



# Product Catalogue

## In-building & Distributed Antenna Systems

## 65 Years of 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 the transistor radio trend of the 1960s, Panorama's expert knowledge of television antennas was put to the manufacture of communication antennas for radio.

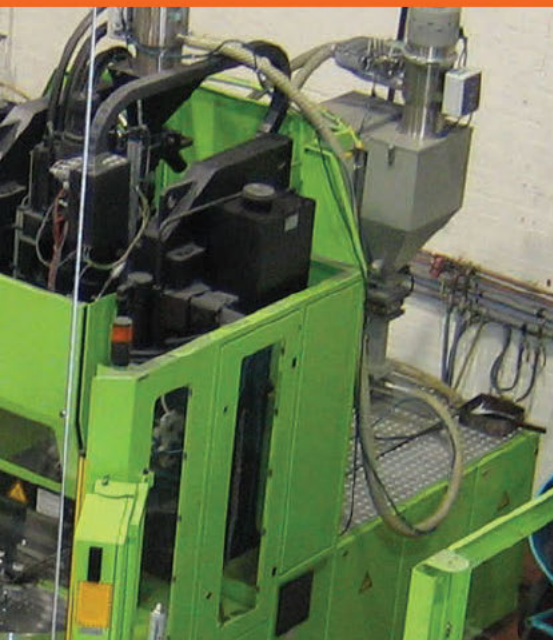
Throughout the 70s and 80s Panorama evolved to become the first specialised communication antenna manufacturer in the UK, developing a range of cellular antennas to coincide with the launch of the mobile phone network in Britain. In 1990, Panorama filed a patent application for the first ever solid state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

Today Panorama is a producer of antennas for the world's leading communication companies. While Panorama has grown to include 8 international offices, 2 subsidiaries, and over 70 staff; manufacturing, design and development are retained in London less than a mile from the original factory. Our network of international sales representatives means that all customers get the attention and advice they require, providing local support on global scale.



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# Quality As Standard

## Quality Assurance

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



## Patents

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

## RoHS Compliance

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



## REACH

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

## Associations

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

Federation of Communication Services

TETRA Association

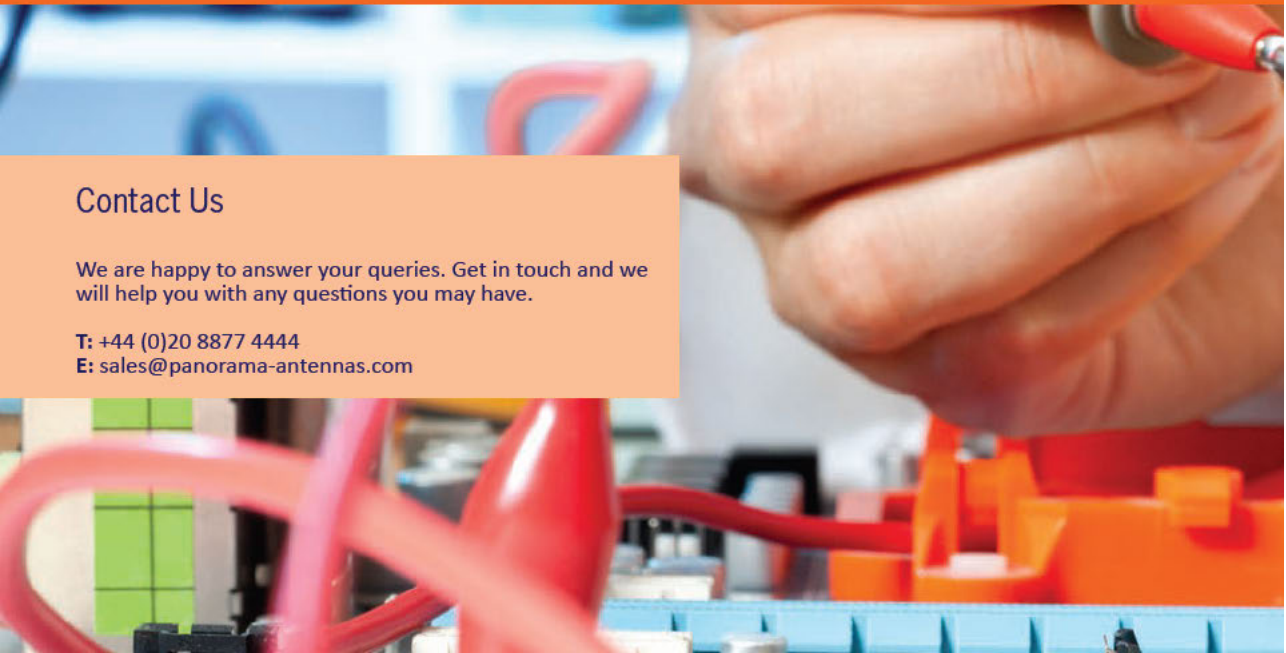
British Safety Council

## Contact Us

We are 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](mailto:sales@panorama-antennas.com)



## 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

The turntable 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 which can be printed or shared on Panorama's computer network.

