# Product Catalogue

2011

PANORAMA ANTENNAS

## Credits

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## Disclaimer

# Product Catalogue

2011

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# 60 Years Experience

Panorama Antennas, a family business now in its third generation, is 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 transistor radios being a trend of the 1960s, Panorama used its expert knowledge in television antennas and began to manufacture 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 networks in Britain. In 1990, Panorama filed a patent application for the first ever solid state coupling circuit, revolutionising cellular glass mount antenna technology and created a new benchmark for quality in the production of components. As the cellular telecommunications industry has grown worldwide, so has Panorama. Today, Panorama is a major producer of antennas for telecommunications and electronics companies around the world. It employs over 50 people and has seven overseas sales offices.

# Contents



## Contact Us

We are always happy to answer your queries. Get in touch and we will help you with any questions you may have.


**T:** +44 (0)20 8877 4444
**E:** sales@panorama-antennas.com


# 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 over 30 different patents and registered designs both in Europe and worldwide.

## RoHS Compliance

All of the products that Panorama Antennas manufactures are 100% RoHS compliant. Investment in advanced technology enables Panorama to test all materials supplied to us, as soon as they arrive at the factory, ensuring that no noncompliant material is passed on to the customer.

## REACH

REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals, EC 1907/2007) is the European Union's chemical control regulation that came into force on 1 June 2007 and will be phased in over an 11 year period. Panorama Antennas is committed to supporting enhancing public health and safety and protecting the environment.

As such Panorama is currently meeting all REACH requirements and will soon be ready to provide our customers with information about substances in our products in accordance with the future requirements of the regulations.

## Certification

Panorama Antennas proudly conforms to the following manufacturing and testing standards:
CE mark, WEEE, UL, e-Mark

## Associations

Panorama Antennas is currently a member of the following professional associations:
Federation of Communication Services
TETRA Association
British Safety Council

# Environmental Responsibility

Panorama Antennas is committed to protecting the environment.

## Energy Consumption

Panorama has a commitment to the environment and has cut its carbon dioxide emissions by approximately 110,000kg over the last 10 years.

## Recycling

Panorama Antennas recycles paper, cardboard, plastic bottles, cans and glass, as well as excess materials from the production process. In 2010 alone Panorama Antennas recycled 14440kg of paper saving 245 trees.

## Working Together

Panorama Antennas works hard with existing suppliers to improve efficiency and environmental responsibility throughout our supply chain. By offering training and guidance, Panorama empowers employees to manage environmental issues as part of their jobs.

# Testing & Facilities

Panorama's testing and measurement facilities represent the cutting edge of antenna design capability. Our communication antenna designs are validated before manufacture using accurate and repeatable tests and measurements. This specialist design and development process builds quality and reliability into all Panorama's products. The key components of our measurement system are:

## The Anechoic Chamber

This creates a 1.2m spherical 'quiet zone' in which the performance characteristics of antenna assemblies can be measured at frequencies up to 35GHz, free from physical or electrical conditions that would otherwise interfere with the measurements.

## Network Analysers

Network Analysers measure efficiency using a wide range of parameters including antenna impedance, relative field strength and insertion loss. Results can be displayed in various formats including Smith Chart, VSWR and return loss.

## Turntable & Positioning Controller

This enables the assessment of the directivity of an antenna in both the 'E' and 'H' planes. This special equipment is constructed to rotate through 360 degrees (in 1 degree increments), with minimal RF reflection or interference.

## Antenna Measurement Software

This enables computer control of the Network Analyser and Positioning Controller/Turntable. Data obtained from controlled measurements is automatically displayed on a monitor as VSWR and polar radiation patterns that can be printed or shared on Panorama's computer network.

## Vehicle Ground Plane Simulation

This can be used in the centre of the anechoic chamber to simulate, as closely as possible, a typical modern car roof and windscreen (front and rear).

## GPS Satellite Recognition

GPS Antennas rely on continuous communication with the satellites. Our GPS Satellite Recognition software enables Panorama to identify each satellite that is being picked up by a GPS antenna. This helps our developers to see how our antennas perform in the real environment.

## Environmental Test Equipment

To ensure our antennas work in all conditions, Panorama has a range of environmental test equipment. These include a vibration chamber to replicate extended use on a vehicle, and two temperature chambers; one 16' and one 3' that fluctuate temperature between -60°F and +175°F to replicate the changing nature of our environment in the most extreme cases.

# Bespoke Design Service

Panorama Antennas is renowned for its ability to design antennas to specifically meet the customers' needs. This could involve modifying an existing product to give it a new frequency, cable length or connector configuration but can even lead to the development of a brand new design.

## Custom Design To Your Specification

Panorama Antennas has extensive experience of engineering antennas to meet precise requirements.

The antenna will be tested so that it works perfectly in the environment that it is designed for.

Throughout the design and manufacturing process we closely consult with the customer to ensure the final product fits their requirements exactly. All our bespoke antennas are rigorously tested to ensure they work perfectly in the real-world, operational environment.

## Tuned To Your Frequency

Panorama can tune most UHF & VHF whips to a specific frequency or bandwidth. If you don't see a product tuned to the exact frequency you require in our product catalogue, you just need to ask us if it can be done specifically for you.

## Don't Forget The Cable

While many people may not realise it, an antenna is only as good as the RF cable attached to it. Panorama can provide many different types of high performance cable to suit your requirements.

But it doesn't stop there: we can provide you with cable to the exact length you require, fitted with the connector of your choice so you do not have to waste any time or money fitting our products.

# Training

Our training sessions help organisations get mobile antenna installation right the first time, helping companies to avoid the costs they might incur in replacing poorly installed units.

## Why is training important?

Ineffective antennas can cause system drop out, noise and lost calls. Without test facilities it is difficult for the user to know if a problem is due to poor installation, a network fault or if the antenna itself is to blame.

Our training explains why efficient electrical design and effective installation are essential to make the most of the available cell site coverage.

## Who should attend?

'Introduction to mobile antennas' is essential training for anyone working with, or supplying, mobile communications equipment. The session aims to increase customer satisfaction by improving the way that mobile antennas are selected and installed.

Individuals who could benefit most by attending include buyers, installers, distributors and retailers of mobile communications equipment.

## What does training involve?

After the training session you should be able to:

Understand basic antenna theory.

Know how to select the best antenna for the job.

Define antenna performance.

Understand the correct installation and test processes.

## Want training for your team?

If you would like to come to one of our open training sessions or would prefer us to provide a bespoke training session for your team please do not hesitate to contact us.

# Testimonials

“Having worked with Panorama for many years we at Axess have always found the staff to be pleasant and knowledgeable, they have helped support our business and expand our product base. We have a very unique relationship”
**Harinder Sandhu**, Director, *Axess International Ltd, UK*

“Astel Communications has been distributing Panorama’s products in the French market for the last 16 years with full satisfaction. We were initially attracted by their wide range of products which cover practically all needs in terms of radio communication antennas whatever the network and the frequency.
Over the  years, we have also appreciated the ever constant quality of their products. Their quality assurance procedures result in a next-to-zero failure rate. I think we must have exchanged 2 or 3 antennas out of thousands delivered.
Quality of service is as important as quality of the product to a nationwide distributor like us. With Panorama we appreciate that all the deliveries are on time, and information can be obtained easily and rapidly at all levels, technical, sales or accounting.”
**Jean-Louis Cazaurang**, General Manager, *Astel Communications, FRANCE*

“Co-Star have had a superb relationship with Panorama for over 13 years which has enabled us to provide our customers with antennas that we believe to be the best in the industry.
The customer service we receive has been fantastic and the sales team are always approachable and friendly.
A great company to be associated with!”
**Tim Cosgrove**, Director, *Co-Star Electronic Components Ltd, UK*

# Mobile Broadband Antennas

## About mobile broadband antennas

The global growth of 3rd generation (3G) technology has enabled a rapid expansion of mobile broadband internet access. Where 3G coverage is limited GPRS coverage ensures that data services are always accessible.

Panorama's global range of 3G & GPRS antennas are compatible with an enormous variety of hardware from different manufacturers and networks. Our antennas have been developed to help out users maintain a consistent data connection and fast transfer speeds wherever they are in the world.

| Key Frequencies |
| --- |
| 3G UMTS - 2100-2170MHz |
| AWS - 1710–1755 and 2110–2155MHz |
| AMPS - 805-880MHz |
| GSM900 - 890-960MHz |
| GSM1800 - 1710-1880MHz |
| Next G - 850MHz |
| PCS1900 - 1850-1990MHz |

| Antenna Applications |
| --- |
| 3G UMTS PCMCIA data cards |
| 3G UMTS express cards |
| 3G UMTS USB modems |
| Mobile broadband applications |

# Mobile Broadband

## 3G Data Card Antenna

## TCLIP2-C3G

Universal clip for laptops
Desk mount option
Various connectors for different data cards, express cards & USB devices

## Elegantly Formed, Powerfully Functional

The deceptively stylish form of the TCLIP2-C3G hides a powerful and effective antenna designed to significantly improve signal strength and transfer speeds for data connections. Simply connect the TCLIP2-C3G to your data card or USB modem and experience the difference immediately.

Whether in the office or out of it the TCLIP2-C3G adapts to every situation: featuring a desk stand and a screen clip combined in one innovative package. With the TCLIP2-C3G you can connect to the world, wherever you are.

Operating Frequencies (MHz):
824-960 & 1710-2170

Gain:
2dBi

Height (mm):
142

Fixing:
Notebook clip & desk stand

# Mobile Broadband

## 3G Directional Antenna

Bracket mount option

## W21-CP-9

High gain directional antenna
Improves 3G signal
Wall mount, mast mount or
desk mount options

Operating Frequencies (MHz):
1900-2170

Gain:
9dBi

Height (mm):
140

Fixing:
Desk mount, wall mount or mast mount

## Supercharge Your Data

If you want to take your mobile data rates to the next level this powerful directional antenna will help you get there. The superb signal strength and high speeds that the W21-CP-9 offers, will make it feel like you are using a fixed line connection.

The compact flat panel antenna is deceptively small and light and the desk stand is simple to remove for easy transportation so you can carry a quality data connection with you wherever you go.

# Mobile Broadband

## High Gain Panel Antenna

Wall mount option

Desk mount option

## WM11-ABOX & WM11-DBOX

High gain at all frequencies
Waterproof housing
Wall mount, mast mount
or desk mount

## Your Fixed Line Substitute

3G signal is often affected by external structures, resulting in low signal within a building. This multiband ultra high gain panel antenna transmits your 3G signal in the direction of your nearest base station to ensure optimum signal strength.

Mounted on a wall or on a mast, the WM11 range is waterproof and UV stabilised so it can withstand any weather conditions.

Operating Frequencies (MHz):
805-894 (WM11-ABOX)
890-960 (WM11-DBOX)
1710-2170 (both antennas)

Gain:
8dBi (805-894MHz & 890-960MHz)
9dBi (1710-1990MHz)
11dBi (2100-2170MHz)

Dimensions (mm):
160 × 142 × 50

Fixing:
Wall mount or mast mount

# Mobile Broadband

## 3G & GPRS Magnetic Antennas

### MAR-2009

Strong magnetic retention
Easy installation
Suction cup window bracket

Operating Frequencies (MHz):
890-960 & 1710-2170

Gain:
5dBi (1710-1990 & 2100-2170MHz)
2dBi (890-960MHz)

Height (mm):
149

Fixing:
Magnetic mount

### Perfect for Vehicles, Boats & Site Offices

If you are constantly on the move the magnetic MAR antenna range is the ultimate solution. Placed on the roof of a vehicle the antenna will grip securely with a tough but removable magnetic base, giving you high gain, omni-directional coverage.

When it comes to removing or re-positioning, it couldn't be easier and you won't be left with any evidence that the antenna was ever there. With the MAR range you no longer need to make holes in your vehicle to fill holes in your coverage.

# Mobile Broadband

## Wall Mount Antenna


Mast mounting kit: Mast block & jubilee clip

## B2B-C3G & B6B-3G

Easy installation
Light weight solution
Wall mount or mast mount options

## Signal Enhancer

The 3G UMTS wall mount antenna range provides a simple and cost effective way of improving the range of a GSM or 3G UMTS network.

The antennas can be used as a way of transferring high network coverage from the outside of a building or boat to its inside. With the antenna mounted in a better position, it will both receive a higher UMTS signal while maintaining the ability to 'fall back' to GSM.

Operating Frequencies (MHz):
805-960 & 1710-2170 (B2B-C3G)
890-960 & 1900-2170 (B6B-3G)

Gain:
2dBi (on all bands - B2B-C3G)
6dBi (1900-2170MHz - B6B-3G)
2dBi (890-960MHz - B6B-3G)

Height (mm):
212

Fixing:
Wall mount, mast mount or suction window mount

# Mobile Broadband

## Universal 3G Modem Adaptor

## CPLR-EP3G & CPLR-AD

Universal adaptor for all USB modems
Hook & loop strap
Enables you to connect an external antenna

Operating Frequencies (MHz):
805-894 & 890-960 (CPLR-AD)
1710-2170 (CPLR-EP3G)

Coupling Loss:
-2dB

Dimensions (mm):
30 × 40 × 7.5

Strap Length (mm):
160

## The Modem Mate

The Panorama Modem Mate antenna adaptor is designed to connect simply and effectively to any USB or 3G data card currently available.

When the base of the adaptor is placed over the internal antenna of any USB modem or data card, the modem mate will automatically couple with the device, diverting its signal to a more powerful external antenna.

The USB Modem Mate adaptor is held securely in place by means of an innovative hook & loop strap and a nonslip rubber foot which fasten the adaptor quickly and securely to any USB modem. No adhesives are necessary and the adaptor can be easily removed by simply unfastening the strap, leaving no unsightly marks or damage on the modem or data card.

