HIRSCHMANN
A BELDEN BRAND

Antenna Guide

Wireless WAN (WWAN)
Antennas of the Hirschmann WWAN devices

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You can get the latest version of this manual on the Internet at the Hirschmann product site (www.hirschmann.com).

Hirschmann Automation and Control GmbH
Stuttgarter Str. 45-51
72654 Neckartenzlingen
Germany

Contents

Introduction

Hirschmann Automation and Control GmbH provides you with a continually expanding product portfolio relating to mobile communication technologies:

- GSM
- GNSS
- UMTS
- LTE

Our product portfolio contains the following components that are necessary to connect devices using a mobile communication network:

- active devices such as Industrial Cellular Routers (OWL devices) and Industrial WLAN Access Points (BAT 450-F)
- passive components such as cables and antennas

We continually improve our product portfolio and include mobile communication technology innovations in our portfolio. As a result, our portfolio is subject to short term changes. Check regularly for updates of our portfolio by visiting the Hirschmann product pages (www.hirschmann.com).

1 Current portfolio of Hirschmann WWAN devices

In the following you get an overview of the Hirschmann WWAN devices.

OWL 3G	OWL LTE	OWL LTE M12	BAT450-F
The Industrial Cellular Routers combine extended Layer 3 functions and extensive security mechanisms in one device. The graphical user interface supports various configurations. The software technology allows you to modify your OWL devices according to your requirements.			Industrial WLAN Access Points with different interfaces for connections using WLAN, WWAN (Wireless Wide Area Network, for example LTE) and Ethernet.
			

Table 1: Hirschmann WWAN devices: overview

For further information, see the "User Manual Installation" for the corresponding device.

2 Antenna selection criteria

☐ Take into account the national regulations that apply to the operation of antennas before considering any other criteria.
See “Legal regulations for operation external antennas” on page 8.

Note: Hirschmann recommends that you perform a formal on-site inspection and analysis for the installation of an LTE or UMTS device.

Various factors have an influence on the transmission and receiving power of a mobile communication signal like LTE and UMTS:

- Distance to a cell tower
- Geographical location: hills, forests or buildings can interfere with the propagation of electromagnetic waves due to reflection, deflection and absorption.

Antenna	Description	Permitted band of operation	For operation with			
			OWL 3G	OWL LTE	OWL LTE M12	BAT450-F
WWAN-A-I-41-S-O Order number: 942 042-105 	Omnidirectional Indoor	698 MHz ... 960 MHz 1710 MHz ... 2170 MHz 2300 MHz ... 2700 MHz	Yes	Yes	Yes	Yes[a]
GNSS-A-O-90-S-P Order number: 942 042-108 	Omnidirectional Indoor	1575 MHz ... 1610 MHz	Yes	Yes	Yes	Yes[b]

Table 2: Antennas and their suitability for operation with Hirschmann WWAN devices

a. Adapter (N plug to SMA socket) needed. Adapter available as an accessory (WWAN-N-O-N-S).
b. Adapter (N plug to SMA socket) needed. Adapter available as an accessory (WWAN-N-O-N-S).

3 External antennas

This chapter is structured as follows:

3.1 Legal regulations for operation external antennas

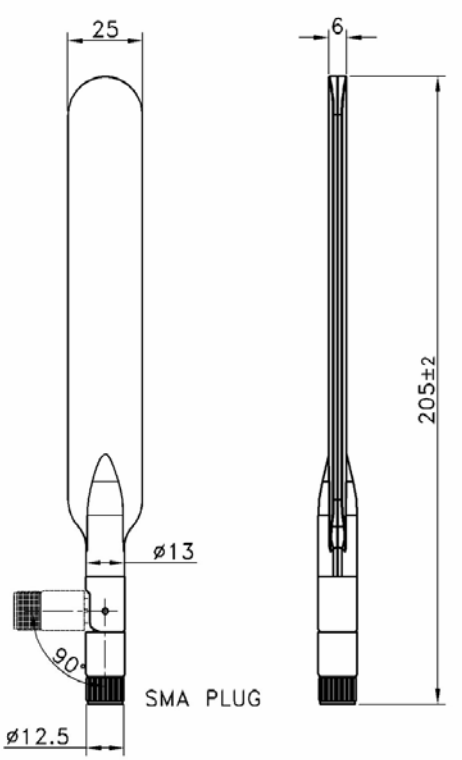
You find additional information on approvals, certifications, and self-declarations in the “User Manual Installation” of your device or devices.

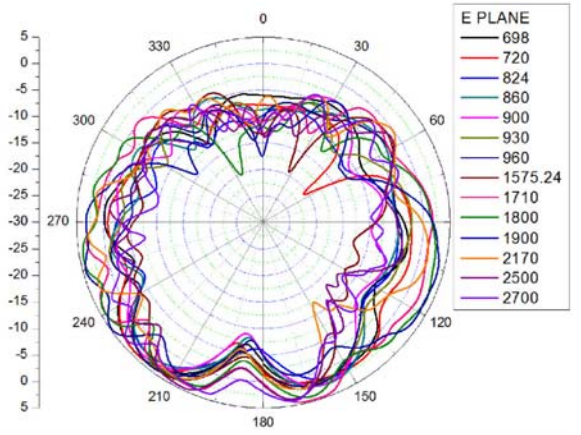
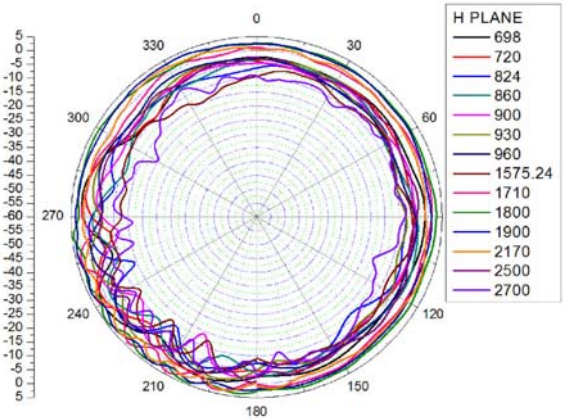
☐ Before operating the antennas, refer to the “Safety instructions” chapter in the “User Manual Installation” for your device or devices.