### 3D Modelling Software

This software enables Panorama to produce 3D simulations of an antenna's performance and to simulate performance parameters which are difficult to measure. This helps to display to customers how the antenna performs and allows rapid progression of new product development.

### PIM Test Equipment

Decreases in network efficiency caused by Passive Intermodulation (PIM) are of increasing concern for network operators. Panorama's high sensitivity PIM test equipment enables us to test and verify the PIM performance of our products.

# Your DAS system is safe with Pa

## Highly efficient wideband coverage of 2G/3G/4G & UHF

More power radiated; more frequencies covered, which means that less antennas are required to cover the same area. All the antennas in the CELLPOWER™ range cover 2G, 3G & 4G frequencies from 698-2700MHz with MIMO and UHF options available.

## Easy but secure installation

Most of our antennas offer multiple mounting options, either utilising supplied brackets, concealed screw fixings or a central mounting via the connector.

## Flame retardant radome

Meets at least UL94-V0. High impact and environmental stability. Selected models meet UL94-5VB and UL-746C.





# anorama's **CELLPOWER** range

## DC grounded

Many of our antennas present a DC short for electrical safety and to enable detection by DAS systems requiring this feature.



## A complete system

CELLPOWER™ antennas feature either an integrated ground plane or are ground plane independent and can be mounted to metallic or non-metallic surfaces.



## PIMGuard low PIM technology

Passive Intermodulation (PIM) generated by antennas can cripple network throughput reducing network efficiency. Antennas in the CELLPOWER™ range typically meet or exceed a PIM level of  $<-140\text{dBc}$  (2x20w) carrier meeting major network standards.



## CM-7-60-NJ

**Discreet ceiling mount design**  
**Highly efficient wideband coverage**  
**Concealed screw fixings**  
**Low PIM and SAR tested to EN50385:2002**



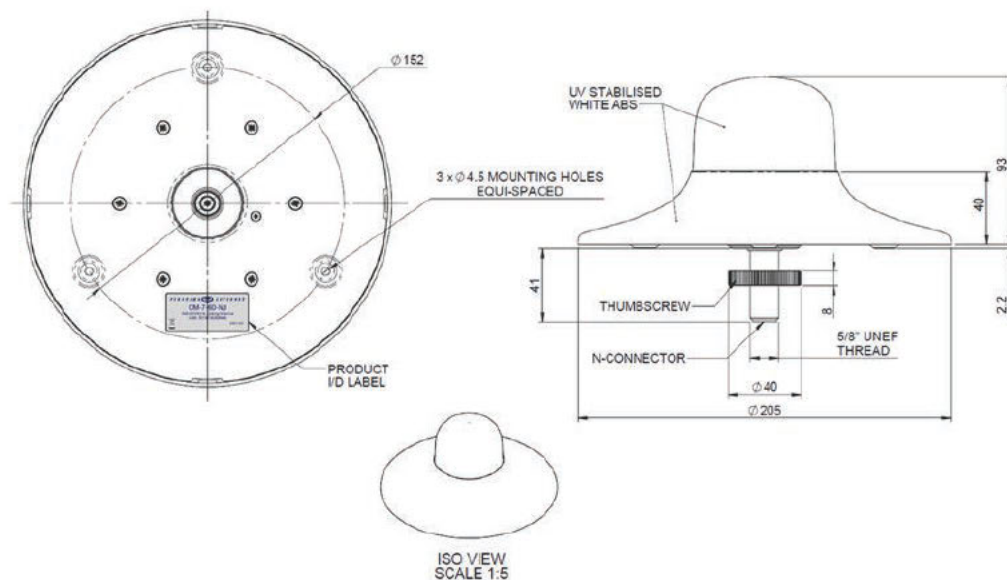
The CM-7-60-NJ ceiling antenna is a compact and cost effective way to provide optimum In-building or DAS coverage for the networks of today and tomorrow. Concealed beneath the antenna housing is a highly efficient wideband element capable of supporting 2G, 3G & 4G, WLAN and WiMAX networks from 698-960MHz and 1710-6000MHz. This element is DC short for equipment requiring this feature.

Suitable for indoor or outdoor use the antenna only requires one mounting hole for installation but offers additional screw fixing holes located beneath a rotating valance. The antenna is ground plane independent and can be fitted onto both thick and thin ceiling tiles.



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





## Standard Data

Part No.		CM-7-60-NJ
Electrical Data		
Frequency Range (MHz)		698-960/1500-6000
Operational bands		2G, 3G, 4G & WLAN/WiMAX
Radiation pattern		Omnidirectional
VSWR		< 2.5:1
Peak Gain	698-960MHz	2dBi
	1710-2170MHz	5dBi
	2200-6000MHz	7dBi
Typical Passive intermod. (2x20W, 3rd ord.) dBc*		<-150
SAR & 'Touch Safe' Test Data		According to 50385:2002 (Bands: 850,900,1800,2100,2600 MHz)
Max input power (W)		50 Watts
Impedance		50Ω
Mechanical Data		
Dimensions (mm)	Height	93 (3.6")
	Diameter	205 (8")
Operating temp (°C)		-30°/+70°C (-22°/158°F)
Material		UV stabilised flame retardant ABS, aluminium base plate
Flame Retardancy		UL94 -V0
Colour		White (RAL 9003)

\*Range PIM performance verified @ 1900MHz under controlled conditions by Anritsu PIM Master test equipment.