# Mobile Broadband

## 3G Data Card Adaptors

### C74-FP-015

Cable for 3G data cards
Various connectors available
Plug & play application

## Unlock Your 3G Modem

Connecting an external antenna to a 3G modem or data card can make a great difference to data transfer speeds. Panorama Adaptor leads are designed to fit most 3G Data Cards, Express Cards and USB modems that have antenna ports, transferring the signal to a better positioned antenna.

Panorama provides compatible adaptor leads for all major 3G modem and data card manufacturers and models.

Length (mm):
150

Antenna connector:
FME Plug

Data card connectors available:
CRC9 Plug
Moebius Plug
Right Angle 151 Plug
Right Angle MMCX Plug
Right Angle MC Card Plug
Right Angle SSMB Plug
TS-9 Plug

See the website for details on which connector fits which 3G device.

# Mobile Broadband

## Point of Sale Packaging

Ready to hang on peg or to go on shelf

Easily adapted to customers requirements

Option of a promotional sticker to promote compatible datacards and modems


## Retail Ready

All of our 3G & GPRS antennas are packaged so that they can go directly into a retail environment. This is either in a colour printed box or in a polythene bag for hanging on a euro-slot.

Product branding is possible in a number of ways depending on cost and quantity considerations. For medium to high volumes, logos and custom designs can be used on the box sleeve or bag backing card.

Low volumes can use a sticker on the product to help consumers easily identify which device the antenna is for.

# Mobile Broadband

## Point of Sale Packaging

EAN Numbers for standard barcode machines

Detailed list of devices the antenna is compatible with

Easy for the consumer to find the correct antenna

## Not Just EAN

Each antenna in the Panorama range is different and is compatible with different mobile broadband devices. This can often leave consumers and sales advisers confused.

Panorama has worked with the major data card manufacturers to identify the correct antenna termination on each card and has compiled a detailed list which is used as a reference guide for the industry.

On the packaging of each antenna the list of compatible devices will make it easier and simpler for the consumer to receive the correct device.

# LTE

## About LTE and 4G Antennas

This year marks the launch of 4G networks in many countries. This new technology has the opportunity to revolutionise mobile broadband experience through increased download and upload speeds. As with all new technology, coverage can be varied and Panoramas antennas offer solutions for a range of applications requiring better or more stable 4G connections.

Panorama's global range of 2G/3G/4G compatible antennas are compatible with an enormous variety of hardware from different manufacturers and networks. Our antennas have been developed to help out users maintain a consistent data connection and fast transfer speeds wherever they are in the world.

| Key Frequencies |
| --- |
| 3G UMTS - 2100-2170MHz |
| 700MHz - 698-806MHz |
| AMPS - 805-880MHz |
| AWS - 1710–1755 and 2110–2155MHz |
| GSM900 - 890-960MHz |
| GSM1800 - 1710-1880MHz |
| Next G - 850MHz |
| PCS1900 - 1850-1990MHz |
| WiMAX - 2394-2696MHz |

| Antenna Applications |
| --- |
| 4G data cards |
| 4G modems |
| Mobile broadband applications |

# LTE

## 2G/3G/4G Wideband Terminal Antenna

## PWB-7-27-RSMAP

Wideband antenna
Ideal for terminals
Covers LTE, GPRS, 3G UMTS & WiMAX
GPS (passive)

## Developers Dream

Ultra-broadband antenna with articulated right-angled connector ideal for modems and terminals. Performing at all 2G, 3G and 4G frequencies the PWB keeps up with the most advanced terminals on the market today.

As an easy to intall, plug and play antenna it is ideal for any developers kit.

Operating Frequencies (MHz):
696 - 960 / 1575 / 1700 - 2700

Gain:
2dBi

Height (mm):
191

Fixing:
Hinged right angle connector

# LTE

## 2G/3G/4G Accessory Antenna

## TPG-7-27

Hook and loop attachment for laptops
Enhance LTE signal on the move
Suitable for OEM bundling

Operating Frequencies (MHz):
698-960 , 1575, 1710-2170, 2400-2700

Gain:
2dBi

Height (mm):
140

Fixing:
Hook and loop pad

## Paddle Power

This simple multiband solution can be used to enhance performance of USB modems. The small size and low cost makes it an ideal in-box product or for customer retention offers.

Its innovative hook and loop attachment for laptops allows it to easily be utilised on the move, whilst it's small and streamlined design means that when not in use it slips conveniently into a laptop bag or briefcase.

# LTE

## LTE MiMo Directional Antenna

## WMM-7-27-5SP

Multiband MiMo capability
Last mile user solution
Wall mount, mast mount and
desk mount options

## Omnidirectional MiMo performance

With the rise of new MiMo capable networks and the release of new spectrum, antennas can struggle to keep up. The WMM-7-27 is a simple solution offering fixed line quality coverage for next generation networks worldwide. Compatible with all 4G networks and backwards compatible for all 2G and 3G networks the WMM-7-27 housing contains two wideband high performance antennas supporting MiMo and diversity applications.

With 3 different mounting options; wall, desk and mast the antenna has the versatility to be used as a temporary or permanent solution.

Operating Frequencies (MHz):
698-960 & 1700-2700

Gain:
2.5dBi

Dimensions(mm):
230 x 180 x 94

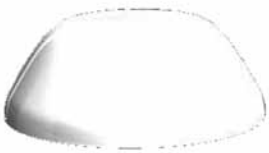
Fixing:
Wall mount, mast mount
& desk mount

# LTE

## MiDome

### LPM-7-27-5SP

Ultra wideband, omni directional
suitable for vehicles or fixed site
Robust low profile housing



Panel mount

Bracket mount

Operating Frequencies (MHz):
698-960 & 1700-2700

Gain:
2dBi

Diameter(mm):
236

Height(mm):
89

Fixing:
Adhesive pad , Vehicle panel mount
& Bracket mount

## One product, Multiple feeds, countless applications

The MiDome provides lightweight and low profile LTE performance. Suitable for vehicles or fixed site installations the MiDome allows you to manage all your installation needs with a single product thereby reducing stock holding and inventory.

Two 2G/3G/4G capable elements ensure that the Midome has got even the most advanced networks covered.

# LTE

## The MiMaxX

## DMM-7-27-2SP

Ultra wideband MiMo solution
Desk stand or Window mount
Packs flat for easy transportation

## Has your broadband got the 'X' factor?

Use the DMM to ensure a strong 2G, 3G or 4G connection and fast transfer speeds for your modem or router. The unique 'X' design enables MiMo connectivity across a huge frequency range and with the options of desk or window mounting the antenna is ideal for home use, or to provide connectivity on the move.

Operating Frequencies (MHz):
698-960, 1575 & 1700-2700

Gain:
2.5dBi

Dimensions (mm):
136

Fixing:
Desk stand or
Window mount

# Mobile Phone Antennas

## About Mobile Phone antennas

Mobile phone network coverage has never been better and yet coverage gaps still remain. Dropped calls can be extremely inconvenient and Panorama's range of antennas for mobile phone car kits can ensure that they become a thing of the past whilst ensuring hands-free convenience in compliance with legislative requirements.

Panorama also caters for the fast growing, tracking, fleet management and telemetry sector with a comprehensive range of GPS & GSM / GPRS vehicle antennas.

| Key Frequencies |
| --- |
| 3G UMTS - 2100-2170MHz |
| PCS1900 - 1850-1990MHz |
| GSM1800 - 1710-1880MHz |
| GSM900 - 890-960MHz |
| AMPS - 805-880MHz |

| Antenna Applications |
| --- |
| Vehicle car kits |
| GPS asset tracking |
| GPS navigation |
| Fleet management |
| Logistics vehicles |

# Mobile Phone

## GPS & GSM Panel Mount Antenna

### GPSF

Active GPS element
Panel mount
Single hole fixing

## Combination Fin

The GPSF is a dual function, compact 'fin' style antenna offering quad-band GSM900, GSM1800, PCS1900 & 3G UMTS along with an active GPS element, all within one housing.

The antenna only requires a single hole for mounting and is installed on the roof of a vehicle. The combination of a low profile design and multi-functionality that the fin offers makes it an ideal choice for logistics and fleet vehicles.

The GPSF antenna has undergone various laboratory tests to ensure it is manufactured to the highest standard. These tests include: high temperature, low temperature, temperature shock, water tightness, salt mist, humidity and vibration.

Operating Frequencies (MHz):
890-960 & 1710-2170

Gain:
2dBi (auxiliary antenna)
26dB (GPS)

Dimensions (mm):
68 × 48 × 43

Fixing:
Panel mount

# Mobile Phone

## GPS & GSM Internal Antenna

### GPSC

Covert application
GPS & GSM combination
Adhesive pad fixing

Operating Frequencies (MHz):
805-960 & 1710-2170

Gain:
2dBi (auxiliary antenna)
26dB (GPS)

Dimensions (mm):
170 × 15

Fixing:
Adhesive pad

### Get a Round

The GPSC makes it easy to get around, allowing GPS and GSM cellular coverage improvements in one small round device. Power-up your phone and navigation system in one easy step with a device which does not cost the earth, but does make it far easier to travel it.

Mounting is totally flexible and our unique 'either way up' mounting system enables you to position the antenna on or under any surface. Display it or keep it hidden, the choice is yours. Even if you cannot see the antenna, it will both help you see where you are going and improve your coverage at the same time.

# Mobile Phone

## Windscreen Mount GPS Combination Antenna

### GPSO-C3G

Windscreen mount
Suitable for SiRFSTAR III® modules
Combined GPS & GPRS & 3G UMTS

## Navigation Made Easy

The GPSO makes it easy to get around, allowing GPS and GSM cellular coverage improvements in one small oval device. Power-up your phone and navigation system with this discreet windscreen mounted device which can offer improved signal over dashboard mounted devices.

Mounting the antenna is simple thanks to its adhesive pad and its unique design. The antenna will still perform even on vertical windscreens making it ideal for use on heavy goods vehicles (HGV's) or lighted vehicles alike.

Operating Frequencies (MHz):
805-890 & 1710-2170 & GPS

Gain:
2dBi
17dB (GPS)

Dimensions (mm):
80 × 64 × 13

Fixing:
Adhesive pad for windscreen mount

# Mobile Phone

## GPS & GSM Low Profile Antennas

LG-DE3G

LGL-DE

## LG-DE3G & LGL-DE3G

Rugged design
Heavy duty application
Ground plane independent

Operating Frequencies (MHz):
890-960 (LGL-DE & LG-DE3G)
1710-1880 (LGL-DE & LG-DE3G)
1900-2170 (LG-DE3G)

Gain:
0dBi (auxiliary antenna, all frequencies)
26dB (GPS)

Dimensions (mm):
104 × 32 (LGL-DE)
102 × 50 (LP-DE3G)

Fixing:
Panel mount

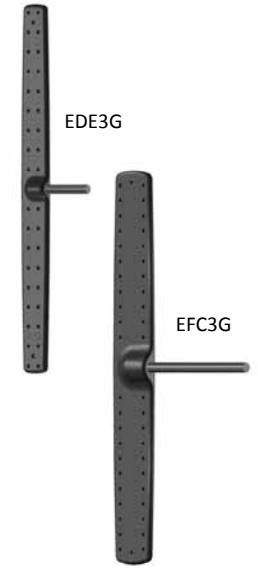
## Low Profile, High Impact

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. The LGL-DE & LG-DE3G have the added bonus of an active 26dB GPS element built into each antenna.

The antennas do not require a metallic ground plane, and maintain the same great performance when mounted on any surface.

# Mobile Phone

## Internal Antennas




## EFC3G & EDE3G

Easy installation
Covert application
Can be removed without a trace

## Easy to Fit, Hard to See

The EFC3G & EDE3G 'easy fit' antennas expand your voice and data coverage without spoiling your view. Connected to a car kit, these multiband easy fit antennas provide radical signal improvements in cities, suburbs and on the motorway.

With their secure but easy to fit adhesive pad mountings, the EFC3G & EDE3G antennas provide a huge range of possibilities for the installer. Whether mounted by the door pillar or behind the rear view mirror the only thing the user will notice is the superb quality of their voice calls and data connection.

Operating Frequencies (MHz):
805-960 & 1710-2170 (EFC3G)
890-960 & 1710-2170 (EDE3G)

Gain:
2dBi (on all bands)

Dimensions (mm):
130 × 17 × 2.5 (EFC3G)
113 × 10 × 2.5 (EDE3G)

Fixing:
Adhesive pad mount

# Mobile Phone

## Glass Mount Antenna

## GXTDE3G

Excellent performance
Solid state coupling
Can be removed without a trace

Operating Frequencies (MHz):
890-960 & 1710-2170

Gain:
2dBi (890-960MHz)
4dBi (1710-2170MHz)

Height (mm):
164

Fixing:
On-glass mounting

## Clear as Glass

With Panorama's patented glass mount technology you can use your windscreen to improve your calls, increase your network coverage and achieve data speeds like never before.

The two part glass mount antenna system gives you all the network coverage benefits of an external antenna without unsightly holes or a tough installation process. The GTXDE3G can be easily installed on any windscreen and removed without a trace, ensuring that your signal and your windscreen glass both stay clear.

# Mobile Phone

## Magnetic Mount Antennas


## MAR-C3G & MAR-2009

Easy removal
No-hole installation
Strong magnetic retention

## No Holes - In Your Coverage or In Your Car

Why start drilling holes when the MAR-C3G & MAR-2009 will grip securely with a tough but removable magnetic base. Measuring a mere 74mm in height, the diminutive MAR-C3G antenna provides great coverage across all the cellular bands whilst the slightly taller, 149mm high MAR-2009 increases the antennas gain across the 3G UMTS band.

