



# MOTOROLA

## General Business Information

### REF: Tetra Mobile Antenna selection guide 800MHz

#### Introduction

Maintaining Terminal performance and ensuring operational life of a communication system go hand in hand. Motorola have a full range of Antenna solutions that meet the needs of a wide range of user groups. The information in this bulletin is intended to supplement the information contained in the Operating Guides and Individual Data Sheets. The Antennas detailed are for the 800MHz Frequency Bands. Refer to the associated General Information Bulletins for the 380 - 430MHz, 450MHz and 350MHz Bands.

#### Motorola Antenna Solutions.

##### 1.0 GPS and Tetra Combined Antenna

The GPS and Tetra combined Antenna provide ease of installation, excellent Receiver Sensitivity and Transmission coverage, as can be seen from below Polar diagrams. Small aperture mounting Hole ensures trouble free installation. The GPS Antenna includes a 26dB Low Noise Amplifier (LNA) which is supplied via Coaxial feed with DC supply in the range 3.0 – 7.0V. For additional specifications refer to the individual Data Sheets.



GPS	
VSWR	<2.0:1 @ 1575 MHz +/- 4MHz
Impedance	50 Ohms
LNA Gain	26 dB
Polarisation	Right Hand Circular
Operating Voltage	3 - 7V DC (fed via coax)
Current (Typical)	14 mA
Connector	FME Socket on 300mm long, 2.5mm diameter coaxial cable
Tetra Antenna	
RF Connector	FME Plug on 300mm long, 2.5mm diameter coaxial cable
Gain, 800 MHz	0 dBd
General	
Dimensions (including whip)	Length-60mm Width-50mm Height-119mm
Colour	black
Mounting Hole	15mm
Mounting depth	8mm (max)

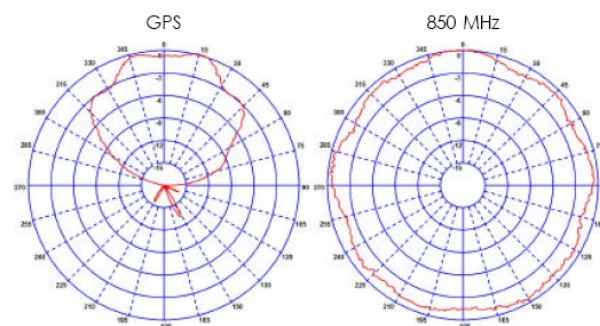


Fig 1. GPS and Tetra Combined Antenna

Fig. 2 Antenna Radiation Patterns

**Motorola Terminal CLASS Options (order with radio) :**

**G968AA**

ADD: Antenna Combined Tetra / GPS 800MHz

**Motorola Aftermarket Kit Numbers :**

**GMAF4408A**

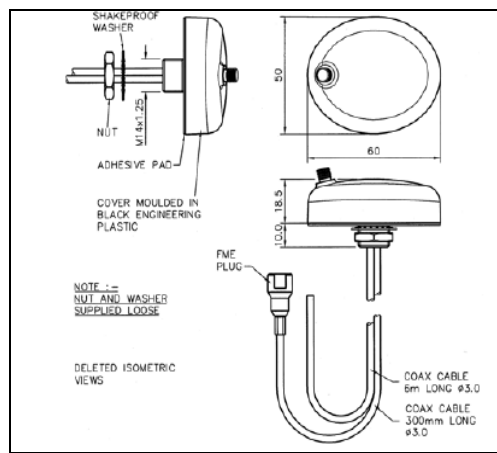
Antenna Combined Tetra and GPS 800Mhz



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**Fig. 3 Antenna Mechanical Drawings**

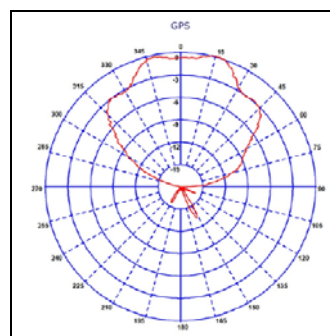
## 2.0 GPS only Antenna

The GPS only Antenna is available in two versions direct Mount and Magnetic Mount. Direct Mount version can be Pole Mounted using suitable Right Angled bracket such as Motorola Part MNT62312B1. Note reducing Washers are required for the MNT62312B1.