## CMMG-7-60-NJ

**Discreet ceiling mount design**

**2x ultra-wideband elements**

**Concealed screw fixings**

**Low PIM and SAR tested to EN50385:2002**



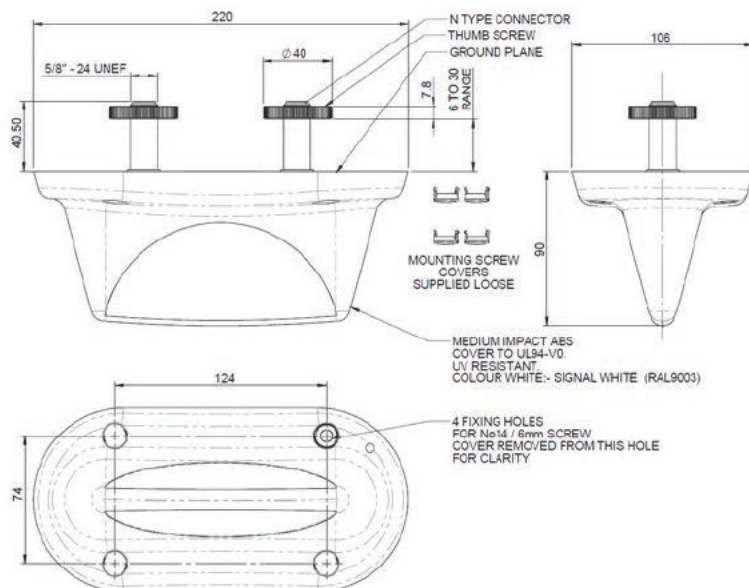
The CMMG-7-60-NJ ceiling antenna offers low PIM 2x2 MIMO/diversity coverage across 2G, 3G & 4G frequencies (698-960/1710-6000MHz) for In-building and DAS installations. The two highly efficient wideband elements within the CMMG-7-60-NJ enclosure are DC short for equipment that requires this feature.

The antenna only requires two mounting holes for installation via the fitted low PIM N connectors but offers additional screw fixing holes disguised beneath press-fit caps. The antenna is ground plane independent and can be fitted onto both thick and thin ceiling tiles.



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

## Technical Drawing



## Standard Data

Part No.		CMMG-7-60-NJ
Electrical Data (both elements)		
Frequency Range (MHz)		698-960/1710-6000
Operational bands		2G, 3G, 4G & WLAN/WiMAX
Radiation pattern		Omnidirectional
VSWR		< 2.5:1
Correlation Co-efficient		<0.1
Isolation (across connectors)		>15dB
Peak Gain (both elements fed)		2dBi (698-960MHz) 5dBi (1710-2170MHz) 7dBi (2200-6000MHz)
Typical Passive intermod. (2x20W, 3rd ord.) dBc *		<-150
SAR and 'Touch Safe' Test Data		According to 50385:2002 (Bands: 850, 900, 1800, 2100, 2600MHz)
Max input power (W)		50 Watts
Impedance		50Ω
Mechanical Data		
Dimensions (mm)	Height	90 (3.5")
	Length	220 (8.66")
	Width	106 (4.17")
Operating temp (°C)		-30°/+70°C (-22°/158°F)
Material		UV stabilised flame retardant ABS, aluminium base plate
Flame Retardancy		UL94 -V0
Colour		White (RAL 9003)

\*Range PIM performance verified @1900MHz under controlled conditions by Anritsu PIM Master test equipment.