When it comes to removing or re-positioning things couldn't be easier and you will not be left with any evidence that the antenna was there at all. With the MAR-C3G & MAR-2009 you no longer need to make holes in your vehicle to fill holes your in cellular coverage.

Operating Frequencies (MHz):
805-960 & 1710-2170 (MAR-C3G)
890-960 & 1710-2170 (MAR-2009)

Gain:
2dBi (on all bands - MAR-C3G)
2dBi (890-960MHz - MAR-2009)
5dBi (1710-1900 & 1900-2170MHz - MAR-2009)

Dimensions (mm):
73 × 34 (MAR-C3G)
149 × 34 (MAR-2009)

Fixing:
Magnetic mount

# Mobile Phone

## Bumper Mount Antenna

## BMP1-DEP3G & BMP1-7-27

Covert application
Robust design
Flexible construction

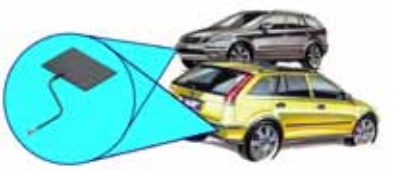
Operating Frequencies (MHz):
890-960 & 1710-2170 (BMP1-DEP3G)
698-960 & 1700-2700 (BMP1-7-27)

Gain:
2dBi

Dimensions (mm):
140 × 100 × 4.5

Fixing:
Adhesive pad bumper mount

Antenna positioning



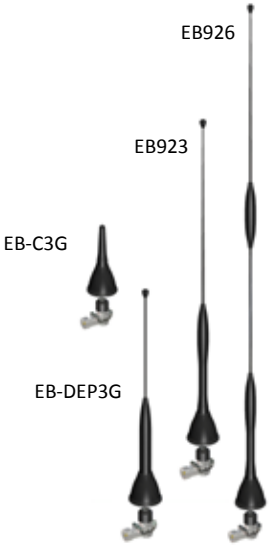
## Invisibly Effective

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, this specialist device's installation requires no drilling and is invisible from the outside of the car. Popular amongst luxury car owners, this antenna may be invisible but it's impact upon in-car reception will be clear to see.

# Mobile Phone

## Panel Mount Antennas




## EB-C3G, EB923, EB926 & EB833

Stylish Design
Detachable whip for car wash
Moulded cable option

## Stylish Design

The 'Euro' base panel mount (EB) has a smooth profile which is free from protrusions. These stylish whips easily screw in and out of their moulded base cups, ideal for car washing.

The Euro Base antenna range is available with a moulded cable option, just change the part number beginning from 'EB' to EBM'

Moulded Cable Option

Detachable Cable Option

Operating Frequencies (MHz):
805-960 & 1710-2170 (EB-C3G)
890-960 & 1710-2170 (EB-DEP3G)
870-960 (EB923 & EB926)

Gain:
2dBi (EB-C3G)
5dBi (1710-1900) & 1dBi (890-960) (EB-DEP3G)
5dBi (EB923)
7dBi (EB926)

Height (mm):
69 (EB-C3G)
185 (EB-DEP3G)
290 (EB923)
500 (EB926)

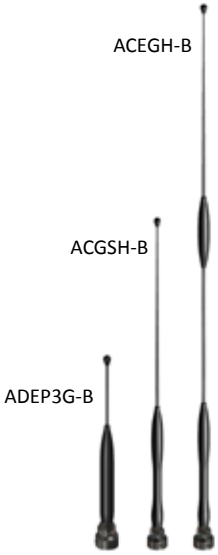
Fixing:
Panel mount

# Mobile Phone

## Modular Whips

### ADEP3G-B, ACGSH-B & ACEGH-B

Rigid or flexible whips
Hinged and non-hinged versions
Removable for car wash




Operating Frequencies (MHz):
890-960 & 1710-2170 (ADEP3G-B)
825-960 (ACGSH-B)
870-960 (ACEGH-B)

Gain:
5dBi (1710-1900) & 1dBi (890-960) (ADEP3G-B)
5dBi (ACGSH-B)
7dBi (ACEGH-B)

Height (mm):
162 (ADEP3G-B)
320 (ACGSH-B)
500 (ACEGH-B)

Fixing:
Various bases available

### Efficiently Versatile

All Panorama mobile whips feature either rigid 17-7 PH stainless steel rods with plated brass components and black nylon mouldings or have a flexible construction within a black nylon tube. When fitted and tuned correctly these antennas will have a typical VSWR of 1.2:1 or less.

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

# Mobile Phone

## Modular Bases


## M8, EM & MBM

Interchangeable system
Panel mount option
Boot clip option

## Adaptive Design

The Panorama mounting system features a high degree of compatibility between whips and bases. Our comprehensive range of panel mount bases suits many applications and can cater for many varied fitting requirements such as hole size, panel thickness, cable length and connector terminations are catered for.

M8:
Panel mount with 5m moulded cable for panels up to 4mm thick

EM:
M8 base with detachable 5m cable assembly

MBM:
Temporary boot clip antenna with 5m moulded cable assembly

# In Building Antennas

## About In building antennas

The widespread use of cellular phones and wireless network applications inside buildings has increased the need for antenna systems that can distribute network coverage within these buildings.

Panorama's in building wireless antennas are particularly applicable in environments where aesthetics and wide angle coverage is necessary for successful wireless development. Their surprisingly small size allow the antennas to be hidden almost anywhere, providing an invisible solution for most applications.

| Key Frequencies |
| --- |
| 2.4GHz WLAN - 2400-2500MHz |
| WiMAX - 2394-2696MHz |
| 3G UMTS - 2100-2170MHz |
| PCS1900 - 1850-1990MHz |
| AWS - 1710–1755 and 2110–2155MHz |
| GSM1800 - 1710-1880MHz |
| GSM900 - 890-960MHz |
| AMPS - 805-880MHz |

| Antenna Applications |
| --- |
| Indoor GSM network boosting |
| Wireless LAN networking |
| In-filling GSM black spots |
| Increase hotel or office network coverage |
| Femto-cell's |
| Pico-cell's |

# In Building

## Ceiling Tile Antenna

## CM-C3G-24-SJ

As thin as a credit card
Hidden from room
Easy installation

### Hidden Benefits

The multiband ceiling mount antenna range is perfect for hotels. This range of multiband cellular and 2.4GHz WLAN antennas require only one cable to be installed in the ceiling, saving on the installers time and money.

Installing antennas in the ceiling can allay hotel guests' fears about radiation problems while ensuring they still receive full signal on their cell phones.

Operating Frequencies (MHz):
806-960, 1710-2170 & 2400-2470

Gain:
3dBi

Dimensions (mm):
115 × 130 × 1.5

Fixing:
Ceiling tile mounted

# In Building

## Ultra Wideband Ceiling Antenna

### CMWB-038-6-NJ

Ultra wideband from 380MHz - 6GHz
Easy installation
Integrate wireless services in one antenna

Operating Frequencies (MHz):
380-6000

Gain:
1dBi (400MHz) - 7.5dBi (6000MHz)

Dimensions (mm):
175 × 420 × 420

Fixing:
Ceiling mount

## In-Building Integration Made Easy

A true wideband system, Panorama's CMWB-038-6 allows businesses and facilities to support multi-service / multi-operator wireless coverage. Any number or combination of services are supported - including TETRA UHF, GSM400, AWS 700MHz, Quadband GSM, 3G UMTS, 2.4GHz WLAN, LTE & WiMAX etc. enabling simultaneous mobility for employees, consumers and emergency services and providing in-building service providers and DAS installers with a convenient one size fits all solution.

# In Building

## TETRA UHF Ceiling Antenna

## CM-S1-08NJ

Easy installation
In building TETRA UHF coverage
Suitable for airports and
large campus areas

## In-Building Security

The Panorama TETRA 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.

Operating Frequencies (MHz):
380-400

Gain:
0dBi

Dimensions (mm):
160 × 40

Fixing:
Ceiling mount

# In Building

## Covert Ceiling Antenna

### CMSD-C3G-24-NJ

Designed to look like a smoke detector
Easy Installation
Multiband GSM, 3G UMTS & 2.4GHz WLAN

Operating Frequencies (MHz):
806-960, 1710-2170 & 2400-2470

Gain:
2dBi

Dimensions (mm):
81.5 × 150

Fixing:
Ceiling mount

## Smoke Signals

The Panorama 'smoke detector look-a-like' antenna is designed to cover all the GSM, UMTS & WLAN frequencies and so can be used for any application. In addition to this, it offers either multi-frequency or single band capabilities, depending on the users requirements. This multiple functionality means that the user only needs to buy one antenna to cover all their in-building coverage options.

# In Building

## WLAN & GSM Ceiling Antenna

## W24C-IBCO-3

Single hole fixing
Multi frequency
Perfect for hot-spots

### Combining the Wireless World

The ceiling mount antenna range is perfect for hotels. The GSM & 2.4GHz WLAN antenna requires only one cable to be installed in the ceiling, saving on time and money for the installer.

In addition to this, it offers either multi-frequency or single band capabilities, depending on the users requirements. This multiple functionality means that the user only needs to buy one antenna to cover all their in-building coverage options.

Operating Frequencies (MHz):
698-960 & 1710-2500

Gain:
3dBi

Dimensions (mm):
165 × 95

Fixing:
Ceiling mount

# In Building

## Multiband Directional Antenna

## WM8-ADEP3G-NJ
## WM8-3ADED3G-NJ

High gain, Wall or mast mount
Waterproof housing
Integrate wireless services into one antenna

Operating Frequencies (MHz):
805-894, 890-960, 1710-1880, 1850-1990 & 1990-2170 (WM8-ADEP3G-NJ)
698-960, 1710-2170(WM8-3AEP3G-NJ)

Gain:
8dBi

Dimensions (mm):
230 x 180 x 85

Fixing:
Wall Mount/ Pole Mount

## Sending signal in the right direction

A versatile high gain directional antenna for in building applications, panorama's WM8 range allows businesses and facilities to support multi-service/multi-operator wireless coverage. The WM8-BAEP3G-NJ supports 2G, 3G, 3G+ and 4G technologies including AMPS, PCS, GSM, UMTS, LTE & AWS.

The WM8 range is housed in impact resistant, UV stabilised and flame retardant plastic. The antenna is sealed to be completely weather proof and features a heavy duty N female connector making the product ideal for indoor and outdoor deployment, for in building coverage or network infill applications.

# In Building

## Omnidirectional Wall Mount Antenna

## ODP-DE-3G

Improves range
Easy installation
Low cost, Lightweight solution

## Outdoor Signal, Inside

The ODP is a low cost remote antenna solution for GSM & 3G UMTS devices.

Particularly useful where inbuilding network coverage is reduced due to solid walls or glass, this antenna will improve the communication and performance.

Operating Frequencies (MHz):
890-690, 1710-1880, 1850-1990 & 1990-2170

Gain:
2.5dBi

Dimensions (mm):
150 × 32.7 x 150

Fixing:
Wall Mount

# M2M & Metering Antennas

## About M2M & ISM Band antennas

Panorama offers a wide range of antennas for ISM band, short range radio applications such as Wifi, Bluetooth and GSM & GPRS. We specialise in providing antenna solutions to meet customer's varied requirements and have a large number of standard products suitable for M2M use.

Our products are currently deployed in parking meters, vending machines and utility meters across the world.

With our in-house research & development and production departments, we are able to provide cost effective, short timescale, custom antenna products designed and optimised to offer optimum antenna performance for the customer's application.

| Key Frequencies |
| --- |
| 2.4GHz WLAN - 2400-2500MHz |
| 3G UMTS - 2100-2170MHz |
| PCS1900 - 1850-1990MHz |
| GSM1800 - 1710-1880MHz |
| GSM900 - 890-960MHz |
| ISM-868 - 840-890MHz |
| AMPS - 805-880MHz |
| ISM-433 - 430-450MHz |

| Antenna Applications |
| --- |
| Smart meters |
| Vending machines |
| Wireless 'chip & pin' devices |
| Wireless mesh networking |
| Parking meters |
| Water sensors |
| Hand-held devices |
| Gas & electricity meters |
| SCADA |

# M2M & Metering

## PCB Antennas


### TCB-C3G-UF, TCE-C3G-UF & TCF-C3G-UF

Smart metering antenna
Simple & quick installation
Suitable for plastic enclosures

## Plug & Play

The TC range is ideal for any GPRS or UMTS data module, no matter what GSM Band it operates on.

The TC range covers all the cellular bands without compromising on performance or cost making them an ideal 'one size fits all' product for metering systems, equipment monitoring, and any other applications involving the transmission of data over cellular networks.

The TC antennas are easy to install with pre-drilled mounting holes and industry standard UFL socket connector. The small size & low profile allow this antenna to be fitted in small spaces.

Operating Frequencies (MHz):
805-960 & 1710-2170

Gain:
2dBi

Dimensions (mm):
50 × 40 × 0.4 (TCB-C3G-UF)
140 × 10 × 0.4 (TCE-C3G-UF)
125 × 13 × 0.4 (TCF-C3G-UF)

Fixing:
2 fixing holes

# M2M & Metering

## PCB Antennas

### TCT-C3G-24-24-UF

Smart metering antenna
Simple & quick installation
Suitable for plastic enclosures

Operating Frequencies (MHz):
805-960, 1710-2170 & 2400-2500

Gain:
2dBi

Dimensions (mm):
125 × 19.5 × 0.4

Fixing:
2 fixing holes

### Three in One

The TCT-C3G-24-24 represents an effective and cost effective solution to the problem of combining multiple transmission methods in a single device.

Typical use for this antenna is where GSM & 3G UMTS, 2.4GHz WLAN and Bluetooth functions are needed.

When space, cost and lack of ground plane are an issue the TCT-C3G-24-24 comes into its own and substituting inconvenient soldered flying leads for board mounted UFL connectors makes it extremely adaptable.