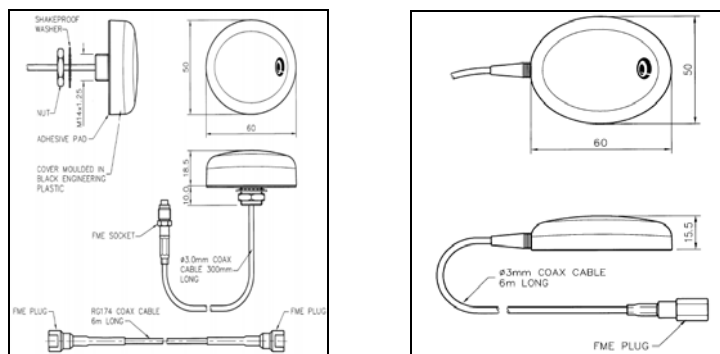
**FIG. 4 GPS Only Antenna**

GPS	
VSWR	<2.0:1 @ 1575 MHz +/- 4MHz
Impedance	50 Ohms
LNA Gain	26 dB
Polarisation	Right Hand Circular
Operating Voltage	3 - 7V DC (fed via coax)
Current (Typical)	14 mA
Connector	FME Socket on 300mm long, 2.5mm diameter coaxial cable
General	
Dimensions	Length-60mm Width-50mm Height-18mm
Colour	black
Mounting Hole	15mm
Mounting depth	8mm (max)



**Fig. 5 Antenna Receive Polar Diagram**

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**Fig. 6 Mechanical Drawing GPS Panel and Magnetic Mount**

### Motorola Terminal CLASS Options (order with Radio) :

**G896AA**  
**G897AA**

ADD: Antenna GPS Only Panel/Roof Mount  
ADD: Antenna GPS Only Mag Mount

### Motorola Aftermarket Kit Numbers :

**GMAG4251A**  
**GMAG4252A**


Antenna GPS Panel / Roof Mount  
Antenna GPS Magnetic Mount

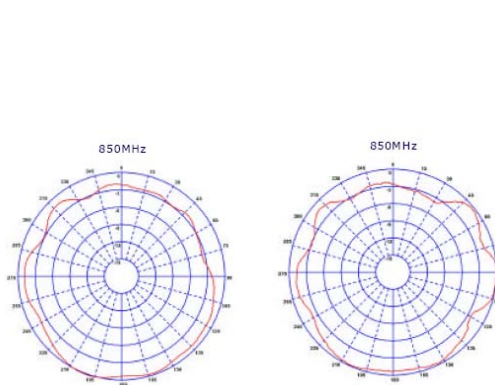
## 3.0 Tetra Antennas – Alternative Styles

The following range of Antennas are available to suit the diverse requirements of Users and of course specialist Vehicles. The range covers traditional Glass Mount, Low Profile and also Antennas suited to discreet or Covert operations. These Antennas can be used in conjunction with the Stand Alone GPS Antennas described in Section 2.0 above.

### 3.1 Glass Mount

Glass Mount provides ease of installation coupled with solid performance. Whips are easily detached for General vehicle maintenance such as cleaning. Glass Mount provides a lower cost solution compared to other Antenna styles.

