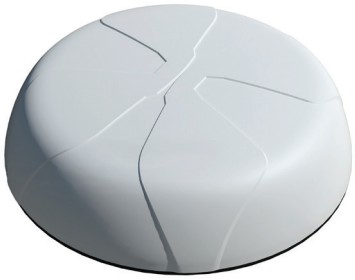
Installation Instruction – SW3-875 LGMQM4 Series

SW3-875 - Document Version 2.0

A. Introduction

The LGMQM4 antenna series comprises a range of vehicle antennas for new generation devices that require 4x4 MiMo function for 4G/LTE. The rugged, low profile housing incorporates four ultra-wideband cellular elements for frequency range 698-960MHz and 1710-3800MHz. Versions of the antenna can in addition provide 2x2, 3x3 or 4x4 MiMo function for dual band WiFi and also an active 26dB gain GNSS antenna module.



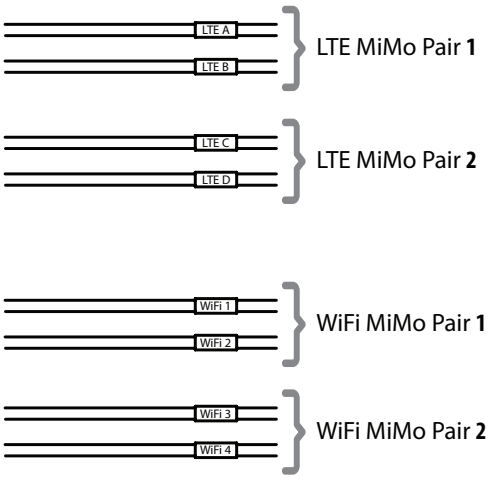
Part Number	4x4 MiMo Function (698-960/ 1710-3800MHz)	WiFi MiMo Function 2.4/4.9-6GHz	GNSS Function GPS/GLONASS/ Galilelo/BeiDou
LPMM4-7-38	✓	N/A	N/A
LGMM4-7-38	✓	N/A	✓
LGMDM4-7-38-24-58	✓	2x2	✓
LGMTM4-7-38-24-58	✓	3x3	✓
LGMQM4-7-38-24-58	✓	4x4	✓

Application Note

The cellular elements in this antenna provide the required isolation for 4x4 MiMo applications. The use with two separate 2x2 MiMo antenna systems is not recommended as there may not be not sufficient isolation. The antenna could be used where a wireless device has two radios (SIM cards), each with 2x2 MiMo connection, where only one radio will be active at any time (e.g. failover operation).

When used in failover application, ensure that the LTE element pairs are assigned as A&B and C&D.

Where the WiFi antennas are to be used for seperate 2x2 MiMo functions, the same approach to the correctly paired elements should be taken.



Electrical Safety Note

The LG version of this product contains an active GNSS antenna (part number SR8-HG26-04FJ). Rated voltage: 3-5VDC Rated current: 20mA maximum.

The supply to this device must be provided with overcurrent protection of 1A maximum.

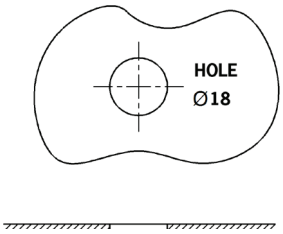
Installation Instruction – SW3-875
LGMQM4 Series

B. Mounting requirements and selecting location

If the antenna will be co-located with other antennas or roof mounted equipment, ensure a minimum 30cm (12") of clearance around the antenna in order to avoid any de-tuning or interference issues.
Select a mounting location – check that there is adequate under panel clearance and that there is no double skin panel or cross brace present. Measure carefully for central position if applicable.

Ground plane requirement: This antenna range does not require a ground plane in order to operate. If a ground plane is present it should be ≥500 x 500mm (20 x 20") in order to maintain insolation between the main cellular elements

Mask the panel area around the hole position to protect the paintwork and headliner. Drill a pilot hole, and then increase the hole diameter to 19mm (3/4"), ensuring that drill/cutter bit does not contact headliner. Clean area around the hole, carefully removing all swarf. Apply some petroleum jelly or paint around the hole to prevent corrosion.