The TCT-C3G-24-24 will support and improve quad band GPRS, 3G, WLAN, Bluetooth and Zigbee communication efficiency.

# M2M & Metering

## PCB Antennas

## TCD-24-UF

Smart metering antenna
Simple & quick installation
Suitable for plastic enclosures

### Small & Mighty

The deceptively small TCD-24-UF is an ideal antenna for Bluetooth, Zigbee and WLAN devices.

The compact TCD-24-UF removes the need for an expensive external antenna by providing impressive performance at 2.4GHz. It has a component style PCB design, suitable for use within plastic device enclosures.

In a market where cost efficiency and performance often seem incompatible the TCD-24-UF removes any need for compromise.

Operating Frequencies (MHz):
2400-2500

Gain:
2.5dBi

Dimensions (mm):
50 × 6.3 × 0.4

Fixing:
2 fixing holes

# M2M & Metering

## Pentaband Portable Antenna

## PCX-TNC-C3G

Rugged design for modems
Multiple frequencies
Waterproof equivalent to IP67

Operating Frequencies (MHz):
805-960 & 1710-2170

Gain:
2dBi

Height (mm):
66

Termination:
TNC plug

## Miniature Networking

The PCX-TNC-C3G wireless terminal antenna is suitable on equipment that requires a wireless GPRS or 3G signal.

This small antenna is perfect for hand-held devices that need wireless connectivity and has been engineered to survive in harsh and exposed environments.

Pentaband functionality allows the antenna to be used for many different applications and to offer a high level of interoperability.

# M2M & Metering

## Ultra Slim Metering Antennas

## TCBM-DE-01UFL & TCBM-AP-01UFL

Ultra slim design
Plug and play U.FL connector
Suitable for utilities and metering devices

## Fits in the Gap

Designed to offer signal improvements when space is at a premium, the Panorama TCBM range fits in with your device.

These antennas are highly flexible and can be squeezed into the tightest of spaces without compromising performance.

These durable overmoulded antennas are even suitable for deployment in special locations such as utilities meter and handheld devices.

Operating Frequencies (MHz):
805-960 & 1710-1880(TCBM-DE-01UFL)
840-890 & 1850-1990 (TCBM-AP-01UFL)

Gain:
2dBi*
Dependant on mounting position

Dimensions (mm):
60 × 17 × 2.5

Terminations:
U.FL plug

# M2M & Metering

## ISM Band Portable Antennas


## MFXU-433, MQ-433 & MQ-868

Rugged design for modems
Pre-tuned to frequency
Colour coded

Operating Frequencies (MHz):
430-450 (MFXU-433 & MQ-433)
840-890 (MQ-868)

Gain:
0dBi (MFXU-433)
2dBi (MQ-433 & MQ-868)

Height (mm):
85 (MFXU-433)
170 (MQ-433)
88 (MQ-868)

Terminations:
BNC, SMA, TNC & Many others

## Life Long Partner

Panorama offers a comprehensive range of portable antennas. These antennas are totally overmoulded in high quality engineering plastics improving both the durability and life expectancy of the antenna.

Each pre-tuned frequency band has its own colour code making it easy to identify the correct product.

# M2M & Metering

## Wireless LAN Portable Antennas


## PG2400-SMA, PG2400-TNC & PG2400-TNCR

Rugged design for modems
Ideal for portable devices
Various version gain

## Instant Networking Solution

PG type wireless terminal antennas are suitable for use with portable equipment.

This range of small antennas are perfect for hand-held devices that need both a 2.4GHz wireless connection and a rugged antenna that can suffer high levels of wear and tear and survive accidental drops.

Operating Frequencies (MHz):
2400-2485

Gain:
2dBi (PG2400-SMA)
4dBi (PG2400-TNC & PG2400-TNCR)

Height (mm):
88 (PG2400-SMA)
178 (PG2400-TNC & PG2400-TNCR)

Termination:
SMA plug (PG2400-SMA)
TNC plug (PG2400-TNC)
Right angle TNC plug (PG2400-TNCR)
Reverse poliarity connectors available

# M2M & Metering

## Low Profile Antenna

### LPW

Extends network coverage
Mounting by screws or adhesive pad
PCB capable of multi-polar reception across large frequency range

Operating Frequencies (MHz):
890-960 & 1710-1880 (LPA-DE)
840-890 & 2100-2170 (LPA-868-3G)
840-890 & 2400-2500 (LPA-868-2400)

Gain:
0dBi

Dimensions (mm):
104 × 40 × 15.5

Fixing:
Wall Mount: Screws or Adhesive pad

### Making a Connection Anywhere

The LPAW is one of the most versertile low profile PCB antennas available. With multiple mounting and cable routing options available, the antenna can be installed very simply on many different casings via adhesive pad or screw installation.

The high performance PCB is capable of multi-polar reception across a large frequency range and extends network coverage for a reliable connection even in problem areas.

# M2M & Metering

## Low Profile Antenna

## LPAB-AP, LPAB-DE LPAB-925-2400,

Low profile, vandal & tamper proof design
Suitable for plastic or metal enclosures
One hole installation, optional screw fixing

## Low Profile M2M

The panorama LPAB range of antennas combine ergonomic style with sophisticated engineering. The rugged design features a solid impact resistant, weatherproof, flame retardent plastic housing.

The low profile housing gives a high degree of vandal resistance making it perfect for vending machines or other telemetry devices in exposed locations that require reliable communications. The antenna is secured in place by a reversible locking nut allowing secure fitment to panels of between 1mm and 26mm thick.

The antenna offers ground plane independent omnidirectional performance across up to three bands making it a versatile solution for a number of applications.

Multiple Antenna Operating Frequencies (MHz):
890-960, 2400-2500 (LPAB-925-2400)
890-960, 1710-1880 (LPAB-DE)
824-897, 1880-1990 (LPAB-AP)

Gain:
0dBi

Dimensions (mm):
130 × 40 × 15.5

Fixing:
Panel mount

# M2M & Metering

## MiMo Low Profile Antenna

### LPAM-2300

Multiple input & multiple output
Rugged heavy duty housing
Two antennas in one housing

Multiple Antenna Operating Frequencies (MHz):
2200-2400

Gain:
0dBi

Dimensions (mm):
164.5 × 40 × 16.5

Fixing:
Panel mount

## Low Profile MiMo

The LPAM low profile antenna combines ergonomic style with sophisticated design technology to take advantage of the advanced capabilities of MiMo networks.

The rugged design only requires one mounting hole to aid with installation but offers separate feeds and spatially diverse elements.

This low cost antenna has a high degree of vandal resistance and is perfect for vending machines, utilities meters and featuring a secure yet easy to install locking nut.

# M2M & Metering

## Panel Mount Antenna


## EB-868 & EB-C3G

Euro base with flexible whip
Moulded cable option
Stylish design

## Stylish Design

The 'Euro' base panel mount (EB) has a smooth profile which is free from protrusions. The whip attaches with a screw thread recessed in the cap.

The Euro Base antenna range is available with a moulded cable option, just change the part number beginning from 'EB' to EBM'

Moulded Cable Option

Detachable Cable Option

Operating Frequencies (MHz):
840-890 (EB-868)
805-880, 890-960, 1710-1880, 1850-1990, 1900-2170 (EB-C3G)

Gain:
2dBi

Height (mm):
90 (EB-868)
69 (EB-C3G)

Fixing:
Panel mount

# M2M & Metering

## Bracket Mount Antenna

## B2BE-C3G & B6B-3G

Improve range
Cost effective solution
Easy installation

Operating Frequencies (MHz):
805-960 & 1710-2170 (B2B-C3G)
890-960, 1710-2170(B6B-3G)

Gain:
2dBi (B2B-C3G)
5dBi (B6B-3G)

Dimensions (mm):
212 × 20 (B2B-C3G)
365 × 20 (B6B-3G)

Fixing:
Bracket mount

## Omni-Directional Networking

The B2B range has been designed as a cost effective antenna to provide longer range. The omni-directional radiation pattern allows the antenna to be quickly installed.

These antennas provide an ideal solution for infill coverage or a gain subscriber solution.

# M2M & Metering

## WiMAX or WLAN Directional Antenna

### W24-CP-9

High gain directional antenna
Improves wireless network range
Point to point communications

## Maximise your Wireless Network

The Panorama client patch antenna is a directional wall mounting or mast mounting antenna covering 2.4GHz. This antenna is ideal for point to point communications or used to cover a wide area thanks to its 65° azimuth and 65° elevation.

Ideal to infill network coverage or subscriber terminals the W24-CP-9 is a cost effective solution to network coverage issues.

Operating Frequencies (MHz):
2400-2485

Gain:
9dBi

Dimensions (mm):
93 × 93 × 25

Fixing:
Wall mount or mast mount

# M2M & Metering

## Directional Antenna

Wall mount option

## WM11-AEP3G & WM11-DEP3G

High gain at all frequencies
Wall mount or mast mount
Waterproof housing

Operating Frequencies (MHz):
805-894 (WM11-AEPD3G)
890-960 (WM11-DEP3G)
1710-2170 (both antennas)

Gain:
8dBi (805-960MHz)
9dBi (1710-1990MHz)
11dBi (2100-2170MHz)

Dimensions (mm):
160 × 142 × 50

Fixing:
Wall mount or mast mount

## Powerful and Directional

The WM11 is a directional antenna. This makes point to point communication between machines at low power more reliable.

The multiband functionality enables the antenna to have backup (fall back) frequencies so that communication is never lost.

Flexible wall and mast mount options will suit any mounting position and a durable waterproof construction makes this antenna ideal for outdoor use.

# M2M & Metering

## Wall Mount Antennas

## ODP-9-18-3G

Improves range
Easy installation
Off-set dipole design

## Fill in the Gaps

Wall mounted antennas can be used as a simple and cost efficient way of improving the range of a GSM network. The antennas can be used as a way of converting high network coverage from the outside of a building to its inside.

This antenna is perfect for filling-in weak signal areas in shopping centres, hotels and exhibition centres.

Operating Frequencies (MHz):
890-960 & 1710-2170

Gain:
2.5dBi

Height (mm):
150

Fixing:
Wall mount

# M2M & Metering

## Wall Mount Antennas

### ODP-433

Improves range
Easy installation
Light weight solution

Operating Frequencies (MHz):
430-450

Gain:
2dBi

Height (mm):
235

Fixing:
Wall mount

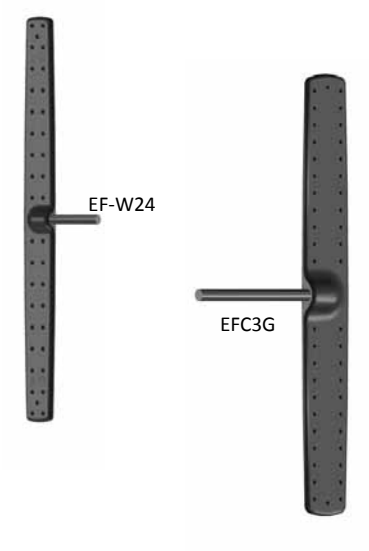
## Signal Enhancer

THE ODP is a low cost remote antenna solution for ISM433 devices.

Particularly useful where in-building network coverage is reduced due to solid walls or glass, this antenna will improve the communication performance.

# M2M & Metering

## Pentaband Easyfit Antenna




## EFC3G & EF-W24

Waterproof
Internally or externally fitted
Simple & quick installation

## Slim Line Design

The EF 'easy fit' antennas are efficient & compact.

With their secure but easy to fit adhesive pad mountings, the EF antennas provide a huge range of possibilities for the installer. Whether mounted by the windscreen pillar or behind the rear view mirror the only thing the user will notice is the superb quality of their data connection.

Operating Frequencies (MHz):
805-960 & 1710-2170 (EFC3G)
2400-2485(EF-W24)

Gain:
2dBi

Dimensions (mm):
130 × 17 × 2.5 (EFC3G)
113 × 10 × 2.5 (EF-W24)

Fixing:
Adhesive pad mounting

# M2M & Metering

## Vehicle GPS Antennas


## GPSK-433, GPSK-868 & GPSK-W24-2

Excellent performance
Active GPS element
Perfect for asset tracking

Operating Frequencies (MHz):
430-450 (GPSK-433)
840-890 (GPSK-868)
2400-2485 (GPSK-W24-2)

Gain:
2dBi

Height (mm):
168 (GPSK-433)
169 (GPSK-868)
60 (GPSK-W24-2)

Fixing:
Panel mount

## Single Hole, Dual Function

The GPSK combination antenna range is used by logistics, fleet management & transportation companies to identify the location of vehicles, using GPS, and to transmit data on ISM-433 & ISM-868 or 2.4GHz WLAN.

The antenna only requires a single hole for mounting, saving the installer time. It is installed on the roof of a vehicle.

# M2M & Metering

## Vehicle GPS Antennas

## GPSF-868-3G & GPSF-2400

Panel Mount
Active GPS element
Perfect for asset tracking

## Combination Fin

The GPSF is a dual function, compact 'fin' style antenna offering ISM868, GSM & 3G or 2.4GHz along with an active GPS element, all within one housing.

The antenna only requires a single hole for mounting for installation on the roof of a vehicle. The combination of a low profile design and multi-functionality that the fin offers makes it an ideal choice for discreet installations.

The GPSF meets stringent environmental testing requirements to ensure it is suitable for rugged applications.