	<b>Electrical Data</b>	
	Frequency Range (MHz)	835 - 900
	Operational Bands	Tetra 800MHz
	VSWR	Tx = 1.8:1, Rx = 2:1
	Gain: Isotropic	5dBi
	Compared with 1/2 wave	2dB
	Polarisation	Vertical
	<b>Mechanical Data</b>	
	Length of Whip	320
	Operating Temp (°C)	-40° / +80°C
	<b>Mounting Data</b>	
	Fixing	External Glass Mount
	Mounting Foot Dimensions (mm)	Length 50.4 Width 51.4
	Material	Engineering Plastic / Stainless Steel
	Colour	Black
	<b>Coupling Box Data</b>	
	Colour	Black
	Termination	FME
	<b>Cable Data</b>	
	Type	Co-Axial Cable
	Length (mm)	5000
	Connector	BNC supplied loose



**Fig. 7 Glass Mount Antennas**

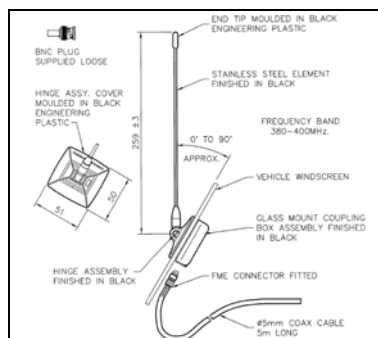
**Fig. 8 Glass Mount Polar Diagrams.**



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**Fig. 9 Mechanical Drawing for Glass Mount**

#### Motorola Terminal CLASS Options (order with Radio) :

**G969AA**

Antenna Glass Mount 800MHz

**G970AA**

Antenna Glass Mount 800MHz 3dB Gain

#### Motorola Aftermarket Kit Numbers :

**GMAF4409A**

Antenna Glass Mount 800MHz

**GMAF4410A**

Antenna Glass Mount 800MHz 3dB Gain

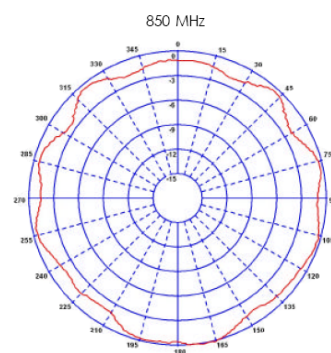
### 3.2 Panel Mount Antenna

Panel Mount Antenna solutions are the preferred choice for robust installation and solid RF performance. A well sited Antenna correctly installed will give reliable and cost effective performance for many years. The choice of flexible Whip gives added protection against harsh environments and will withstand general maintenance such as cleaning.



#### Electrical Data

Gain	0dBd
Polarisation	Vertical
Freq Range	805-900 MHz
Height	90mm
Mounting	Eurobase bodymount
Detachable cable	5m URM76, loose BNC



**Fig. 10 Panel Mount Antenna**

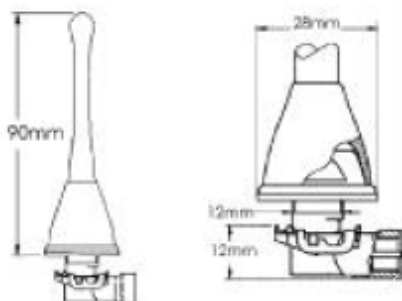
**Fig. 11 Panel Mount Antenna Polar Diag.**



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**Fig. 12 Mechanical Drawings for Panel Mount.**

**Motorola Terminal CLASS Options (order with Radio) :**

**G971AA**

ADD: Antenna Tetra Panel/Roof Mount 800MHz

**Motorola Aftermarket Kit Numbers :**

**GMAF4411A**

Antenna Panel Mount 800MHz

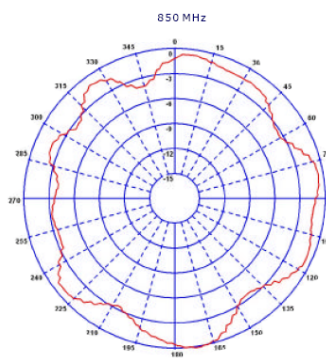
### 3. 3 Magnetic Mount Antenna

Magnetic Mount Antennas are by design suited to temporary installations and provide good RF performance. The adherence strength makes them suitable for a wide range of vehicle styles.