## CMWB2-038-6-NJ

**Ceiling mount design**

**Future proof UHF and cellular coverage**

**Concealed screw fixings**

**Low PIM and SAR tested to EN50385:2002**

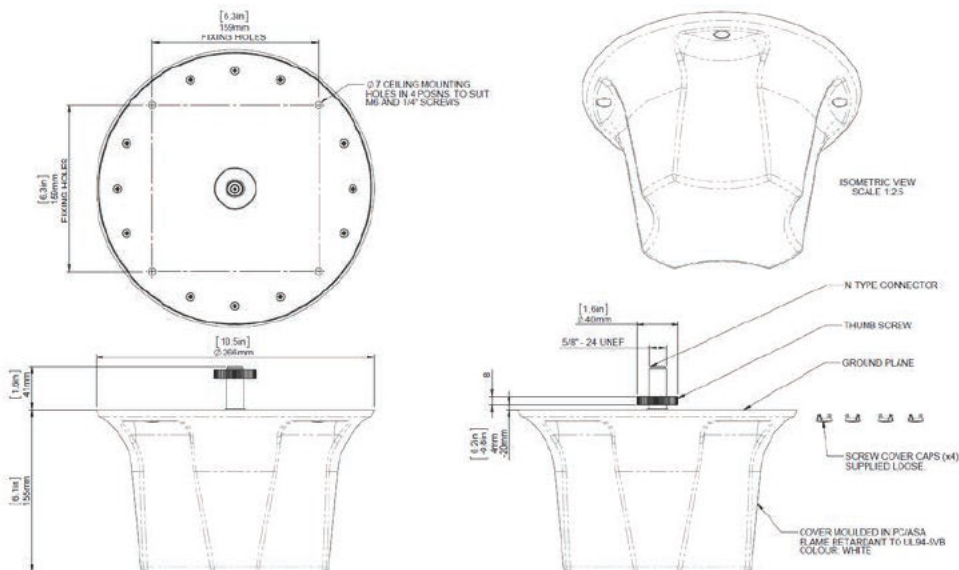


A true wideband system, Panorama's CMWB2-038-6-NJ allows businesses and facilities to support multi-service/multi-operator wireless coverage. A huge number of services are supported from 380MHz UHF to 6GHz - including TETRA UHF, GSM400, AWS 1700MHz, Quadband GSM, 3G UMTS, 2.4GHz WLAN, LTE & WiMAX etc. enabling simultaneous connectivity for employees, consumers and emergency services and providing In-building service providers and DAS installers with a convenient one size fits all solution.



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

## Technical Drawing



## Standard Data

Part No.		CMWB2-038-6-NJ
Electrical Data		
Frequency Range (MHz)		380-6000
Operational bands		2G, 3G & 4G/WLAN/WiMAX
Radiation pattern		Omnidirectional
VSWR		< 2.7:1
Peak Gain	380-800MHz	2dBi
	800-1000MHz	3dBi
	1000-6000MHz	6dBi
Typical Passive intermod. (2x4W, 3rd ord.) dBC*		<-140
SAR & 'Touch Safe' Test Data		According to 50385:2002 (Bands: 850,900,1800,2100MHz)
Max input power (W)		60 Watts
Impedance		50Ω
Mechanical Data		
Dimensions (mm)	Height	155 (6.1")
	Diameter	266 (10.47")
Operating temp (°C)		-30°/+70°C (-22°/158°F)
Radome Material		Geloy PC/ASA (meets UL746C f1)
Radome Flame Retardance		UL94-5VB (chlorine and bromine free)
Colour		White (RAL 9003)

\*Range PIM performance verified @1900MHz under controlled conditions by Anritsu PIM Master test equipment.



## CMWBD-038-3-NJ

**Ceiling mount design**  
**Future proof UHF and cellular coverage**  
**Flame Retardant Radome**  
**Low PIM**



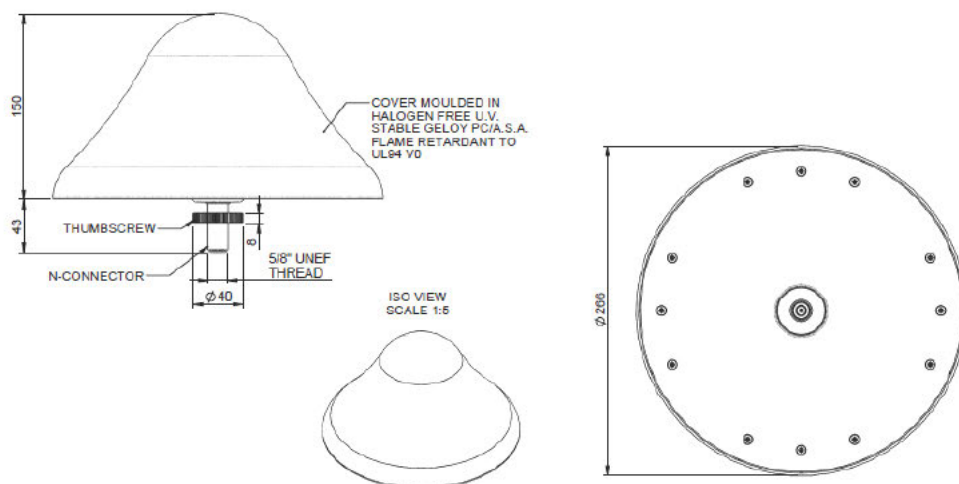
Panorama's CMWBD-038-3-NJ allows businesses and facilities to support multi-service/multi-operator wireless coverage. A huge number of services are supported from 380MHz UHF to 6GHz - including TETRA UHF, GSM400, AWS 1700MHz, Quadband GSM, 3G UMTS, 2.4GHz WLAN, LTE & WiMAX etc. enabling simultaneous connectivity for employees, consumers and emergency services and providing In-building service providers and DAS installers with a convenient one size fits all solution.

The CMWBD features an attractive domed shape offering a discreet appearance and low visual impact for highly visible mounting locations.