Operating Frequencies (MHz):
840-890 & 2100-2170 (GPSF-868-3G)
2400-2500 (GPSF-2400)

Gain:
2dBi (auxiliary antenna)
26dB (GPS)

Dimensions (mm):
68 × 48 × 43

Fixing:
Panel mount

# M2M & Metering

## Internal Vehicle GPS Combination Antenna

### GPSC-C3G

Covert application
GPS & Cellular + 3G UMTS combination
Adhesive pad fixing

Operating Frequencies (MHz):
805-960 & 1710-2170

Gain:
2dBi
26dB (GPS)

Dimensions (mm):
170 × 15

Fixing:
Adhesive pad

## Get a Round

The GPSC makes it easy to get around, allowing GPS and GSM/cellular coverage improvements in one small device. Power-up your phone and navigation system in one easy step with a device which does not cost the earth, but does make it far easier to travel it.

Mounting is totally flexible and our unique 'either way up' mounting system enables you to position the antenna on or under any surface. Display it or keep it hidden, the choice is yours. The ideal antenna for secure asset management systems.

# M2M & Metering

## Windscreen Mount GPS Combination Antenna

### GPSO-C3G

Windscreen mount
Suitable for SiRFSTAR III® modules
Combined GPS & Cellular & 3G UMTS

## Navigation Made Easy

The GPSO makes it easy to get around, allowing GPS and GSM/cellular coverage improvements in one small oval device. Power-up your phone and navigation system with this discreet windscreen mounted device which can offer improved signal over dashboard mounted devices.

Mounting the antenna is simple thanks to its adhesive pad and its unique design. The antenna will still perform even on vertical windscreens making it ideal for use on heavy goods vehicles (HGV's) or lighted vehicles alike.

Operating Frequencies (MHz):
805-890 & 1710-2170 & GPS

Gain:
2dBi
17dB (GPS)

Dimensions (mm):
80 × 64 × 13

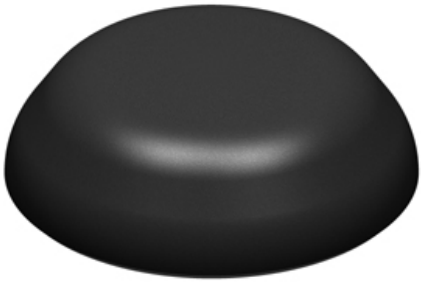
Fixing:
Adhesive pad for windscreen mount

# M2M & Metering

## Low Profile Vehicle Antenna

### LPL-W24-2

Rugged design
Heavy duty application
Ground plane independent



Operating Frequencies (MHz):
2400-2485

Gain:
2dBi

Dimensions (mm):
104 × 32

Fixing:
Panel mount

## Low Profile, High Impact

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. The LPL-W24-2 has the option of an active 26dB GPS element if required.

The antenna does not require a metallic ground plane, and maintains the same great performance when mounted on any surface.

# M2M & Metering

## Magnetic Vehicle Mount Antenna

## MAR-W24

Easy removal
No-hole installation
Strong magnetic retention

## Temporary Fixing, Permanent Connection

Why start drilling holes when the MAR-W24 will grip securely with a tough but removable magnetic base.

Measuring 145mm high MAR-W24 increases the antennas gain across the 2.4GHz WLAN spectrum.

When it comes to removing or re-positioning things couldn't be easier and you will not be left with any evidence that the antenna was there at all.

Operating Frequencies (MHz):
2400-2485

Gain:
5dBi

Dimensions (mm):
145 × 34

Fixing:
Magnetic mount

# M2M & Metering

## Adaptor Leads with Micro Connectors

### C137-UFL-01
### C231-UFL-01

Cable for wireless modules
Snap fit U.FL connectors
Plug & play application

Length (mm):
10

Wireless module connector:
U.FL plug

Antenna connectors available:
U.FL (C137-UFL-01-FL)
SMA Plug (C137-UFL-01-SP)
SMA Bulkhead Jack (C132-UFL-01-SMABJ)

See our website for details on the connectors for wireless devices.

## Plug & Go

U.FL connectors have become the industry standard for M2M modules because of their ease of use and quick installation time. Panorama has a range of cable assemblies using the U.FL connector to suit various different antenna connectors available in our range.

A U.FL adaptor lead provides a quick, easy and cost effective way to supplement your data rates and transfer speeds using a better external or integrated antenna.

# M2M & Metering

## Data Card Adaptor Leads

### C74-FP-015

Cables for Wireless 3G + 4G modems
Various connectors available
Plug & play application

## Unlock Your 3G Modem

Connecting an external antenna to a modem or data card can make a great difference to data transfer speeds. Panorama adaptor leads are designed to fit most 3G data cards, express cards and USB modems that have antenna ports, transferring the signal to a more efficient antenna.

Panorama provides compatible adaptor leads for all major modem and data card manufacturers and models.

Length (mm):
150

Antenna connector:
FME Plug

Data card connectors available:
Right Angle 151 Plug
Right Angle MMCX Plug
Right Angle MC Card Plug
CRC9 Plug
Right Angle SSMB Plug

See the website for details on which connector fits which 3G or 4G device.

# WiMAX Antennas

## About WiMAX antennas

Wimax technology offers network operators a way to cope with the capacity and specturm issues caused by the bandwidth hungy wireless applications of today and tomorrow. Panorama Antenna's range of Wimax antennas are designed to provide efficient infill and improved terminal coverage for real world applications such as wireless internet access, machine to machine data transfer and smart metering. Panorama also offers a range of multiple antenna systems which can radically improve the perfomance of WIMAX netwroks operating MIMO technology.

| Key Frequencies |
| --- |
| 2.3GHz WiMAX |
| 2.5GHz WiMAX |

| Antenna Applications |
| --- |
| Point to multi-point links |
| Mesh networking |
| Mobile broadband |
| 'Last mile' connectivity |

# WiMAX

## MiMo Low Profile Antenna

## LPAM-2300

Multiple input & multiple output
Rugged heavy duty antenna
Suitable for plastic or metal enclosures

## Low Profile MiMo

The LPAM low profile antenna combines ergonomic style with sophisticated design technology to take advantage of the advanced capabilities of MiMo networks.

The rugged design only requires one mounting hole to aid with installation but offers separate feeds and spatially diverse elements.

This low cost antenna has a high degree of vandal resistance and is perfect for vending machines, utilities meters and featuring a secure yet easy to install locking nut.

Multiple Antenna Operating Frequencies (MHz):
2200-2400

Gain:
0dBi (both antennas)

Dimensions (mm):
164.5 × 40 × 16.5

Fixing:
Panel mount

# WiMAX

## Low Profile Antenna

## W26-CP-9

HIgh gain directional antenna
Improves woreless network range
Point to point communications

Operating Frequencies (MHz):
2500-2700

Gain:
9dBi

Dimensions (mm):
93 x 93 x 25

Fixing:
Wall mount or mast mount

## Maximise your Wireless Network

The Panorama client patch antenna is a directional wall mounting or mast mounting antenna covering 2.5GHz. This antenna is ideal for point to point communications or used to cover a wide area thanks to it's 65º azimuth and 65º elevation.

Ideal to infill network coverage or subscriber terminals the W26-CP-9 is a cost effective solution to network coverage issues.

# WiMAX

## Bracket Mount Antenna

Mast mounting kit: Mast block & jubilee clip

## B5B-2300

Improve range
Cost effective solution
Easy installation

## Omni-Directional Networking

The B5B range has been designed as a cost effective antenna to provide longer range. The omni-directional radiation pattern allows the antenna to be quickly installed.

These antennas provide an ideal solution for infill coverage or a gain subscriber solution.

Operating Frequencies (MHz):
2200-2500

Gain:
5dBi

Dimensions (mm):
250 × 20

Fixing:
Bracket mount

# GPS Antennas

## About GPS antennas

The Global Positioning System (GPS) is a Global Navigational Satellite system consisting of a constellation of between 24 & 32 medium Earth orbiting satellites. A receiver's position is calculated by carefully timing the signal sent to it by a satellite which enables it to determine their current location, the time and their velocity.

Used by police forces and logistics companies worldwide Panorama's GPS antenna range is a proven solution for navigation and tracking.

| Key Frequencies |
| --- |
| GPS - 1575MHz |

| Antenna Applications |
| --- |
| Vehicle navigation systems |
| GPS asset tracking |
| Fleet management |
| Logistics vehicles |

# GPS

## In-Vehicle GPS Antenna

## GPSV & GPSS

Excellent performance
Active GPS element
Hook & loop or adhesive pad fixing

## Simple, Smart, Effective

Wherever you are heading, the GPSV/GPSS can help you find the way. With a simple, compact design, the antenna is engineered to be easy to mount but hard to see. Available with an adhesive pad or an innovative hook and loop mounting system, where you place it is your choice.

Wherever it ends up, the GPSV/GPSS will deliver great performance, letting you find where you're going faster than ever before.

Operating Frequencies (MHz):
1575

Gain:
26dB

Dimensions (mm):
34.5 × 34 × 12

Fixing:
Hook & Loop pad (GPSV) or
Adhesive pad (GPSS)

# GPS

## Magnetic GPS Antenna

### GPSME

Excellent performance
Active GPS element
Magnetic fixing

Operating Frequencies (MHz):
1575

Gain:
26dB

Dimensions (mm):
49 × 40 × 16

Fixing:
Magnetic mount

## Short Term Friend or Long Term Partner

However often you use your GPS system the GPSME can help. If you are an occasional user, then you can enjoy the convenience and flexibility of a magnetic system that can be fitted, removed and re-positioned as many times as you want.

If you are a regular user, then the tough magnet in the GPSME will hold it securely in place, ensuring that you get the best GPS coverage all the time.

# GPS

## GPS Panel Mount Antenna

## GPSP

Excellent performance
Active GPS element
Single hole fixing

## Permanent Positioning

Knowing the position of a vehicle is vital for fleet management and logistics planning. With the GPSP panel antenna, you can identify the position of a vehicle whenever you want.

Mounted on the roof of a vehicle, the GPSP antenna's low profile design reduces the risk of damage whilst achieving optimum performance.

The antenna is fitted with a 30cm coaxial cable for ease of installation and extension cables are available to suit all GPS applications.

Operating Frequencies (MHz):
1575

Gain:
26dB

Dimensions (mm):
60 × 50 × 18.5

Fixing:
Panel mount

# Transit Antennas

## About Transit antennas

GSM-R (Global System of Mobile Communication - Railway or GSM-Railway) is an international wireless communications standard for railway communications applications. It is used for communication between train and railway regulation control centres. Being built on the back of the GSM network it guarantees performance at speeds of up to 500km.h (310mph), without any communication loss.

GSM-R is part of the new European Rail Traffic Management System (ERTMS) standard and carries the signalling information directly to the train driver, enabling higher speed and traffic density with a high level of safety.

The Panorama range of transit antennas have been tested to meet various European industry standards to ensure they maintain connection at such high speeds.

| Key Frequencies |
| --- |
| GSM-R Band - 870-930MHz |
| TETRA UHF - 380-430 |
| TETRA 800 - 806-870 |
| 3G UMTS - 2100-2170MHz |
| AMPS - 805-880MHz |
| AWS - 1710–1755 and 2110–2155MHz |
| GSM900 - 890-960MHz |
| GSM1800 - 1710-1880MHz |
| Next G - 850MHz |
| PCS1900 - 1850-1990MHz |
| WiMAX - 2394-2696MHz |

| Antenna Applications |
| --- |
| Public transport |
| Automatic train controls |
| On-board train communications |

# GSM-R

## Train Antenna

## TRNB-7-27 & TRNBG-7-27

Suitable for underground & overground
Optional DC grounded GPS antenna
Standard four hole rail fixing

## Stay on Track

The TRNB omnidirectional antenna series is designed specifically for use on trains, underground or overground. With an gain of over 2dBi and operating in all cellular bands from 698-960MHz and 1710-2700MHz, the TRNB series covers the 800MHz TETRA and trunking bands along with 2.4GHz WLAN along with the option of a DC grounded GPS antenna, all in one housing.

Housed in a UV stabilised, low flame, smoke and toxicity (FST) housing, the TRNB series is fully weatherproof with the equivalent to IP66 rating ensuring the antennas performance is never compromised even when subjected to industrial carriage wash systems. With less than 100g of flame retardant plastic, the TRNB series can also be used on underground trains. The TRNB antennas have also been designed to meet various European industry standards.

Operating Frequencies (MHz):
Multiband: 698-960, 1710-2700
GPS: 1575 (only with TRNBG-8-27)

Gain:
2dBi (on all bands)

Dimensions (mm):
240 × 100 × 100

Fixing:
Panel mount

Industry Standards:
NF-F-16-101/102 (materials standard)
EN50155 (vibration standard)
EN50124-1 (electrical isolation standard)
Deutsch Bahn high voltage/current standards

Other Variations:
A UHF TETRA version is available, see page 116

# Portable Antennas

## About PMR antennas

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

Each pre-tuned frequency has its own colour coding making individual frequencies instantly recognisable. Helping you to ensure you have received the correct antenna.

| VHF & UHF Band Plan | |
|---|---|
| E3 - 67-74MHz | M - 245-274MHz |
| E4 - 74-81MHz | N - 270-300MHz |
| E5 - 81-88MHz | P - 200-336MHz |
| H4 - 141-151MHz | R - 330-336MHz |
| H5 - 149-159MHz | S - 350-392MHz |
| H6 - 156-162MHz | S1 - 380-400 |
| H7 - 162-174MHz | S2 - 410-430MHz |
| JRC - 139-157MHz | T - 390-432MHz |
| K5 - 174-192MHz | TET - 380-430MHz |
| K6 - 192-208MHz | U - 430-472MHz |
| K7 - 208-225MHz | UT - 406-472MHz |
| L - 220-250MHz | W - 470-512MHz |

# Private Mobile Radio

## Portable Antennas

## MXK, PXK, MVQ, MFX, MFXU, MQ & PUG

Rugged design
Pre-tuned to frequency
Colour coded

## Life Long Partner

Panorama offers a comprehensive range of portable antennas. The MFXU and MQ range are totally overmoulded in TPU or TPE engineering 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.

