

DRAFT ANTENNA INSTALLATION GUIDELINE

The following document is the Antenna Installation Guide for the Mobile Accessory Antenna.

**SATELLITE SERIES
MOBILE ACCESSORY ANTENNAS**

Installation Guideline

Draft

1. Scope of Manual

This document covers the procedures for installing the Satellite Series Mobile Antennas, both permanent mount and magnetic mounted versions. This manual is intended for use by experienced technicians familiar with installation of antennas for similar types of equipment.

2. How to use this Manual

This manual covers the procedures for installing and mounting the Satellite Series Mobile Antennas, and for routing and connecting associated cabling. Before installing the 9520 Mobile Phone or its antenna, read the information related to installation planning and lightning/surge protection covered further in this manual.

3. General Safety Precautions

During normal use, the Satellite Series 9520 Mobile Telephone will emit radio energy substantially below the level where any kind of harm is reported. However, to ensure personal safety and to avoid equipment damage, please observe the following simple rules:

- To assure that radio frequency (RF) energy exposure to bystanders near the antenna is lower than that recommended by the adopted standard, operate the 9520 Mobile Phone only when bystanders are at least 60 cm (24 inches) away from a properly installed externally mounted antenna.
- For proper Iridium system operation, do not operate 9520 Mobile Phone when someone is within 20 cm (8 inches) of the antenna.
- DO NOT operate the telephone unless all RF connectors are secure and any open connectors are properly terminated.
- DO NOT operate the 9520 Mobile Phone near electrical blasting caps or in an explosive atmosphere.
- All equipment should be serviced and installed only by a qualified technician.
- Refer to the appropriate section of the product service manual for additional pertinent safety information.

4. Installation Safety Warning

When choosing a location for the 9520 Mobile Phone and the antenna, be sure to consider the operator and bystander's safety. Be sure to mount the 9520 Mobile Phone and the antenna such that the General Safety Precautions outlined in Section 3 above are not violated during normal use by operators and bystanders. Be sure to route the cable between the 9520 Mobile Phone and the antenna in such a way that it does not pose an obstruction to the users. Take steps to insure that the antenna is mounted in such a way that it will not become detached from its supporting surface on the vehicle under normal conditions to which the vehicle will be subjected.

5. Operational Safety Warnings

- **WARNING** - For vehicles equipped with electronic anti-skid systems, see “ANTI-SKID BRAKING PRECAUTIONS” Publication, Motorola Number 68P81109E34.
- **WARNING** - For vehicles equipped with electronic ignition systems, check the service manual for warnings about the use of radiotelephone equipment in the vehicle.
- **WARNING** - It is mandatory that radiotelephone installations in vehicles, fueled by liquefied petroleum gas, conform to the following standard: National Fire Protection Association standard NFPA 58 applies to radio installations in vehicles fueled by liquefied petroleum (LP) gas with LP gas container in the trunk or other sealed-off space within the interior of the vehicles. This standard requires that:
 1. Any space containing radio equipment shall be isolated by a seal from the space in which the LP gas container and its fittings are located.
 2. Remote (outside) fitting connections shall be used.
 3. The container space shall be vented to the outside.
- Airbag Warning Statement

Installation of vehicle communication equipment should be performed by a professional installer/technician qualified in the requirements for such installations. An air bag’s size, shape and deployment area can vary by vehicle make, model and front compartment configuration (e.g., bench seat vs. bucket seats). Contact the vehicle manufacturer’s corporate headquarters, if necessary, for specific air bag information for the vehicle make, model and front compartment configuration involved in your communication equipment installation.

WARNING--VEHICLES EQUIPPED WITH AIR BAGS

An air bag inflates with great force. DO NOT place objects, including communication equipment, in the area over the air bag or in the air bag deployment area. If the communication equipment is improperly installed and the air bag inflates, this could result in serious bodily harm to vehicle occupants.

5. Antenna Installation Planning

The Satellite Series Mobile Antenna system consists of a mobile antenna and a coaxial cable that connects the 9520 Mobile Phone to the antenna . It is suitable for both vehicular and marine applications, and is designed to meet Iridium system performance requirements when installed per this manual. A typical vehicular application is depicted in the Diagram “A” below.

The Satellite Series Mobile Antenna is a “patch” type antenna contained inside a weatherproof housing, and is intended to be mounted on a horizontal conductive surface. For proper performance in the Iridium system, the antenna must have a clear view of the sky from the horizon on up and must be mounted horizontally. It’s location should be such that at least 40 cm (15.8 in.) of conductive horizontal surface extends in all directions from the center of the antenna, and the antenna should be located on the highest horizontal surface on the vehicle.

