



# MULTIBAND MIMO ANTENNA

## CELLULAR (2G/3G/4G/5G), WI-FI (2.4/5GHz), GNSS L1 L2 L5

T01891801

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POLOMARCONI offers a very wide range of wireless products. Our products can be tailored according to the customer's need.

TRANSPORT

### Electrical Specifications

#### CELLULAR (2G/3G/4G/5G/WiFi) BANDS

Frequency bands (MHz)	
Band 1	694 ÷ 960
Band 2	1350 ÷ 2700
Band 3	2700 ÷ 3300
Band 4	3300 ÷ 4900
Band 5	4900 ÷ 5975
Impedance ( $\Omega$ )	50
VSWR	$\leq 1.8:1$
Continuous Max. Composite Power (W)	30
Polarization	linear vertical
Peak gain (dBi)(*)	
Band 1	$\geq 2.0$
Band 2	$\geq 2.4$
Band 3	$\geq 4.1$
Band 4	$\geq 3.6$
Band 5	$\geq 5.1$
Isolation between ports (dB)	
Band 1	$\geq 13$
Band 2	$\geq 20$
Band 3	$\geq 20$
Band 4	$\geq 20$
Band 5	$\geq 20$
Operating Temp. Range ( $^{\circ}\text{C}$ )	$-40 \div +85$

#### SATELLITE NAVIGATION AND GEOLOCALIZATION BANDS

Frequency band (MHz)	
	1160 ÷ 1237
	1260 ÷ 1300
	1553 ÷ 1610
Impedance ( $\Omega$ )	50
VSWR	$\leq 2.0:1$
Polarization	Right Hand Circular Polarization (RHCP)
Gain (dBic) @ 90° of elevation	$36 \pm 2$ , @ $T_0=25^{\circ}\text{C}$ , $V_{DC}=5\text{V}$
Noise Figure (dB)	$\leq 2$ , @ $T_0=25^{\circ}\text{C}$ , $V_{DC}=5\text{V}$
Operating supply voltage ( $V_{DC}$ )	3 ÷ 12
Satellite navigation and geolocation supported systems	L1, L2 and L5
Operating Temp. Range ( $^{\circ}\text{C}$ )	$-40 \div +85$

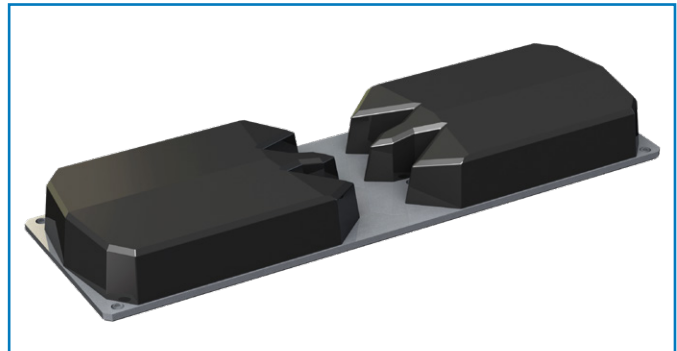
(\*) low loss RF coaxial cable pigtail Insertion Losses are included in the antenna peak gain evaluation.



Patent n° 1548873

Antenna for train with protective means against high voltages.

Patent has been used by SNCF and by the most important producers of trains.



#### DESCRIPTION

Railway multiband rooftop double multiple MIMO antenna for Cellular (2G/3G/4G/5G) and Wi-Fi (2.4/5GHz) bands with embedded GPS, Galileo and Glonass antenna with integrated LNA.

Supports multiple MIMO configurations.

12 radiators for Cellular (2G/3G/4G/5G/WiFi) bands,  
1 radiator for GNSS, L1, L2 and L5 bands.



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### Mechanical Specifications

#### Connectors

Cellular (2G/3G/4G/5G) and Wi-Fi bands  
Satellite navigation and geolocalization bands

12 x low loss RF coaxial cable pigtail with N f connector  
1 x low loss RF coaxial cable pigtail with TNC m connector

(cable length and connectors could be tailored on customer needs)

Cable labels	Cellular (2G/3G/4G/5G) and Wi-Fi bands Satellite navigation and geolocalization bands	12 x "CELLULAR" 1 x "GNSS"
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Dimensions (Height from installation surface x Width x Depth, mm)	100 x 300 x 960
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Weight (kg)	abt 19
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Colour	radome	black or grey
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Materials	base radome	aluminum with SURTEC 650 galvanic treatment high impact polycarbonate
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Mounting the antenna needs to be installed in longitudinal position with respect to the wind/driving direction

Ground plane requirement the above indicated VSWR and peak gain values are also valid for installation on non-metallic surface; no specific ground plane requirements.  
In order to guarantee the SECURITY OF THE STAFF in case of fall of the catenary and possible consequent contact of the latter one with the antenna, it is necessary that the antenna base is connected to the train or vehicle ground reference using proper ground connection (please, refer to UIC 533 for the description of the proper ground connection).

### Environmental Specifications

**ATMOSPHERIC and CLIMATIC CONDITIONS according to NF EN 50155 and NF EN 60068**

**MECHANICAL CONDITIONS according to NF EN 50155, NF EN 60068, NF EN 61373**

**EMC according to NF EN 50121-3-2**

**HIGH VOLTAGE PROTECTION according to NF EN 50153 and NF EN 50124-1**

**DC GROUNDING, HIGH CURRENT PROTECTION according to NF EN 50153, UIC 758, UIC 533, NF EN 50388 and NF EN 50123**

Short-circuit currents flow / time before breaking	70 kA / 5 ms – 40 kA / 100 ms (DC)
	31.5 kA / 10 ms – 15 kA / 100 ms (AC)

**RoHS 2011/65/EU compliant**

**FLAMMABILITY RATING according to NF EN 45545-2**

**IP rating IP69**

**Grounding, high voltage and high current protection:** Our antennas have passed the strict SNCF's tests, according to SNCF CT IG.TL GSM-R n° 2472, that approved our products as protected against lightning, high voltage and high current lines thanks to our patented DC and AC grounding system.

**Drilling mask:** please, refer to the relevant mounting instruction document.