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





## Standard Data

Part No.		CMWB-038-3-NJ
Electrical Data		
Frequency Range (MHz)		380-470/698-960/1710-6000
Operational bands		UHF/2G/3G/4G/WLAN/WIMAX
Radiation pattern		Omnidirectional
VSWR		< 2.5:1
Peak Gain	380-520MHz	2dBi
	698-960MHz	4dBi
	1710-600MHz	7dBi
Typical Passive intermod. (2x20W, 3rd ord.) dBc*		<-140
Max input power (W)		60 Watts
Impedance		50 $\Omega$
Mechanical Data		
Dimensions (mm)	Height	150 (5.9")
	Diameter	266 (10.47")
Operating temp (°C)		-30° / +70°C (-22°/158°F)
Radome Material		Geloy PC/ASA (meets UL746C f1)
Flame Retardance		UL94-V0 (chlorine and bromine free)
Colour		White

\*Range PIM performance verified @1900MHz under controlled conditions by Anritsu PIM Master test equipment.

## CM Range

**In-building UHF coverage**

**Low profile & unobtrusive visual impact**

**Easy installation**

**Suitable for airports, stadiums and campus sites**

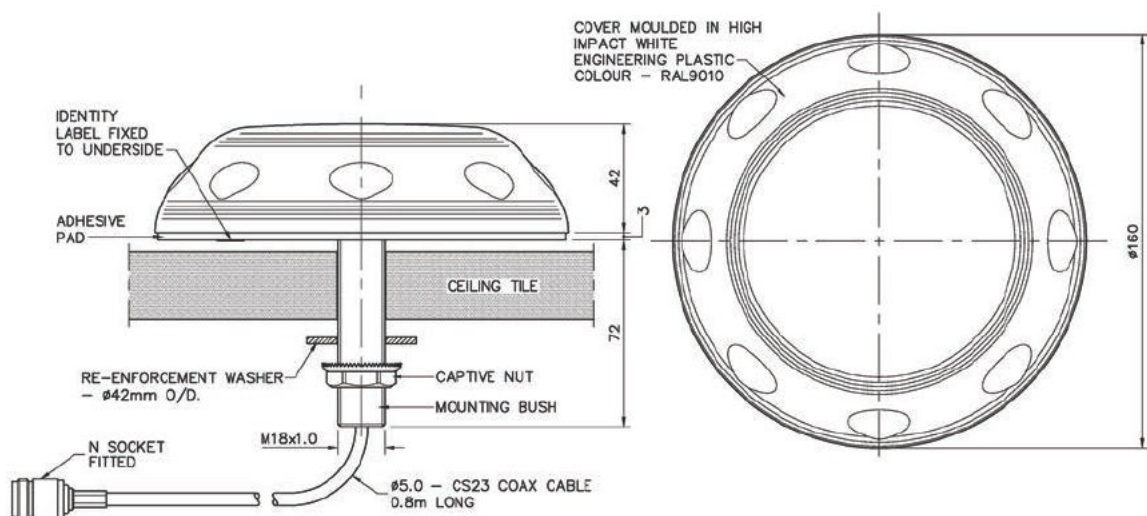


The CM range of UHF ceiling mount antennas is designed to enhance network coverage and reduce poor coverage areas within buildings for the emergency services and other UHF radio users.

With a low profile and durable design. The CM range is suitable even in low clearance areas. Requiring only one hole for installation and supplied with 0.8m of low loss-cable, the CM range can be fitted onto both thick and thin ceiling tiles.

Used in airports, campus sites and shopping centres, the antenna ensures a strong and stable signal throughout the building or area.

## Technical Drawing



## Standard Data

Part No.		CM-S1-08NJ	CM-S2-08NJ	CM-S4-08NJ
Electrical Data				
Frequency Range (MHz)		380-400	410-430	450-470
Operational Band		S1	S2	S4
Peak Gain: Isotropic		0dBi	0dBi	0dBi
Compared to ¼ wave		-2dB	-2dB	-2dB
Polarisation		Vertical	Vertical	Vertical
Pattern		Omnidirectional	Omnidirectional	Omnidirectional
Impedance		50Ω	50Ω	50Ω
Max Input Power (W)		25	25	25
Mechanical Data				
Dimensions (mm)	Height	42 (1.6")	42 (1.6")	42 (1.6")
	Width	160 (6.2")	160 (6.2")	160 (6.2")
Operating Temp (°C)		-30°/+70°C (-22°/158°F)	-30°/+70°C (-22°/158°F)	-30°/+70°C (-22°/158°F)
Material		Flame Retardant ABS	Flame Retardant ABS	Flame Retardant ABS
Flame Retardancy		UL94 -V0	UL94 -V0	UL94 -V0
Colour		White (RAL9010)	White (RAL9010)	White (RAL9010)