#### Electrical Data

<b>Frequency Range (MHz)</b>	805-900
<b>VSWR</b>	Tx = 1.5:1, Rx = 2:1
<b>Gain: isotropic</b>	2dBi
<b>Compared with ¼ wave</b>	0dB
<b>Height of whip (mm)</b>	68
<b>Height of base (mm)</b>	38
<b>Diameter (mm)</b>	72
<b>Detachable Cable</b>	5m URM76 with fitted BNC

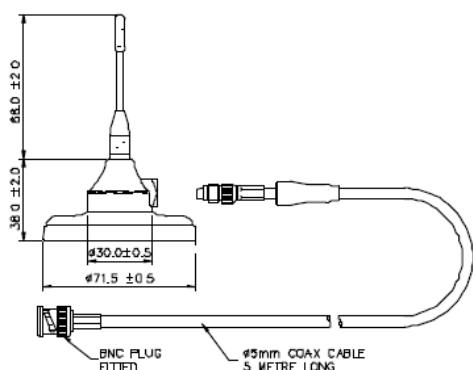


**Fig. 13 Magnetic Mount**

**Fig. 14 Mag Mount Polar Diag.**



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**Fig. 15 Mechanical Drawing Mag Mount.**

#### Motorola Terminal CLASS Options (order with Radio) :

**G972AA**

ADD: Antenna Magnetic Mount 800MHz

**G973AA**

ADD: Antenna Magnetic Mount 800MHz 3dB Gain

#### Motorola Aftermarket Kit Numbers :

**GMAF4412A**

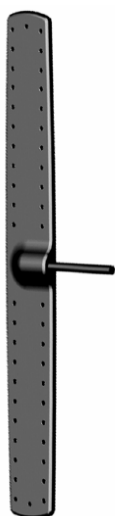
Antenna Magnetic Mount 800MHz

**GMAF4413A**

Antenna Magnetic Mount 800MHz 3dB Gain

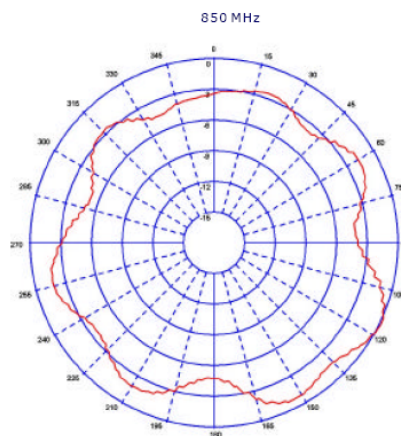
### 3.4 Covert Antenna

Simple Low Cost Covert or discreet Antenna solution based on a Glass Mountable strip (dipole). Provides ease of installation and fair RF Coverage



#### Electrical Data

Frequency Range (MHz)	805-900
VSWR	Tx = 1.5:1, Rx = 2:1
Gain: isotropic	2dBi
Compared with ¼ wave	0dB
Dimensions (mm): L	130
W	17
H	2.5 (6.5 at cable entry)
Orientation	Vertical, Cable entry to side
Configuration	Centre-fed dipole
Cable	3m 3.5mm diameter coax fitted with FME jack + BNC adaptor



**Fig. 16 Covert Antenna**

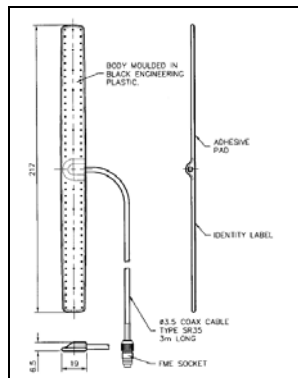
**Fig. 17 Covert Antenna Polar Diagram**



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**Fig. 18 Mechanical Drawing Covert Antenna**