In almost all vehicles, these requirements are best satisfied by mounting the antenna at the center of the roof. Some vehicles have a large trunk lid that provides a suitable antenna location, but this location is only desirable if the roof fails to provide the adequate conductive surface needed

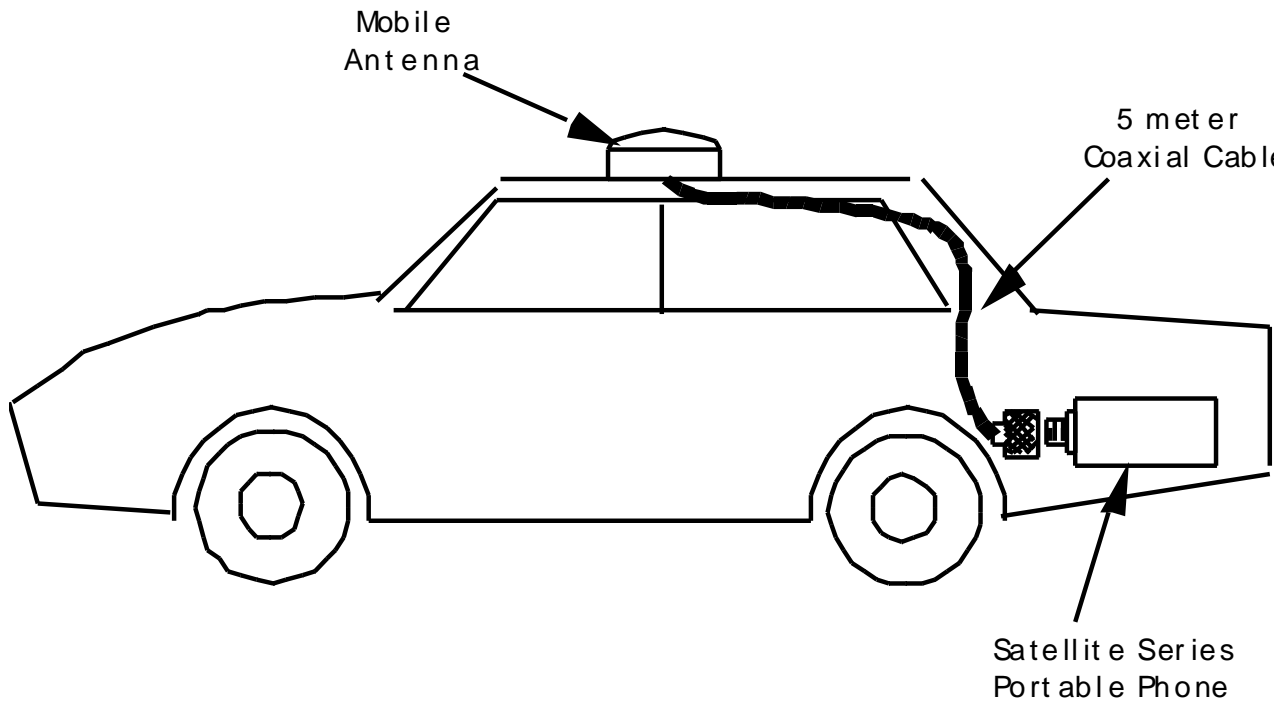


Diagram A--Typical Mobile Antenna Installation

As depicted in Diagram “A”, the connection between the Satellite Series Mobile Antenna and the 9520 Mobile Phone is accomplished using the attached coaxial cable system.

6. Antenna Installation—Magnetic Mounting Base

The Satellite Series Mobile antenna with the magnetic mounting base is designed to be mounted to a vehicle with a steel exterior surface. The location of the antenna should follow the recommendations from Section 5 above. To insure good adhesion of the magnet to the vehicle surface, be certain the surface is free of excessive foreign material, and is reasonably flat.

7. Antenna Installation—Fixed Mounting Base

The Satellite Series Mobile antenna with the fixed mounting base is designed to be mounted to a vehicle with a metallic exterior. The location of the antenna should follow the recommendations from Section 5 above. A single hole of 17mm (0.669 in.) diameter should be drilled on the chosen surface, and the cable routed through this hole from the outside. The attaching nut and lockwasher should be installed on the inside surface, and tightened to 6.75 to 7.88 N-m (60 to 70 in-lbs.).

8. Cable Installation

Cables should be routed and restrained so as to avoid vibration or movement under normal conditions which could result in damage to either the antenna, the 9520 Mobile, or the coaxial cable connections. Where the cables come in contact with vehicle structures, chafing or abrasion of the outer surface of the cable should be prevented. All cable bends must be done in such a manner as to avoid kinking the cable, and bend radii should be no less than 19mm (0.75 in.). All cable connections must be sealed appropriately to prevent moisture and corrosion damage due to weather exposure. The Type "TNC" connector on the cable should be tightened to a torque to 0.45 to 0.68 N-m (4 to 6 in-lbs.).