## WM8-BADEP3G-26-NJ



**High gain**

**Mast mount or wall mount**

**Low PIM & SAR tested to EN50385:2002**

**Integrate wireless services into one antenna**

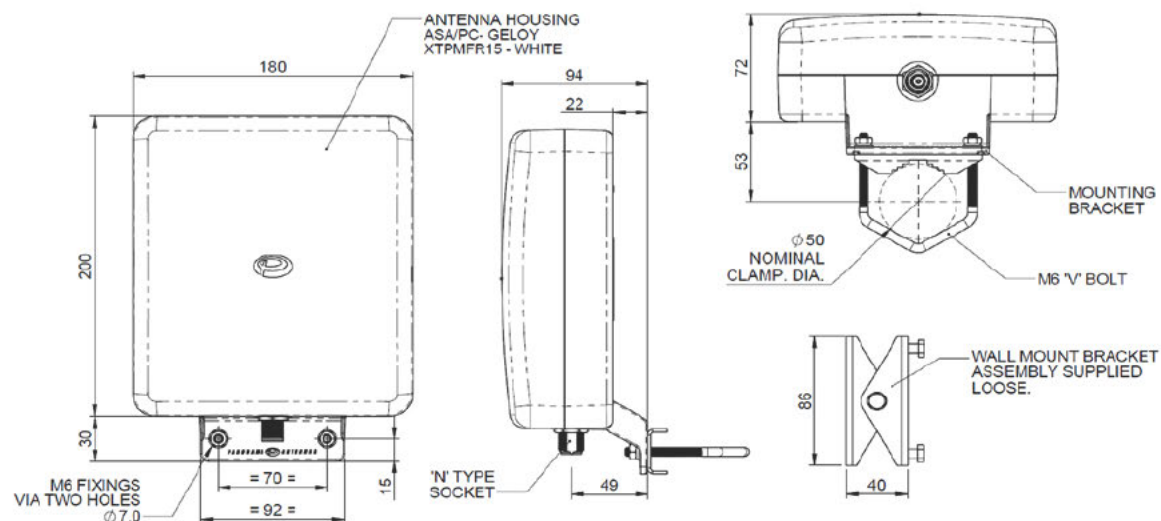
A versatile high gain directional antenna for In-building applications, Panorama's WM8 range allows businesses and facilities to support multi-service/multi-operator wireless coverage. The WM8-BADEP3G-26-NJ supports 2G, 3G, 3G+ and 4G technologies including LTE, AMPS, PCS, GSM, UMTS & AWS with lower gain coverage of WiFi 2.4GHz and LTE 2.6GHz.

The WM8 range is housed in impact resistant, UV light stabilised plastic. The antenna is sealed to be completely weatherproof 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.



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

## Technical Drawing



## Standard Data

Part No.		WM8-BADEP3G-26-NJ
<b>Electrical Data</b>		
Frequency Range (MHz)		698-960, 1710-2700
Operational Band		LTE700, AMPS 850, CDMA 800, GSM1800, PCS1900, 3G UMTS, AWS, WiFi, LTE 2.6
Peak Gain: Isotropic	LTE 700MHz, AMPS800 & GSM900	6.5dBi
	GSM1800, PCS1900, 3G UMTS/AWS 2100	9dBi
	WiFi 2400, LTE 2600	6dBi
VSWR		<2:1
Polarisation		Vertical
Pattern		Directional
Typical Passive Intermod. (2x4W, 3rd ord.) dBc*		<-140
SAR and 'Touch Safe' Test Data		According to 50385:2002 (Bands: 850, 900, 1800, 2100, 2600MHz)
Impedance		50 $\Omega$
Max Input Power (W)		50
<b>Mechanical Data</b>		
Dimensions (mm)	Height	230mm (9.05")
	Width	180mm (7.08")
	Length	94mm (3.7")
Operating Temp (°C)		-30°/+70°C (-22°/158°F)
Material		Geloy PC/ASA (meets UL 746C)
Flame Retardancy		UL94 - V0 (chlorine & bromine free)
Colour		White (RAL 9003)

\*Range PIM performance verified @1900MHz under controlled conditions by Anritsu PIM Master test equipment.

## WM-H7-TET-NJ

**Covers VHF and UHF frequencies**

**Mast mount or wall mount**

**Low smoke halogen free flame retardant radome**



The WM Range of is a dual band VHF/UHF wall mounted antennas are designed for In-building, DAS and network infill applications.

The range offers a variety of VHF tuning options to meet different application requirements.