**Motorola Terminal CLASS Options (order with Radio) :**

**G974AA**

ADD: Antenna Tetra Covert 800MHz

**Motorola Aftermarket Kit Numbers :**

**GMAF4414A**

Antenna Covert 800MHz

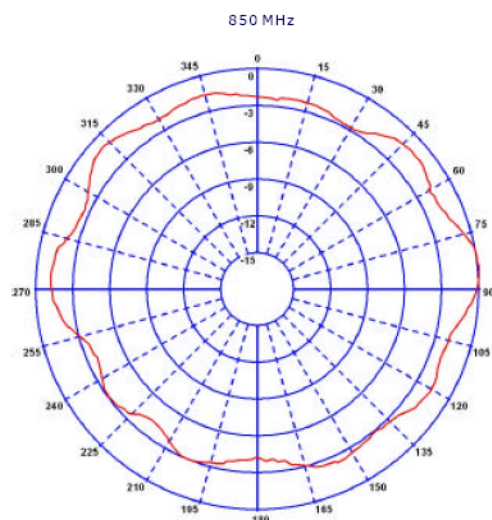
### 3.5 Low Profile Antenna

Low Profile Antenna solutions are ideally suited to a wide number of Vehicles including Trains, Buses and where Antenna Height is required to be kept to a minimum. Robust solution in harsh conditions, RF performance is fair and provides a more directional profile which favor Track or Urban area Bus Route solutions.



**Fig. 19 Low Profile Antenna**

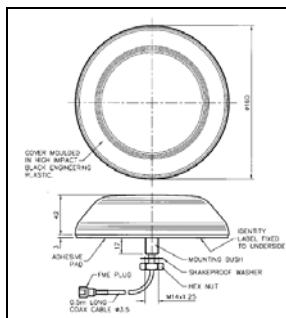
Electrical Data		
Frequency Range (MHz)	805 - 900	
Operational Bands	Tetra 800MHz	
VSWR	= 2:1	
Gain: Isotropic	2dBi	
Compared with ¼ wave	0dB	
Polarisation	Vertical	
Groundplane	Integrated baseplate groundplane	
Mechanical Data		
Base Dimensions (mm)	Height	32
	Diameter	104
Operating Temp (°C)	-40° / +80°C	
Material	Engineering Plastic	
Colour	Black	
Mounting Data		
Fixing	Panel Mount	
Mounting Hole Diameter (mm)	18	
Cable Data		
Type	Co-Axial Cable	
Cable Length (mm)	300	
Cable Thickness (mm)	3.5	
Termination	FME Plug	



**Fig. 20 Low Profile Polar Diag.**



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**Fig. 21 Low Profile Mechanical Drawing**

**Motorola Terminal CLASS Options (order with Radio) :**

**G975AA**

ADD: Antenna Tetra Low Profile 800MHz

**Motorola Aftermarket Kit Numbers :**

**GMAF4415A**

Antenna Low Profile 800MHz

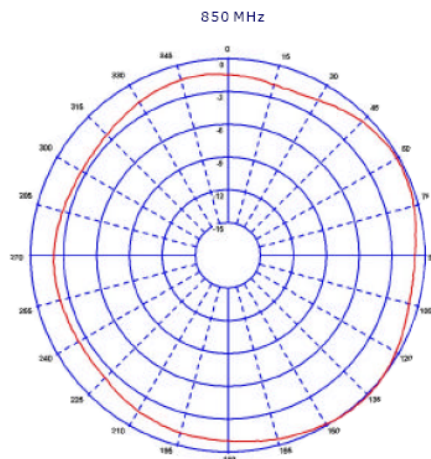
## 3.6 Motorcycle Antenna

Motorcycle Antenna solution provides specific solution including inbuilt Ground plane and capability for Stand Off mount. The Antenna also provides excellent RF Performance. Whip is Flexible and plastic coated for safety.



