



MOTOROLA

General Business Information

REF: Tetra Mobile Antenna selection guide 450MHz

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 450MHz Frequency Bands. Refer to the associated General Information Bulletins for the 380 - 430MHz, 800MHz 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, 450 MHz	0 dBd
General	
Dimensions (including whip)	Length-60mm Width-50mm Height-154mm
Colour	black
Mounting Hole	15mm
Mounting depth	8mm (max)



Fig 1. GPS and Tetra Combined Antenna

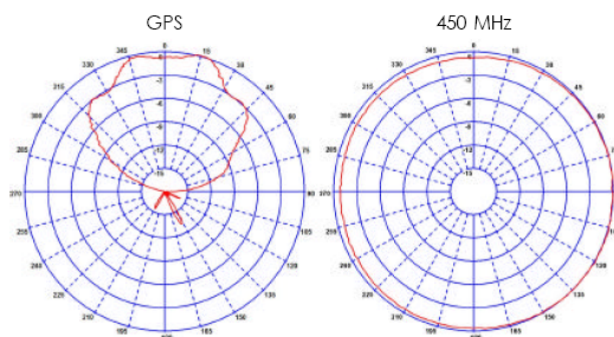


Fig. 2 Antenna Radiation Patterns

Motorola Terminal CLASS Options (order with radio) :

G911AA

ADD: Antenna Combined Tetra / GPS 430 - 470MHz

Motorola Aftermarket Kit Numbers :

GMAE4269A

Antenna Combined Tetra and GPS 430 - 470Mhz



MOTOROLA

General Business Information

REF: Tetra Mobile Antenna selection guide 450MHz

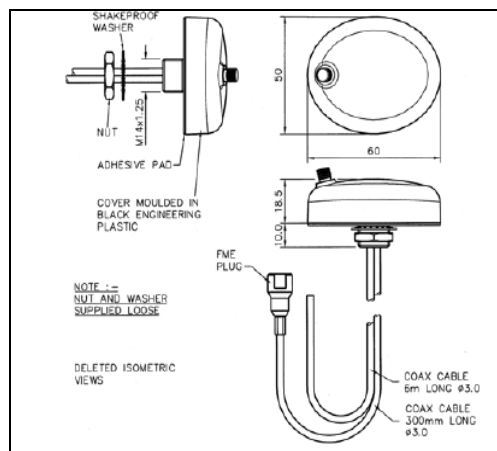


Fig. 3 Antenna Mechanical Drawings

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)

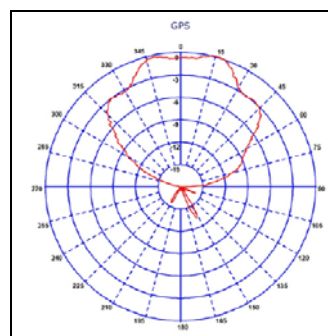


Fig. 5 Antenna Receive Polar Diagram

REF: Tetra Mobile Antenna selection guide 450MHz

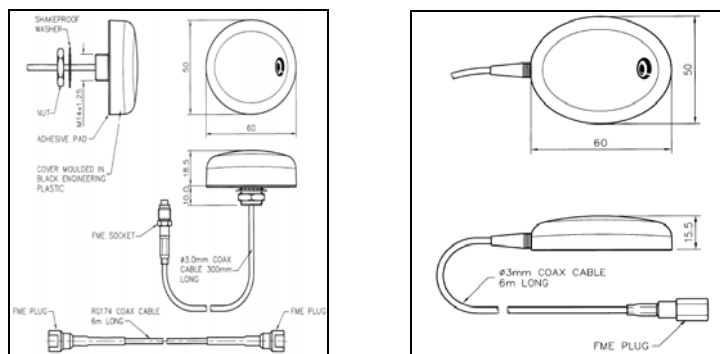


Fig. 6 Mechanical Drawing GPS Panel and Magnetic Mount

Motorola Terminal CLASS Options (order with Radio) :

G896AA

ADD: Antenna GPS Only Panel/Roof Mount

G897AA

ADD: Antenna GPS Only Mag Mount

Motorola Aftermarket Kit Numbers :

GMAG4251A

Antenna GPS Panel / Roof Mount

GMAG4252A

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.