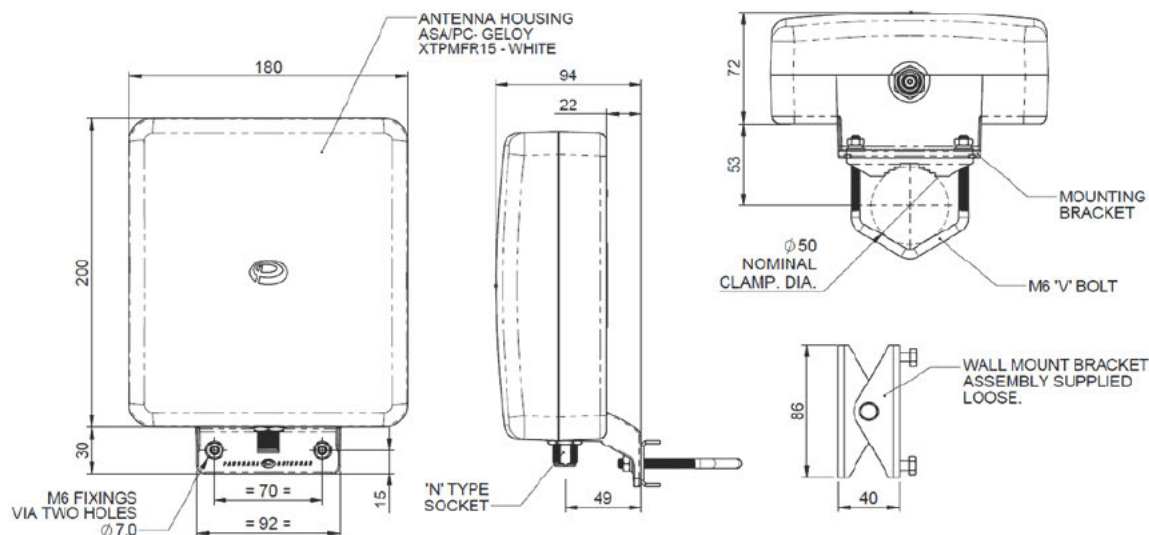
The WM Range combine omnidirectional VHF and UHF coverage in a single feed enclosure minimising cable runs and allowing UHF radio systems to be seamlessly integrated with existing VHF systems.

The compact wall mount enclosure is weather-proof and constructed from flame retardant, low smoke, halogen free PC/ASA.

It is supplied with U-bolt clamps for mast mounting and adjustable wall mount bracket.



## Technical Drawing



## Standard Data

Part No.		WM-H7-TET-NJ	WM-157-TET-S4-MJ
Electrical Data			
Frequency Range (MHz)		162-174/380-430	162-174/380-430
Operational bands		H7, TET	157, TET
Radiation pattern		Omnidirectional	Omnidirectional
VSWR		< 2.5:1	< 2.5:1
Peak Gain		-2dBi (162-174MHz) 1dBi (380-430MHz)	-2dBi (162-174MHz) 1dBi (380-430MHz)
Max input power (W)		50 Watts	50 Watts
Impedance		50 $\Omega$	50 $\Omega$
Mechanical Data			
Dimensions (mm)	Height	230 (9.05")	230 (9.05")
	Width	180 (7.08")	180 (7.08")
	Depth	94 (3.7")	94 (3.7")
Operating temp (°C)		-30°/+70°C (-22°/158°F)	-30°/+70°C (-22°/158°F)
Material		Geloy PC/ASA (meets UL746C f1)	Geloy PC/ASA (meets UL746C f1)
Flame Retardance		UL94-V0 (chlorine and bromine free)	UL94-V0 (chlorine and bromine free)
Colour		White	White
Mounting Data			
Fixing		Pole Mount / Wall Mount	Pole Mount / Wall Mount
Pole Diameter (mm)		20-50 mm (0.8 - 1.96")	20-50 mm (0.8 - 1.96")
Depth (mm)		41 (1.6")	41 (1.6")
Termination		N Socket	N Socket

## CM-H7-TET-NJ

**Covers VHF and UHF frequencies**

**Ceiling mount design**

**Low smoke halogen free flame retardant radome**



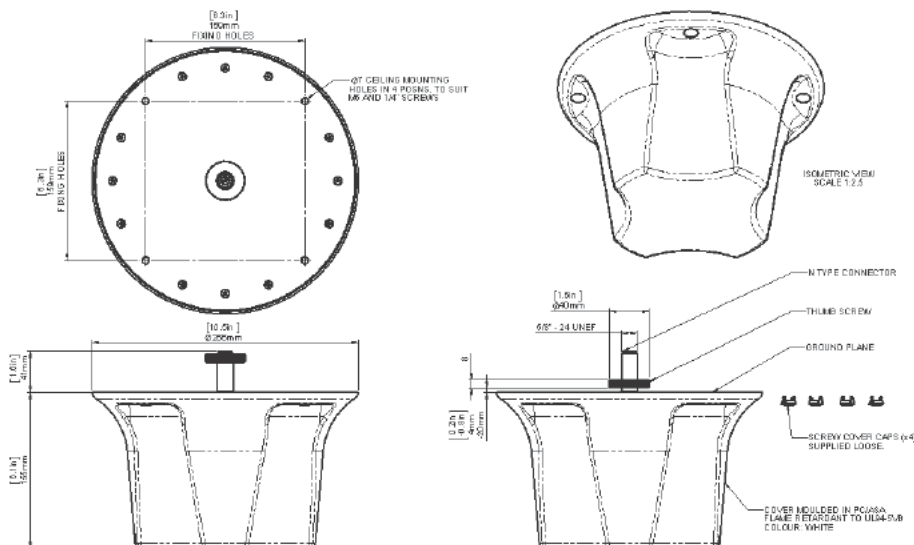
The CM-H7-TET-NJ is a dual band VHF/UHF ceiling mounted antenna designed for short range in-building, DAS and network infill applications.