Each pre-tuned frequency has its own colour coding making individual frequencies instantly recognisable. Helping you to ensure you have received the correct antenna.

Operating Frequencies (MHz):
66-88 (MXK - E3-E5)
141-225 (PXK - H4-K7)
141-336 (MVQ & MFX - H4-R)
330-512 (MFXU & MQ - R-W)
350-512 (PUG - S-W)

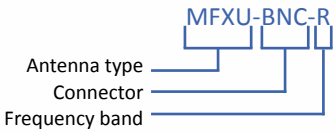
# Private Mobile Radio

## Portable Antennas

| Part No. | MXK | PXK | MVQ |
|---|---|---|---|
| Operational Bands | E3-E5 | H4-K8 | H4-R |
| Connectors | BNC, MG, MV, MX, TNC, TNK, TNM | BNC, ICF4, MG, MX, PRP73, SMAFR, SMAMO, TNC, TNM, TP8, VX410 | BNC, MV, MX, TNC |

## Part Numbering

There are many different combinations that can be made up for Panorama's portable antennas, there is a very easy way to get the right product.






| MFX | MFXU | MQ | PUG |
|---|---|---|---|
| H4-R | R-W | R-W | S-W |
| BNC, ICF4, ICF5, M4, M6, MG, MV, MX, PRP73, SMAFR, SMAMO, TNC, TNK, TNM, TP8, VX410 | BNC, ICF4, ICF5, M4, M6, MG, MV, MX, PRP73, SL100, SMAFR, SMAMO, TNC, TNK, TNM, TP8, VX410 | BNC, ICF4, IFC5, M4, M6, MG, MV, MX, SMAFR, SMAMO, TNC, TNK, TNM, TP8, VX410 | TNC |


# TETRA UHF Antennas

## About TETRA UHF antennas

TETRA UHF is a specialist Professional Mobile Radio and two-way transceiver specification. TETRA was specifically designed for use by government agencies, emergency services (police forces, fire departments & ambulance), rail transportation staff, transport services and the military.

Since 1995 Panorama Antennas has been developing and growing its range of TETRA antennas to facilitate the expanding range of frequencies and applications. Panorama offers over 40 different antennas for the various applications.

With a proven track record with all major radio manufacturer and equipment suppliers Panorama is the first choice when it comes to TETRA antennas.

| Key Frequencies |
| --- |
| R1 Band - 300-334MHz |
| R2 Band - 350-370MHz |
| S1 Band - 380-400MHz |
| S2 Band - 410-430MHz |
| TET Band - 380-430MHz |
| S4 Band - 450-470MHz |

| Antenna Applications |
| --- |
| Public safety |
| Police forces |
| Coast guard |
| Public transport |
| Emergency services |
| Public utilities |

# TETRA UHF

## GPS Combination Antennas

GPSK-R1, GPSK-R2,
GPSK-TET, GPSK-S4

GPSK-S1G &
GPSK-S2G

## GPSK

Excellent performance
Active GPS element
Single hole fixing

## Two in One

The GPSK antenna range is a dual function, high performance TETRA antenna with an active GPS element.

The GPSK range covers frequencies from 300MHz to 470Mhz, depending on the equipment requirements. The antenna can be mounted on a roof up to 6mm thick using only a single 15mm hole.

The dual functionality of the Panorama GPSK range makes the antenna a popular choice for police, buses, taxi's and other public service and utility vehicles.

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

Operating Frequencies (MHz):
300-334 (GPSK-R1)
350-370 (GPSK-R2)
380-430 (GPSK-TET)
450-470 (GPSK-S4)

Gain:
2dBi (GPSK-R1, GPSK-R2, GPSK-TET & GPSK-S4)
5dBi (GPSK-S1G & GPSK-S2G)
26dB (GPS)

Height (mm):
225-149 (GPSK-R1, GPSK-R2,
GPSK-TET & GPSK-S4)
436-410 (GPSK-S1G & GPSK-S2G)

Fixing:
Panel mount

# TETRA UHF

## Low Profile Antennas

## LG-R1, LG-R2, LG390, LG420 & LG-S4

Rugged design
Heavy duty application
Active GPS element

Operating Frequencies (MHz):
300-334 (LG-R1)
350-370 (LG-R2)
380-400 (LG390)
410-430 (LG420)
450-470 (LG-S4)

Gain:
0dBi (comms antenna)
26dB (GPS)

Dimensions (mm):
160 × 45

Fixing:
Panel mount

## Low Profile, Heavy Duty

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.

The antenna does not require a metallic ground plane, and maintains the same great performance when mounted on any surface.

An excellent solution for demanding applications in transportation.

The LG-R1, LG-R2, LG390, LG420 & LG-S4 antennas are also available without GPS, simply by exchanging the ‘G’ for a ‘P’ in the part number.

# TETRA UHF

## Multi Function Low Profile Antennas

## LG-S1-DEP3G-24-58 & LG-S2-DEP3G-24-58

Single housing
Multiple frequencies
Rugged design

## Find It All In One Antenna

Panorama low profile antennas are designed to withstand high impact while maintaining functionality. They are perfect for police vehicles that may require communication abilities, even when under attack.

The modular construction of the LG-S1-DEP3G-24-58 & LG-S2-DEP3G-24-58 means that if a frequency is not required it can be taken out and an extra element can be added, depending on the requirements of the customer.

The multiple frequencies available with the LG-S1-DEP3G-24-58 & LG-S2-DEP3G-24-58 are perfect for buses and public services that require many different technologies to be on board.

Operating Frequencies (MHz):
380-400 (LG-S1-DEP3G-24-58)
410-430 (LG-S2-DEP3G-24-58)
890-960 & 1710-2170 (Both antennas)
2400-2500 (Both antennas)
5700-5900 (Both antennas)

Gain:
0dBi (All TETRA bands)
2dBi (on all auxiliary bands)
26dB (GPS)

Dimensions (mm):
210 × 150 × 48

Fixing:
Panel mount

# TETRA UHF

## Heavy Duty Multi Function Antennas

## GPSB1 & GPSB2

Four elements in one sleek housing
TETRA, GPS, Multiband GSM/Cellular, 3G UMTS & Wireless LAN in one antenna
Heavy duty design for any UHF or VHF whip

Operating Frequencies (MHz):
300-334 (GPSB-R1)
350-370 (GPSB-R2)
380-430 (GPSB-TET)
450-470 (GPSB-S4)
880-960, 1710-2170, 2400-2470 & 5800-5870(GPSB1)
829-894, 1710-2170, 2400-2470 & 5800-5870(GPSB2)

Gain:
2dBi (auxiliary antenna)
2dBi (internal antennas)
26dB (GPS)

Dimensions (mm):

Fixing:
Panel mount

## 4-in-1

The heavy duty GPSB antenna series combines four different antennas in a sleek mounting. Only a single hole is required to mount the antenna, making this a far quicker and easier solution than using four different antennas.

The versatility of the antenna makes it ideal for every application from public safety to logistics and asset tracking. The external UHF or VHF whip can be used as a simple two-way radio link with a hub, the 3G UMTS antenna or GPRS antenna can be used for data feeds and mobile phone calls, the GPS antenna can be used for navigation and vehicle tracking, whilst the WLAN antennas can download data back at the depot.

Four complicated functions in just one rugged antenna.

# TETRA UHF

## Magnetic GPS Combination Antenna

## GPSKM

Magnetic mount
Dual function GPS & TETRA UHF
Excellent performance

## Two Functions, No Holes

The dual functionality of the Panorama GPSKM range makes these antennas a popular choice for police, buses, taxis and other public service and utility vehicles.

The GPSKM is a dual function, high performance Tetra antenna with an active GPS element. Standard GPS LNA gain is 26dB, version R has a 13dB gain LNA.

A strong magnet ensures the antenna stays in position and leaves no evidence that it was ever there, when removed.

This antenna can be supplied with connectors to suit all TETRA terminals and a variety of whips with various gain.

Operating Frequencies (MHz):
300-334 (GPSKM-R1)
350-370 (GPSKM-R2)
380-430 (GPSKM-TET)
450-470 (GPSKM-S4)

Gain:
2dBi
26dB (GPS)

Height (mm):
213-153

Fixing:
Magnetic mount

# TETRA UHF

## TETRA Train Antenna

## TRNB-TET, TRNBG-TET
## TRNB-S4 & TRNBG-S4

Suitable for underground & overground
Optional DC grounded GPS antenna
Standard four hole rail fixing

Operating Frequencies (MHz):
380-400(TRNB-TET & TRNBG-TET)
450-470(TRNB-S4 & TRNBG-S4)

GPS: 1575 (TRNBG-TET & TRNBG-S4)

Gain:
2dBi (UHF)
26 dB(GPS)

Dimensions (mm):
240 × 100 × 100

Fixing:
Panel mount

Industry Standards:
NF-F-16-101/102 (materials standard)
EN50155 (vibration standard)
EN50124-1 (electrical isolation standard)
Deutsch Bahn high voltage/current standards

## Stay on Track

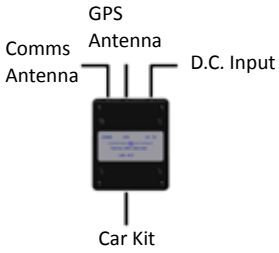
The TRNB antenna series is designed specifically for use on trains, underground or overground. With an omnidirectional peak gain of 2dBi the TRNB-TET series covers the TETRA UHF trunking bands along with the option of a DC grounded GPS antenna, all in one housing.

Housed in a UV stabilised, low flame, smoke and toxicity (FST) housing, the TRNB series is fully weatherproof with an IP68 rating ensuring the antennas performance is never compromised even when subjected to industrial carriage wash systems. With less than 100g of flame retardant plastic, the TRNB series can also be used on underground trains.

The TRNB antennas have also been designed to meet various European industry standards.

# TETRA UHF

## Diplexer for GPS & Mobile Radio Car Kit




## DPX-1000-1500

Splits combined GPS & TETRA to separate antennas
Low insertion loss
High level of isolation between antenna ports
Use with VR-SF voltage regulation

## Split Signals

The DPX-1000-1500 is an efficient diplexer unit that splits a combined GPS & TETRA UHF feed to separate antennas.

When the user attaches their handset to their car kit it enables them to use an external antenna located in a better position, improving helping their communication and navigation functions.

Comms Range (MHz):
50-1000 (High pass)
1500-2000 (Low pass)

DC Feed Voltage (V):
3-7

Dimensions (mm):
90 × 75 × 14

Voltage Regulator CE Number:
75903244-01-1

# TETRA UHF

## Internal Glass Mount Antenna

### EF

Covert application
No-hole installation
Can be removed without a trace

Operating Frequencies (MHz):
300-334 (EF-R1)
350-370 (EF-R2)
380-400 (EF-S1)
410-430 (EF-S2)
380-420 (EF-S3)
450-470 (EF-S4)

Gain:
2dBi

Dimensions (mm):
217 × 19 × 2.5

Fixing:
Adhesive pad mount

## Easy to Fit, Hard to See

The TETRA UHF EF 'easy fit' antennas expand your voice and data coverage without spoiling your view. Connected to a car kit, the UHF easy fit antennas provide radical signal improvements in cities, suburbs and on the motorway.

With their secure but easy to fit adhesive pad mountings, the EF antenna provide a huge range of possibilities for the installer. Whether mounted by the door pillar or behind the rear view mirror, the only thing the user will notice is the superb quality of their voice calls and data connection.

# TETRA UHF

## Panel Mount Antenna

## EBF

Stylish design
Detachable whip for car wash
Moulded cable option

## Stylish Design

The 'Euro' base panel mount (EBF) has a smooth and stylish profile. The flexible whip detaches from base cup, ideal for car washing.

The Euro Base antenna range is available with a moulded cable option, just change the part number beginning from 'EBF' to EBMF'

Moulded Cable Option

Detachable Cable Option

Operating Frequencies (MHz):
300-334 (EBF-R1)
350-370 (EBF-R2)
380-430 (EBF-TET)
450-470 (EBF-S4)

Gain:
2dBi

Height (mm):
228-152

Fixing:
Panel mount

# TETRA UHF

## Magnetic Mount Antenna

## MD

No hole installation
Easy removal
Strong magnetic retention

Operating Frequencies (MHz):
300-334 (MD-R1)
350-370 (MD-R2)
380-430 (MD-TET)
450-470 (MD-S4)

Gain:
2dBi

Height (mm):
201-137

Fixing:
Magnetic mount

## Temporary Mounting, Permanent Solution

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 leave no evidence that it was ever there, once repositioned or removed.

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

# TETRA UHF

## Glass Mount Antenna

## GM

Excellent performance
No-hole installation
Solid state coupling

## Clear as Glass

The Panorama Glass Mount Antenna requires no holes or special tools and can be quickly & easily installed on a windscreen or rear window.

The antenna couples capacitively through the glass and its high positioning gives it an almost omni-directional radiation pattern, with performance similar to a conventionally mounted roof-top antenna.

The antenna can be easily removed for the car wash. To remove the antenna assembly, both the coupling box and the mounting foot can be removed and the glass cleaned to leave it in its original state.

Operating Frequencies (MHz):
300-334 (GM-R1)
350-370 (GM-R2)
380-400 (GM390)
410-430 (GM420)
450-470 (GM-S4)

Gain:
2dBi

Height (mm):
273 - 214

Fixing:
On-glass mounting

# TETRA UHF

## Covert Glass Mount Antenna

## GM-S1-CV, GM-S2-CV & GM-S3-CV

Excellent performance
Solid state coupling
Designed to look like a GSM Glass Mount

Operating Frequencies (MHz):
380-400 (GM-S1-CV)
410-430 (GM-S2-CV)
380-420 (GM-S3-CV)

Gain:
2dBi

Length (mm):
259

Fixing:
On-glass mounting

## Plain Clothed Glass Mount

The Panorama Glass Mount Antenna requires no holes or special tools and can be installed easily and quickly on a windscreen or rear window.