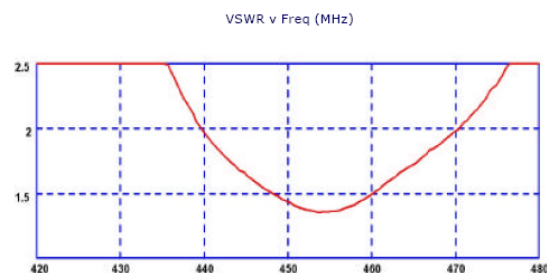
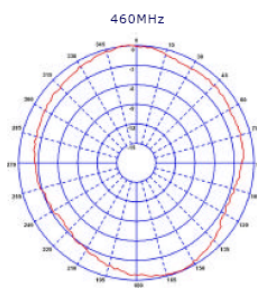


Fig. 7 Glass Mount Antenna

Fig. 8 Glass Mount Polar Diagrams.



MOTOROLA

General Business Information

REF: Tetra Mobile Antenna selection guide 450MHz

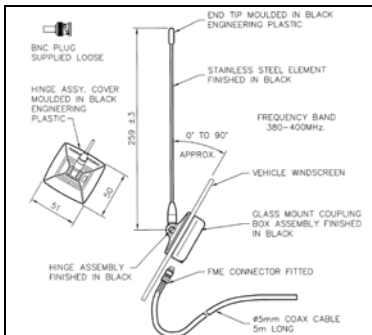


Fig. 9 Mechanical Drawing for Glass Mount

Motorola Terminal CLASS Options (order with Radio) :

G912AA

ADD: Antenna Tetra Glass Mount 450MHz

Motorola Aftermarket Kit Numbers :

GMAE4270A

Antenna Glass Mount 450MHz

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.



Frequency Range (MHz)	430-472
Bandwidth @ 2:1 VSWR	10%
Gain: Isotropic	2dBi
Compared with ¼ wave	0dB
Height Mounted (mm)	176
Hole Size (fitted from inside) (mm)	16
Hole Size (fitted from outside) (mm)	12
Panel Thickness (mm)	0-4
Cable Length (m)	5
Detachable Cable	✓
Flexible Whip	✓

Fig. 10 Panel Mount Antenna

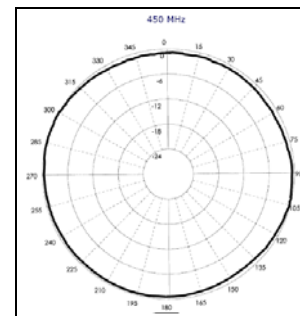


Fig. 11 Panel Mount Antenna Polar Diag.



MOTOROLA

General Business Information

REF: Tetra Mobile Antenna selection guide 450MHz

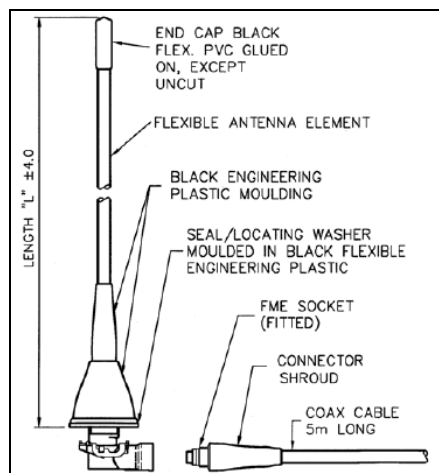


Fig. 12 Mechanical Drawings for Panel Mount.

Motorola Terminal CLASS Options (order with Radio) :

G913AA

ADD: Antenna Tetra Panel/Roof Mount 430 - 470MHz

Motorola Aftermarket Kit Numbers :

GMAE4271A

Antenna Panel Mount 430 -470MHz

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.