The CM-H7-TET-NJ combines omni-directional VHF and UHF coverage in a single feed enclosure minimising cable runs and allowing UHF radio systems to be integrated with existing VHF systems.

The ceiling mount enclosure is weather-proof and constructed from flame retardant, low smoke, halogen free PC/ASA.

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

# Technical Drawing



## Standard Data

Part No.		CM-H7-TET-NJ
Electrical Data		
Frequency Range (MHz)		162-174/380-430
Operational bands		H7/TET
Radiation pattern		Omnidirectional
*Typical VSWR		≤ 2.5:1
Peak Gain	153-163MHz	-2dBi
	380-470MHz	-2dBi
Max input power (W)		50 Watts
Impedance		50Ω
Mechanical Data		
Dimensions (mm)	Height	155mm (6.1")
	Diameter	266mm (10 5")
Operating temp (°C)		-30° / +70°C (-22° /158°F)
Material		Geloy PC/ASA (meets UL746C f1)
Flame Retardance		UL94-V0 (chlorine and bromine free)
Colour		White
Mounting Data		
Fixing		Ceiling mount
Depth (mm)		41 (1.6")
Termination		N Socket

## WMMLP8G-7-27

**Wall or mast mount design**  
**Highly efficient wideband coverage**  
**Flexible Plenum rated cable**  
**Low PIM**

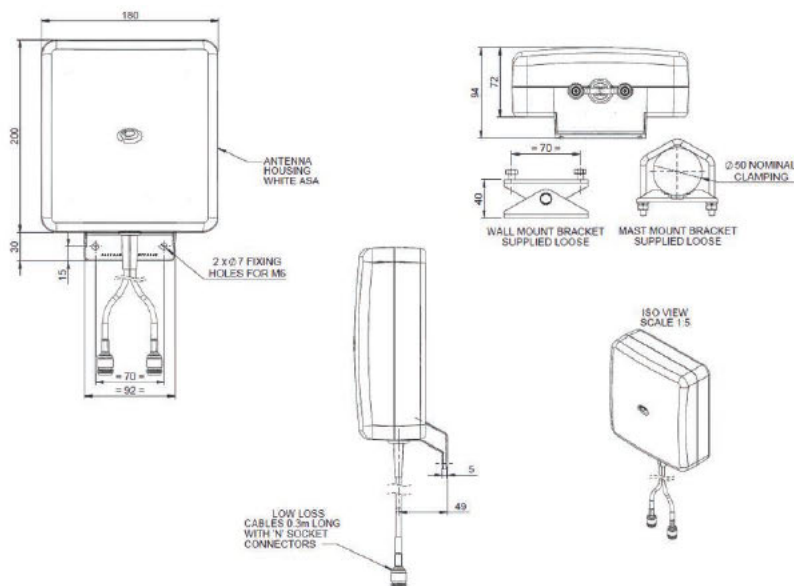


The WMMLP8G-7-27 antenna is a high directional gain 2x2 MIMO wall mount antenna for in-building/ DAS networks. Incorporating two separately fed wideband elements in a single housing the WMMLP8G-7-27 is equipped to offer MIMO and diversity support for 2G, 3G and 4G in-building networks. With 6dBi of peak gain at 698-960MHz and 9dBi peak gain at 1710-2700MHz the WMMLP8G-7-27 provides a wall mount solution for next generation networks.

The rugged, weather resistant housing meets UL746C and is flame retardant to UL94-V0. Supplied with fitted pigtails of low loss plenum rated cable the WMMLP8G-7-27 simplifies cable management for easy installation.



## Technical Drawing



## Standard Data

Part No.		WMMLP8G-7-27-03NJ
<b>Electrical Data</b>		
Frequency Range (MHz)	Antenna 1 & 2	698-960/1710-2700
Operational bands		2G, 3G, 4G
Radiation pattern		Directional
Peak Gain (excl cable loss)		6dBi (698-960 MHz) 9dBi (1710-2170 MHz) 6dBi (2396-2700 MHz)
Efficiency - excluding cable loss (all bands)		> 60%
Correlation co-efficient ( all bands)		< 0.05
Typical PIM 3rd order (2x 20W) dBc		-150
Max input power (W)		20 Watts
Nominal Impedance		50Ω
<b>Mechanical Data</b>		
Dimensions (mm)	Height	230 (9")
	Width	180 (7.1")
	Depth	94 (3.7")
Operating temp (°C)		-30°/+70°C (-22°/158°F)
Material		PC / ASA (UL94 V0 /UL746C)
Colour		RAL9003 (Signal White)
<b>Mounting Data</b>		
Fixing		Wall mount/mast mount/desk mount
Mounting bracket material		Stainless steel/Aluminium
Pole diameter (mm)		20-50 / (0.78 - 1.96")



## 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. As 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, they 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.

## Important Waiver Information

All information and data in this catalogue is intended to provide an indication of the performance of our products under particular circumstances and none of it implies a guarantee of performance or fitness for any particular purpose. We strongly encourage our customers to conduct their own tests in order to establish the appropriate product for any particular application.

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

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