The antenna couples capacitively through the glass and its high positioning gives it an almost omni-directional radiating pattern, with performance similar to a conventionally mounted roof-top antenna.

The antenna is designed to look like a GSM glass mount and is ideal for when a discrete installation is required.

# TETRA UHF

## Bumper Mount Antenna

## BMP1

Covert application
Robust
Flexible construction

## Stay Connected Whilst Undercover

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.

Operating Frequencies (MHz):
380-400 (BMP1-S1)
410-430 (BMP1-S2)
430-472 (BMP1-U)

Gain:
2dBi

Dimensions (mm):
140 × 100

Fixing:
Adhesive pad bumper mount

Antenna positioning

# TETRA UHF

## Power Divider

## DPD-550

Optimise antenna performance
Connect two bumper antennas
to a radio

Operating Frequencies (MHz):
50-550

Dimensions (mm):
57.5 × 53 × 24.2

Bumper antenna with power divider
part numbers:
BMP2-S1-DPD-550 (380-400MHz)
BMP2-S2-DPD-550 (410-430MHz)
BMP2-U-DPD-550 (430-472MHz)

## Bumper to Bumper

The Panorama power divider is designed for use with the Panorama Bumper Antennas.

For optimum performance two bumper antennas can be used, one at the front of the vehicle and one at the rear, to help create an omni-directional pattern around the vehicle and enable better network coverage.

Using a power divider ensures that a correctly matched antenna system is presented to the radio.

# TETRA UHF

## Covert Vehicle Dipole Antenna

## VCD

Dipole construction
Covert bumper mounting
Flexible wire elements

## Get a Covert Connection

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

This specialist antenna can be tuned to either S1 band or S2 band when fitted simply by cutting down the radiating elements, ensuring that a good VSWR match can be achieved.

Operating Frequencies (MHz):
380-400 (VCD-S1)
410-430 (VCD-S2)

Gain:
2dBi (uninsulated)

Length (mm):
250

Fixing:
Mounted to inside of vehicle bumper

# TETRA UHF

## Panel Mount 1/2 Wave Antenna

## HM

Ideal for motorcycles
Flexible 1/2 wave whip
Ground plane independent

Operating Frequencies (MHz):
300-334 (HM-R1)
350-370 (HM-R2)
380-400 (HM-S1)
410-430 (HM-S2)
450-470 (HM-S4)

Gain:
4dBi

Height (mm):
490-335

Fixing:
Panel mount

## Multi Surface Mounting

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 or fixed sites.

The HM antenna range has a rugged design with a flexible nylon whip. The base is moulded in engineering plastic and mounting is with a M14 stud.

# TETRA UHF

## High Gain Whip

## A5SG

High gain 5dBi whip
Compatible with various bases
Broadband design cover complete TETRA band

## Boost Your Network Coverage

The A5GH is a wideband 5dBi gain whip designed a gain an alternative to the standard ¼ wave whip.

The increased gain can extend the range of a vehicle within the mobile network.

Operating Frequencies (MHz):
380-430 (A5SG-TET)
400-435 (A5SG-417)
450-470 (A5SG-S4)

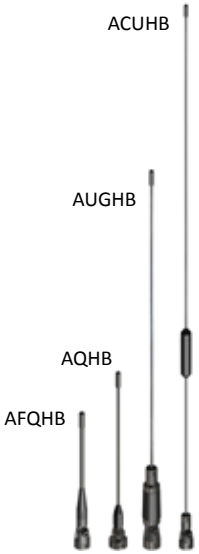
Gain:
5dBi

Height (mm):
622-525

Recommended Bases:
GPSA, EBF, MMR

# TETRA UHF

## Modular Whips




## ACUHB, AUGHB, AQHB & AFQHB

Rigid or flexible whips
Hinged or non-hinged versions
Removable for car wash

Operating Frequencies (MHz):
300-334 (AQHB-R1 & AFQHB-R1)
350-370 (AQHB-R2 & AFQHB-R2)
380-400 (ACUHB-S1 & AUGHB-S1)
410-430 (ACUHB-S2 & AUGHB-S2)
380-430 (AQHB-TET & AFQHB-TET)
450-470 (AQHB-S4 & AFQHB-S4)

Gain:
2dBi (AQHB & AFQHB)
3.5dBi (AUGHB)
7dBi (ACUHB)

Height (mm):
771 (ACUHB at 390MHz)
478 (AUGHB at 390MHz)
185 (AQHB at 390MHz)
175 (AFQHB at 390MHz)

Fixing:
Various bases available

## Efficiently Versatile

All Panorama mobile whips feature either rigid 17-7 PH stainless steel rods with black chrome plated brass components and black nylon mouldings or have a flexible construction within a black nylon tube. When fitted and tuned correctly these antennas will have a typical VSWR of 1.2:1 or less.

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

# TETRA UHF

## Modular Bases


## M8, EM & MMR-5F

Interchangeable system
Panel mount option
Magnetic option

## Adaptive Design

The Panorama mounting system features a high degree of compatibility between whips and bases. Our comprehensive range of panel mount bases suit many applications and can cater for many varied fitting requirements such as hole size, panel thickness, cable length and connector termination.

M8:
Panel mount with 5m moulded cable for panels up to 4mm thick

EM:
M8 base with detachable 5m cable assembly

MMR-5F:
Magnetic mount 102mm diameter with moulded cable

# TETRA UHF

## Marine Antenna

## NA-S1, NA-S2 & NA-S4

GPS combination option
Ratchet or deck mount
Various frequencies

Ratchet mount option

Operating Frequencies (MHz):
380-400 (NA-S1 & NA-S1-GPS)
410-430 (NA-S2 & NA-S2-GPS)
450-470 (NA-S4 & NA-S4-GPS)

Gain:
5dBi
25dB (GPS)

Dimensions (mm):
732 × 32

Fixing:
Ratchet mount or deck mount

## Offshore Support

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

This antenna range has the unique capability of being supplied as a GPS/Tetra combination type with a 25dB gain low noise GPS amplifier, offering a simpler and quicker installation for the customer.

This antenna will fit the standard 1”x14TPI marine mounting systems. Panorama offers a range of these mounts, in heavy duty stainless steel. We can also supply custom extension coaxial cable sets to meet the customer’s specific installation requirements

# TETRA UHF

## Body Worn Antenna

## BWDT

Covery dipole antenna
Signal optimised to individuals body
Flexible wire elements

## Secure Communications

The Body Worn Dipole Antenna is specifically designed for undercover operations or for installation into body armour.

The wires are taped to a person's body so that their appearance is as discreet as possible. The antenna is worn across the shoulders or down the back.

Once in position the antenna is tuned to the required frequency so that there is no possibility of interference in transmitting or receiving.

Operating Frequencies (MHz):
380-400 (BWDT-S1)
410-430 (BWDT-S2)

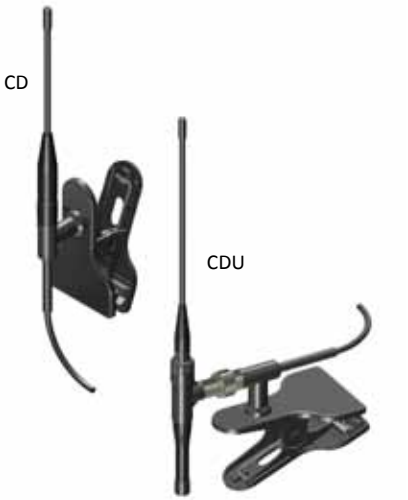
Gain:
2dBi

Length (mm):
250-270

Fixing:
Body worn

# TETRA UHF

## Temporary Clip Antenna




## CD & CDU

Rugged construction
Fast installation
Moulded in coaxial cable

Operating Frequencies (MHz):
380-400 (CD-S1 & CDU-S1)
410-430 (CD-S2 & CDU-S2)

Gain:
4dBi

Height (mm):
400-340

Fixing:
Clip mount

## Portable Performance

The performance and scope of portable equipment can often be considerably improved by elevating the antenna to a more efficient height. Spring clip antennas provide an easy way to do this.

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

# TETRA UHF

## Bracket Mount Antenna

Mast mounting kit: Mast block & jubilee clip

## BM

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

## Network Enhancer

The bracket mount antenna range are easy to install solutions ideal for Police stations and public safety buildings.

Emergency services often need a dispatcher in the hub to co-ordinate the activities of the various forces. The BM range provides a simple and reliable solution to this complicated activity.

Operating Frequencies (MHz):
380-400 (BM390)
410-430 (BM420)
430-472 (BM450)

Gain:
4dBi

Height (mm):
420-340

Fixing:
Wall mount or mast mount

# TETRA UHF

## Elevated Antenna

## BSU

Mast mount
Temporary or permanent fixing
Quick assembly

Operating Frequencies (MHz):
380-400 (BSU-S1)
410-430 (BSU-S2)
450-470 (BSU-S4)

Gain:
2dBi

Height (mm):
170-200

Fixing:
Mast mount

## Elevated Efficiency

Panorama Elevated Antennas can be used for temporary field use or permanent installations. The range uses flexible helical elements to provide an effective but compact groundplane.

The antenna's centre fitting has a metal hub to mount the radial ground plane elementsand a moulded insulator for the radiator. The whip element is plastic coated for weather proofing and durability.

An N socket connector is fitted to enable a wide range of coaxial cable types to be used.

# TETRA UHF

## Wall Mount Antenna

## ODP

Improve range
Easy installation
Light weight solution

## Signal Aid

The ODP wall mount antenna range is a simple and cost efficient way of improving the range of a TETRA network.

Used with a fixed radio terminal the antennas enable dispatchers to co-ordinate the various public services involved in large by operations.

With the increased gain provided by the ODP-S1G6 & ODP-S2G6 the range that a dispatcher can cover is greatly increased, thanks to the 6dBi provided from the radiating antenna.

Operating Frequencies (MHz):
300-334 (ODP-R1)
350-370 (ODP-R2)
380-400 (ODP-S1G6)
410-430 (ODP-S2G6)
380-430 (ODP-TET)
450-470 (ODP-S4)

Gain:
2dBi (ODP-R1, ODP-R2, ODP-TET & ODP-S4)
6dBi (ODP-S1G6 & ODP-S2G6)

Height (mm):
310-221 (ODP-R1, ODP-R2, ODP-TET & ODP-S4)
897-803 (ODP-S1G6 & ODP-S2G6)

Fixing:
Wall mount

# TETRA 800MHz Antennas

## About TETRA 800MHz antennas

In South America and Asia Pacific, Tetra operates on frequencies within the 800MHz band. Panorama, the worlds leader in Tetra antenna products, has a full range for use on this band.

Panorama offers the same high quality portfolio of Tetra products at 800MHz that is offered at the lower Tetra frequencies. These antennas all cover the full 800MHz band from 806-870MHz making them universally suitable for all Tetra 800MHz terminals and applications.

| Key Frequencies |
| --- |
| S5 Band - 806-870 |

| Antenna Applications |
| --- |
| Public safety |
| Police forces |
| Public transport |
| Emergency services |
| Public utilities |
| Trains |

# TETRA 800MHz

## Vehicle GPS Antennas

## GPSF-FF-S5

Active GPS element
Panel mount
Single hole fixing

## Combination Fin

The GPSF is a dual function, compact 'fin' style antenna offering TETRA 800MHz along with an active GPS element, all within one housing.

The antenna only requires a single hole for mounting for installation on the roof of a vehicle. The combination of a low profile design and multi-functionality that the fin offers makes it an ideal choice for discreet installations.

The GPSF meets stringent environmental testing to ensure it is suitable for rugged applications.

Operating Frequencies (MHz):
806-880

Gain:
2dBi
26dB (GPS)

Dimensions (mm):
68 × 48 × 43

Fixing:
Panel mount

# TETRA 800MHz

## Vehicle GPS Antennas

## GPSK-S5G

Excellent performance
Highly flexible whip
Dual function

Operating Frequencies (MHz):
806-870

Gain:
5dBi
26dB (GPS)

Height (mm):
320

Fixing:
Panel mount

## Single Hole, Dual Function

The GPSK antenna range is a dual function, high performance TETRA 800MHz antenna with an active GPS element.

The GPSK has the ability to mount on a roof up to 6mm thick using only a single 15mm hole.

The dual functionality of the Panorama GPSK range makes the antenna a popular choice for police, buses, taxi's and other public service and utility vehicles.

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

# TETRA 800MHz

## Magnetic GPS Combination Antenna

## GPSKM-S5G

Magnetic mount
Dual function GPS & TETRA 800MHz
Excellent performance

## Two Functions, No Holes

The twin functionality of the Panorama GPSKM range makes these antennas a popular choice for police, buses, taxis and other public service and utility vehicles.

The GPSKM is a dual function, high performance Tetra antenna with an active GPS element. Standard GPS LNA gain is 26dB, version R has a 13dB gain LNA.

A strong magnet ensures the antenna stays in position and acts like a panel mount while leaving no evidence that it was ever there, when removed.

Operating Frequencies (MHz):
806-870

Gain:
5dBi
26dB (GPS)

Height (mm):
320

Fixing:
Magnetic mount

# TETRA 800MHz

## Transit Antenna

## TRNB-7-27 & TRNBG-7-27

Suitable for overground or underground
Optional DC grounded GPS antenna
Standard four hole rail fixing

Operating Frequencies (MHz):
TETRA 800: 806-870
Wideband: 698-960, 1710-2700
GPS: 1575 (TRNBG-7-27)

Gain:
5dBi (on all bands)

Dimensions (mm):
240 × 100 × 100

Fixing:
Panel mount

Industry Standards:
NF-F-16-101/102 (materials standard)
EN50155 (vibration standard)
EN50124-1 (electrical isolation standard)
Deutsch Bahn high voltage/current standards

## Stay on Track

The TRNB antenna series is designed specifically for use on trains, underground or over ground. With an omnidirectional peak gain of over 2dBi and operating in all bands from 698-960MHz and 1710-2700MHz, the TRNB series covers the 800MHz TETRA and trunking bands along with 2.4GHz WLAN along with the option of a DC grounded GPS antenna, all in one housing.