Frequency Range (MHz)	430-472
Pre-tuned Bands	U
Bandwidth @ 2:1 VSWR	10%
Gain: Isotropic	2dBi
Compared with ¼ Wave	0dB
Height Mounted (mm)	140

Fig. 13 Magnetic Mount

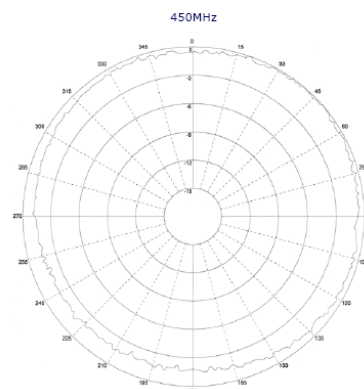


Fig. 14 Mag Mount Polar Diag.



MOTOROLA

General Business Information

REF: Tetra Mobile Antenna selection guide 450MHz

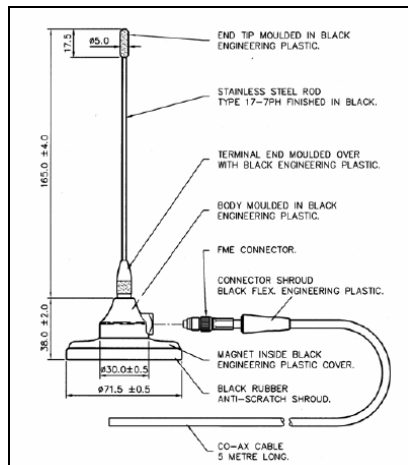


Fig. 15 Mechanical Drawing Mag Mount.

Motorola Terminal CLASS Options (order with Radio) :

G914AA

ADD: Antenna Tetra Magnetic Mount 430 - 470MHz

Motorola Aftermarket Kit Numbers :

GMAE4272A

Antenna Magnetic Mount 430 - 470MHz

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



Gain	0 dBd/ 2 dBi
Polarisation	Vertical
Freq Range	UHF 420-465MHz
Cable	3m 3.5mm coax, FME fitted
Configuration	Printed 1/2 wave dipole element
Orientation	Vertical, cable entry left or right
Mounting	Internal Glassmount Front
Dimensions	Length: 217mm Width: 19mm Height: 2.5mm (6.5mm at cable entry)

Fig. 16 Covert Antenna

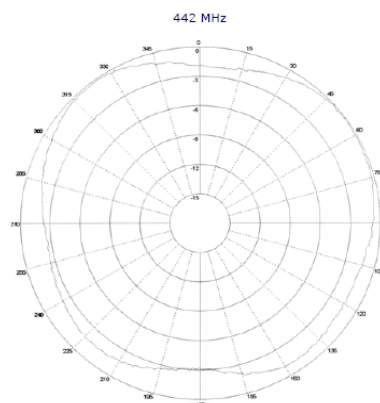


Fig. 17 Covert Antenna Polar Diagram



MOTOROLA

General Business Information

REF: Tetra Mobile Antenna selection guide 450MHz

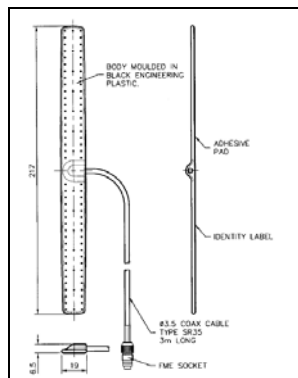


Fig. 18 Mechanical Drawing Covert Antenna

Motorola Terminal CLASS Options (order with Radio) :

G915AA

ADD: Antenna Tetra Covert 430 -470MHz

Motorola Aftermarket Kit Numbers :

GMAE4273A

Antenna Covert 430 - 470MHz

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.



Gain	0dBi
Polarisation	Vertical
Freq Range	450-470MHz
Cable	0.5m 3.5mm coax with FME Plug
Dimensions	Height: 45mm Width 160mm
Mounting	M14 Centre bolt with adhesive pad
Groundplane	Integrated baseplate groundplane

Fig. 19 Low Profile Antenna

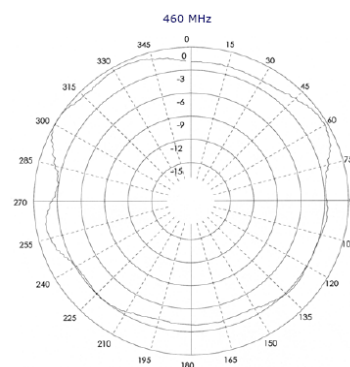


Fig. 20 Low Profile Polar Diag.