C. Fitting the antenna

Note: The adhesive pad provides the sealing function of the antenna to mounting panel. The temperature range for optimum pad bonding process is 21°C (70°F) to 37°C (100°F) - it is recommended that the installation is not carried out in temperatures of less than 50°F (10°C).
Remove the protective backing from the underside of the antenna and feed the coaxial cables through the panel. Position the antenna over the hole ensuring correct orientation and stick the antenna to the panel by applying firm downward pressure.
Caution – A slotted/split nut is provided in order to simplify fitting it over the coaxial cables. When fitting the nut, it is important to ensure that the cables are held centrally whilst the nut is correctly started on the threads. The nut should fit freely by hand and only require a final tighten by spanner.
Assemble the nut and washer from underside and tighten to recommended torque of 5Nm.

D. Routing and terminating coaxial cable(s)

Coaxial cable is a critical component of the antenna system – Panorama offers a range of suitable cables.
Connect the extension coaxial cables to the antenna – it may be necessary to identify the correct LTE extension cables at the equipment end, depending on the installation configuration. (see the application note above)
Route the cables to the wireless device - avoid running them adjacent to any existing vehicle wiring or fouling any moving vehicle components and observe the minimum bend radius applicable to the cable type.
If the cables are not pre-terminated, then fit the correct coaxial connectors or adapters as required.

The cables must not be routed in front of any airbag devices – note that these may be located behind the windscreen pillar trim and the side of the roof head lining, depending on vehicle specification.

E. Commission and Test

Check the GNSS cable (if applicable):

- Check the GNSS cable with DC to measure high resistance.
- Connect the GNSS cable to the GNSS receiver and check for satellite acquisition.

Check the comms cables:

- Earth continuity: connector body to vehicle ground should measure <0.2Ω (where applicable).
- Connector body to centre pin should measure low resistance (elements are DC grounded).
- Carry out VSWR check - the VSWR on all feeds should meet the specification in product data sheet.
- Connect the Cellular/LTE and WiFi cables (if applicable) or secure unused pigtails.

F. Notices

CAUTION:
To comply with FCC RF Exposure requirements in section 1.1310 of the FCC Rules, this antenna must be installed to provide a separation distance of at least 20 cm from all persons to satisfy RF exposure compliance.

DO NOT:
- operate the transmitter when someone is within 20 cm of the antenna.
- operate the equipment in an explosive atmosphere.

European Waste Electronic Equipment Directive 2002/96/EC

Please ensure that your old Waste Electricals and Electronics are recycled do not throw them away into standard waste.

RF Safety Note

This antenna should be mounted in such a way that no person is within 20cm (8") of the antenna during use.

CE

Directive 2011/65/EU (RoHS 2)
This product is fully compliant with the RoHS 2 directive.

Directive 2014/53/EU Radio Equipment Directive (RED)
Harmonised Standards and References:
EN 301 489-1 (V2.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Electro Magnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements".
Referencing EN 61000-4-2:2009 – Electrostatic Discharge Immunity and EN 61000-4-3:2006 +A1:2008 +A2:2010 – Radiated RF Immunity

EN 300 440-1 V1.6.1 (2010-08) – Electromagnetic compatibility and radio spectrum matters (ERM); short range devices; radio equipment to be used in the 1GHz to 40GHz frequency range; Part 1: Technical characteristics and Test methods in accordance with EN 300 440-2 V1.4.1 (2010-8) - Electromagnetic compatibility and radio spectrum matters (ERM); short range devices; radio equipment to be used in the 1GHz to 40GHz frequency range

Low Voltage Directive: Directive 2014/35/EU (Electrical Equipment designed for use within certain voltage limits) of 26th February 2014.

EN60950-1: Safety of information technology equipment – according to test specification EN 60950-1:2006+A2:2013