Housed in a UV stabilised, low flame, smoke and toxicity (FST) housing, the TRNB series is fully weatherproof with equivalent to IP68 rating ensuring the antennas performance is never compromised even when subjected to industrial carriage wash systems. With less than 100g of flame retardant plastic, the TRNB series can also be used on underground trains. The TRNB antennas have also been designed to meet various European industry standards.

# TETRA 800MHz

## Low Profile Antennas

## LPL-S5

Rugged design
Heavy duty application
Ground plane independent

## Low Profile, High Impact

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.

The antennas do not require a metallic ground plane, and maintain the same great performance when mounted on any surface.

Operating Frequencies (MHz):
806-870

Gain:
0dBi

Dimensions (mm):
104 × 32

Fixing:
Panel mount

# TETRA 800MHz

## Internal Glass Mount Antenna

### EF-S5

Covert application
No-hole installation
Can be removed without a trace

Operating Frequencies (MHz):
806-870

Gain:
2dBi

Dimensions (mm):
130 × 17 × 2.5

Fixing:
Adhesive pad mount

## Easy to Fit, Hard to See

The EF-S5 'easy fit' antennas expand your voice and data coverage without spoiling your view. Connected to a car kit, the UHF easy fit antennas provide radical signal improvements in cities, suburbs and on the motorway.

With their secure but easy to fit adhesive pad mountings, the EF-S5 antenna provide a huge range of possibilities for the installer. Whether mounted by the door pillar or behind the rear view mirror the only thing the user will notice is the superb quality of their voice calls and data connection.

# TETRA 800MHz

## Panel Mount Antenna


## EBF-S5 & EBF-S5G

Stylish design
Detachable whip for car wash
Moulded cable option

## Stylish Design

The 'Euro' base panel mount (EBF) has a smooth profile which is free from protrusions. The flexible whip detaches from base cup, ideal for car washing.

The Euro Base antenna range is available with a moulded cable option, just change the part number beginning from 'EBF' to EBMF'

Detachable Cable Option

Moulded Cable Option

Operating Frequencies (MHz):
806-870

Gain:
2dBi (EBF-S5)
5dBi (EBF-S5G)

Height (mm):
90 (EBF-S5)
320 (EBF-S5G)

Fixing:
Panel mount

# TETRA 800MHz

## Magnetic Mount Antenna


## MD-S5 & MD-S5G

No hole installation
Easy removal
Strong magnetic retention

Operating Frequencies (MHz):
806-870

Gain:
2dBi (MD-S5)
5dBi (MD-S5G)

Height (mm):
106 (MD-S5)
358 (MD-S5G)

Fixing:
Magnetic mount

## Temporary Mounting, Permanent Solution

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

The radiating whip can be tuned to any frequency or standard stock items can be purchased to cover the bands shown.

# TETRA 800MHz

## Glass Mount Antenna


## G823-5, GMG-S5 & GMG-S5-GPS

Excellent performance
No-hole installation
Solid state coupling

## Clear as Glass

The Panorama Glass Mount Antenna requires no holes or special tools and can be quickly & easily installed on a windscreen or rear window.

The antenna couples capacitively through the glass and its high positioning gives it an almost omni-directional radiating pattern, with performance similar to a conventionally mounted roof-top antenna. The GMG-S5-GPS has the added feature of a 26dB gain GPS module to ensure accurate tracking and geo-location.

The antenna can be easily removed for the car wash. To remove the antenna assembly, both the coupling box and the mounting foot can be removed and the glass cleaned to leave it in its original state.

Operating Frequencies (MHz):
806-870

Gain:
2dBi (GM-S5)
5dBi (GMG-S5 & GMG-S5-GPS)
26dB(GPS)

Height (mm):
92 (GM-S5)
320 (GMG-S5)

Fixing:
On-glass mounting

# TETRA 800MHz

## Panel Mount 1/2 Wave Antenna

## HM-S5

Ideal for Motorcycles
Flexible whip
Ground plane independent

Operating Frequencies (MHz):
806-870

Gain:
4dBi

Height (mm):
215

Fixing:
Panel mount

## Multi Surface Mounting

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 or fixed sites.

The HM antenna range has a rugged design with a flexible nylon whip. The base is moulded in engineering plastic and mounting is with a M14 stud.

# TETRA 800MHz

## Modular Whips

## AAGH-B

Rigid or flexible whips
Hinged and non-hinged versions
Removable for car wash

## Efficiently Versatile

All Panorama mobile whips feature either 17-7 PH stainless steel rods with plated brass components and black nylon mouldings or have a flexible construction within a black nylon tube. Once fitted and tuned correctly these antennas will have a typical VSWR of 1.2:1 or less.

The Panorama mounting system provides a high degree of compatibility between whips and bases, making them suitable for both temporary and permanent applications.

Operating Frequencies (MHz):
760-900

Gain:
5dBi

Height (mm):
340

Fixing:
Various bases available

# TETRA 800MHz

## Modular Bases

## M8, EM & MMR-5F

Interchangeable system
Panel mount option
Magnetic option


M8:
Panel mount with 5m moulded cable for panels up to 4mm thick

EM:
M8 base with detachable 5m cable assembly

MMR-5F:
Magnetic mount 102mm diameter with moulded cable

## Adaptive Design

The Panorama mounting system features a high degree of compatibility between whips and bases. Our comprehensive range of panel mount bases suits many applications.

Various fitting options such as hole size, panel thickness, cable length and connector terminations are catered for.

# TETRA 800MHz

## Temporary Clip Antenna

## CD800

Rugged construction
Fast installation
Moulded in coaxial cable

## Portable Performance

The performance and scope of portable equipment can often be considerably improved by extending the antenna to a more efficient height. Spring clip antennas provide an easy way to do this.

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

Operating Frequencies (MHz):
800-900

Gain:
4dBi

Height (mm):
210

Fixing:
Clip mount

# TETRA 800MHz

## Bracket Mount Antenna

## B5B-S5

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

Mast mounting kit: Mast block & jubilee clip

Operating Frequencies (MHz):
806-872

Gain:
5dBi

Height (mm):
312

Fixing:
Wall mount or mast mount

## Network Enhancer

The bracket mount antenna range are easy to install solutions ideal for Police stations and public safety buildings.

Emergency services often need a dispatcher in the hub to co-ordinate the activities of the various forces. The B5B-S5 range provides a simple and reliable solution to this complicated activity.

# TETRA 800MHz

## Elevated Antenna

## BS800

Mast mount
Temporary or permanent fixing
Quick assembly

## Elevated Efficiency

Panorama Elevated Antennas can be used for temporary field use or permanent installations. The range uses flexible helical elements to provide an effective but compact groundplane.

The antenna's centre fitting has a metal hub to mount the radial ground plane element and a moulded insulator for the radiator. The whip element is plastic coated for weather proofing and durability.

An N socket connector is fitted to enable a wide range of coaxial cable types to be used.

Operating Frequencies (MHz):
801-896

Gain:
5dBi

Height (mm):
340

Fixing:
Mast mount

# VHF Migration Antennas

## About VHF Migration antennas

During the switchover to digital radio new networks are often run in parallel with existing analogue radio networks. Full interoperability between different systems is often an essential component of managing this transition smoothly and yet it is often not practical to have multiple installations and public service vehicles bristling with antennas.

For this transitional phase, Panorama Antennas can offer a comprehensive range of combination antennas and splitters ensuring that a single antenna installation can operate with both digital and analogue radios. Unlike some other manufacturers who employ potentially in-efficient and loss inducing matching circuitry to achieve multi-frequency operation Panorama only offers truly antennas which truly resonate at each frequency they cover.

Combined with a huge range of bases and mounting options Panorama Antennas is your single stop partner for antenna systems for analogue to digital migration.

| Key Frequencies |
| --- |
| E4 Band - 74-81MHz |
| E5 Band - 81-88MHz |
| H6 Band - 156-162MHz |
| H7 Band - 162-174MHz |
| S1 Band - 380-400MHz |
| TET Band - 380-430MHz |

| Antenna Applications |
| --- |
| Public safety |
| Police |
| Coast guard |
| Transportation |
| Emergency services |
| Public utilities |
| Military |

# VHF Migration Antennas

## Tri-Band 4 metre, 2 metre & TETRA Whip

### AS-E4-5-H7-S1

Combines 4 metre band, 2 metre band & TETRA
Can be used with panel mount and GPS base

## 3-in-1 Whip

This antenna operates on 4m (74-88MHz), 2m (165-174MHz) and Tetra band (380-400MHz). The antenna is resonant on each band and does not require a matching unit.

Used with Panorama's high efficiency triplexer unit, this enables a 4m, 2m and Tetra radio to effectively operate on one antenna.

Operating Frequencies (MHz):
74-88, 165-174 & 380-400

Gain:
2dBi

Length (mm):
915

Fixing:
GPSB1-MIG Base or M8 Base

# VHF Migration Antennas

## Dual-Band 4 metre & TETRA Whip

## AS-E4-S1

Combines 4 metre band & TETRA
Can be used with panel mount and GPS base

Operating Frequencies (MHz):
74-88 & 380-400

Gain:
2dBi

Length (mm):
970

Fixing:
GPSB1 Base or M8 Base

## 4 Metre Dual Band

This antenna operates on 4m (74-88MHz), and Tetra band (380-400MHz).
The antenna is resonant on each band and does not require a matching unit.

Used with Panorama's high efficiency diplexer unit, this enables a 4m, and Tetra radio to effectively operate on one antenna.

# VHF Migration Antennas

## Dual Band 2 metre & TETRA Whip

### AS-H6-H7-S1-462

Combines 2 metre band & TETRA
Can be used with panel mount and GPS base

## 2 Metre Dual Band

This antenna operates on 2m (165-174MHz) and Tetra band (380-400MHz).

The antenna is resonant on each band and does not require a matching unit.

Used with Panorama's high efficiency diplexer unit, this enables a 2m and Tetra radio to effectively operate on one antenna.

Operating Frequencies (MHz):
165-174 & 380-400

Gain:
2dBi

Length (mm):
425

Fixing:
GPSB1 Base or M8 Base

# VHF Migration Antennas

## Triplexer Unit

### TPX-VL-VH-UHF-BNC

Allows multiband antenna to be used with 3 radios
4m, 2m & TETRA band

Operating Frequencies (MHz):
66-99, 140-174 & 380-512

Insertion Loss:
Between < 0.2dB & < 0.3dB

Dimensions (mm):
66 × 116 × 27

Termination:
BNC socket on all ports

## Split them up

The Panorma Triplexer is housed in a compact, robust die cast case for reliability and easy mounting.

This Triplexer allows the Panorama multiband antenna to be used with up to 3 single band radios (4m, 2m & TETRA).

The Triplexer uses efficient design to provide low insertion loss with high port to port isolation and high power handling capability.

# VHF Migration Antennas

## Dual Band 2 metre & TETRA Whip

### DPX-210-270-BJ

Allows dual band antenna to be used
with 2 radios
4m or 2m & TETRA bands

## Split High & Low

The Panorma Diplexer is housed in a compact, robust die cast case for reliablity and easy mounting.

This Diplexer allows the Panorama dual band antenna to be used with 2 single band radios (4m OR 2m & TETRA).

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

Operating Frequencies (MHz):
50-210 & 270-1000

Insertion Loss:
< 1dBi

Dimensions (mm):
100 × 90 × 20

Termination:
BNC socket on all ports

# Panorama Support Tree

Panorama believes that quality service is essential and that every customer worldwide should have more than just one point of contact with us. Being a global company, Panorama has a number of international sales representatives responsible for countries and regions. This enables Panorama to have someone on the ground who knows the local market and can use this knowledge to help customers.

Whilst the local sales representative is ultimately responsible for all customers in their region, he may not be available 24/7. Therefore, Panorama's headquarters in London is able to liaise with the customer over issues like purchase orders, delivery schedules, shipping details and information, sending of samples for evaluation, technical datasheets and other matters that our international sales representative may not be able to deal with immediately.

Panorama aims to answer all questions, and deal with any problems or queries within 24 hours of the original email being sent.

## Panorama Returns Policy

Any defect occurring in any goods supplied by Panorama Antennas due to faulty material, workmanship or design within a period of 12 months from the date of delivery of the goods, Panorama Antennas will replace or repair the defective goods free of charge.

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# Band Plan

| Frequency (MHz) | Band |
|---|---|
| 67-74 | E3 |
| 74-81 | E4 |
| 81-88 | E5 |
| 132-143 | H3 |
| 139-157 | JRC |
| 141-151 | H4 |
| 149-159 | H5 |
| 156-162 | H6 |
| 162-174 | H7 |
| 174-192 | K5 |
| 192-208 | K6 |
| 208-225 | K7 |
| 220-250 | L |
| 245-275 | M |
| 270-300 | N |
| 300-334 | R1 |
| 300-336 | P |
| 330-336 | R |
| 350-370 | R2 |
| 350-392 | S |
| 380-400 | S1 |
| 380-420 | S3 |

| Frequency (MHz) | Band |
|---|---|
| 380-430 | TET |
| 390-432 | T |
| 400-430 | T1 |
| 410-430 | S2 |
| 420-456 | T2 |
| 430-472 | U |
| 450-470 | S4 |
| 470-512 | W |
| 500-520 | W2 |
| 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 |

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