REF: Tetra Mobile Antenna selection guide 450MHz

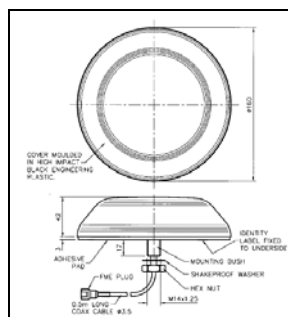


Fig. 21 Low Profile Mechanical Drawing

Motorola Terminal CLASS Options (order with Radio) :

G916AA

ADD: Antenna Tetra Low Profile 430 -470MHz

Motorola Aftermarket Kit Numbers :

GMAE4274A

Antenna Low Profile 430 - 470MHz

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

Gain	0dBd
Polarisation	Vertical
Freq Range	438-472 MHz
Base	ML10 with 5m URM76
Dimensions	Height: 340mm Base diameter: 35mm
Mounting	M14 Centre bolt with adhesive pad
Cable	5m URM76, loose BNC

Fig. 22 Motorcycle Antenna

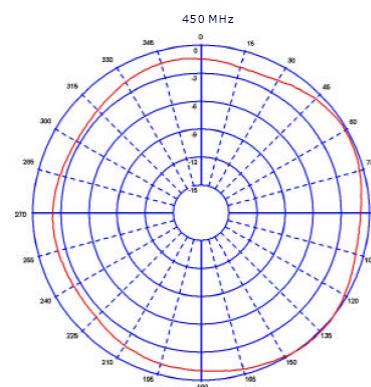


Fig. 23 Motorcycle Ant. Polar Diag.



MOTOROLA

General Business Information

REF: Tetra Mobile Antenna selection guide 450MHz

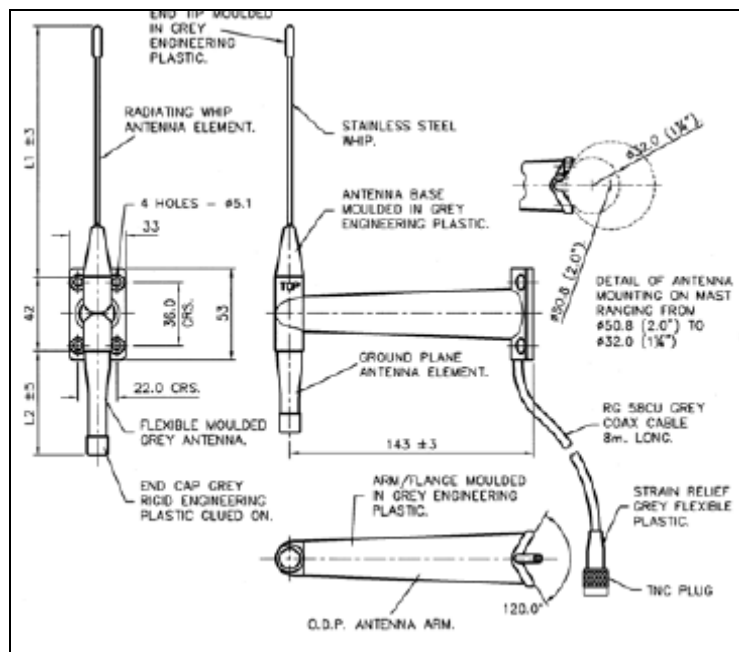


Fig. 27 Mechanical Drawing

Motorola Terminal CLASS Options (order with Radio) :

G917AA

ADD: Antenna Wall Mount 430 -470MHz

Motorola Aftermarket Kit Numbers :

GMAE4275A

Antenna Wall Mount 430 -470MHz

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.