### Electrical Data

<b>Gain</b>	0dBd
<b>Polarisation</b>	Vertical
<b>Freq Range</b>	805-890 MHz
<b>Base</b>	ML10 with 5m URM76
<b>Dimensions</b>	Height: 200mm Base diameter: 35mm
<b>Mounting</b>	M14 Centre bolt with adhesive pad
<b>Cable</b>	5m URM76, loose BNC

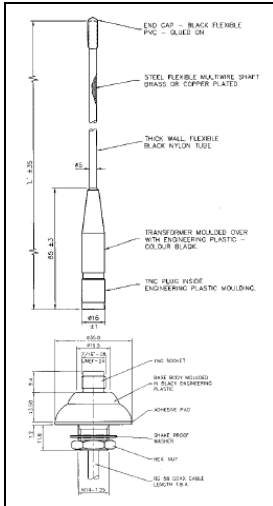


**Fig. 22 Motorcycle Antenna**

**Fig. 23 Motorcycle Ant. Polar Diag.**



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### Fig. 24 Mechanical Drawings Motorcycle Antenna

**Motorola Terminal CLASS Options (order with Radio) :**

G977AA

ADD: Antenna Tetra Motorcycle 800MHz

**Motorola Aftermarket Kit Numbers :**

GMAF4417A

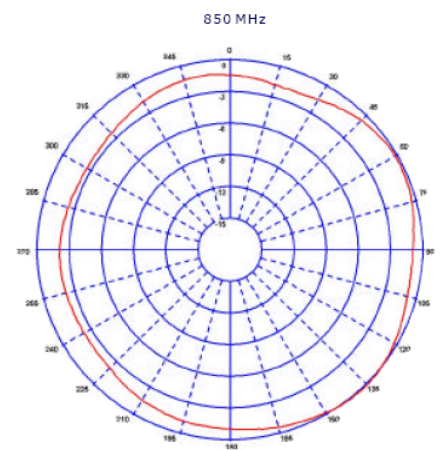
## Antenna Motorcycle 800MHz

### 3.7 Wall Mount Antenna

The Wall Mount Antennas are simple low Duty Antennas suited to applications such as Sports Stadia, Shopping Malls, Rail or Bus Stations. The Installation is uncomplicated and the Antenna Kit includes integral Bracket. These Antennas are not intended to replace Fixed style Antennas.



Electrical Data	
Gain	0dBd
Polarisation	Vertical
Freq Range	805-890 MHz
Base	Bulkhead TNC connector on wall/mast bracket mount
Dimensions	Height: 200mm Wall standoff: 180mm
Cable	8m URM76 with BNC plug fitted



### Fig. 25 Wall Mount Antennas

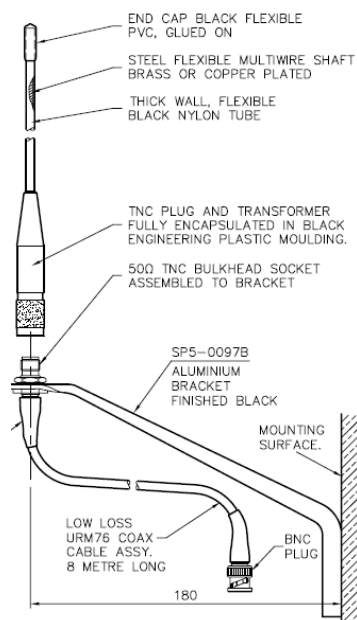
**Fig. 26 Wall Mount Polar Diag.**



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**Fig. 27 Mechanical Drawing**

#### Motorola Terminal CLASS Options (order with Radio) :

**G976AA** ADD: Antenna Wall Mount 800MHz

#### Motorola Aftermarket Kit Numbers :

**GMAF4416A** Antenna Wall Mount 800MHz

Individual Data Sheets are available on each of the above Antennas. These can be downloaded from Motorola On Line at:-

<https://emeaonline.motorola.com/default.asp>

Please also refer to the relevant installation guides supplied with your Tetra Terminal Equipment which contain general Antenna installation tips and important Safety information.

For additional information contact your Motorola Sales representative.