3.2 Omnidirectional antennas

WWAN-A-I-41-S-O

Order number: 942 042-105



Radiation pattern	
vertical	horizontal
	

Frequency range / Gain	698 MHz ... 960 MHz / 3 dBi
	1710 MHz ... 2170 MHz / 3 dBi
	2300 MHz ... 2700 MHz / 3 dBi
VSWR (Voltage Standing Wave Ratio)	≤ 2.0 On all bands including band edges.
Polarization	vertical
HPBW (half power bandwidth)	horizontal 360°
	vertical 102°
Downtilt	0°
Impedance	50 Ω

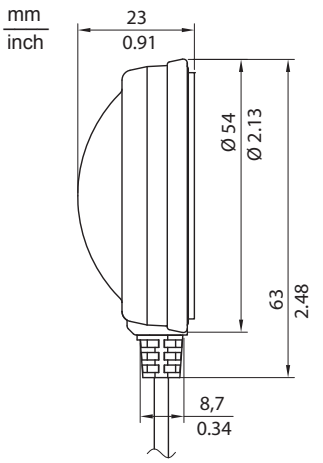
Table 3: Electrical specifications

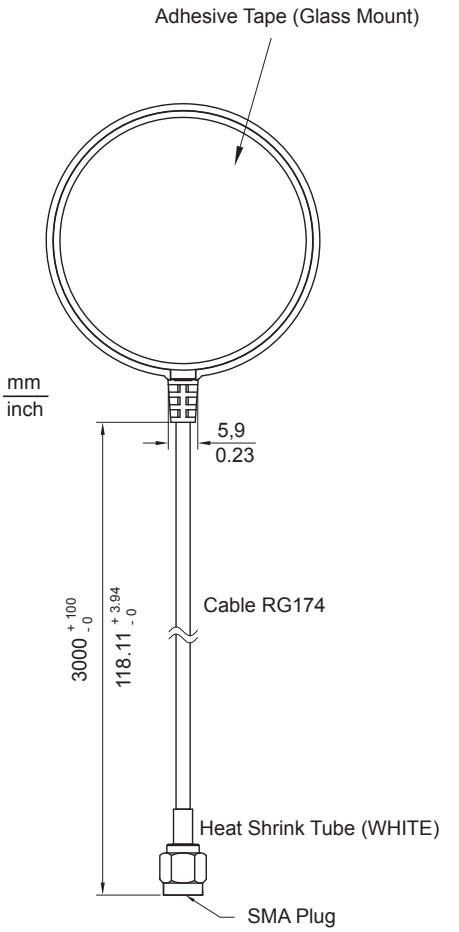
Connector	SMA plug
Temperature	−4 °F ... +149 °F (−20 °C ... +65 °C)
Radome color	Black
Radome material	ABS
Weight	0.057 lb (0.026 kg)
Protection class	IP65

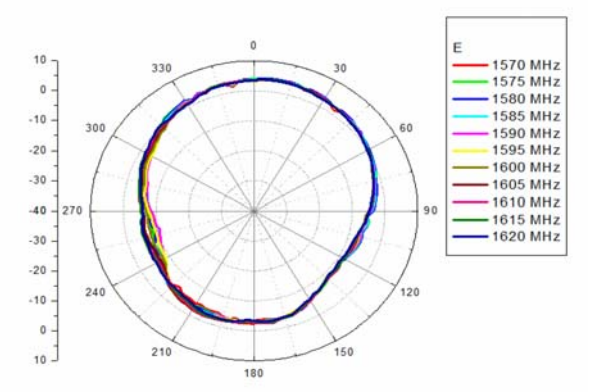
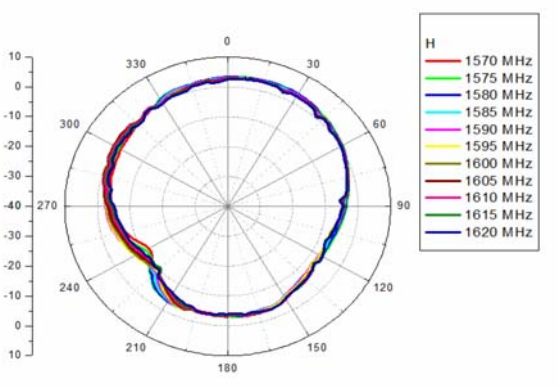
Table 4: Environmental and mechanical characteristics

GNSS-A-O-90-S-P

Order number: 942 042-108





Radiation pattern	
vertical	horizontal
	

Frequency range / Gain	1575 MHz ... 1610 MHz / 4 dBic min.[a]
LNA output VSWR (Voltage Standing Wave Ratio)	≤ 2.0 On all bands including band edges.
Polarization	RHCP (Right Handed Circular Polarization)
Impedance	50 Ω
LNA gain	32 dB ± 3 dB at 5.0 V DC typ.
Noise figure	1.5 dB typ.
Power supply	2.5 V DC ... 5.5 V DC
Power consumption	85 mW ± 10 mW typ. at 5.0 V DC
Attenuation	28 dB min. at DC ... 1522.5 MHz 30 dB min. at 1662.5 MHz ... 3000 MHz

Table 5: Electrical specifications

a. Test ground plane: 2.76 in × 2.76 in (70 mm × 70 mm)

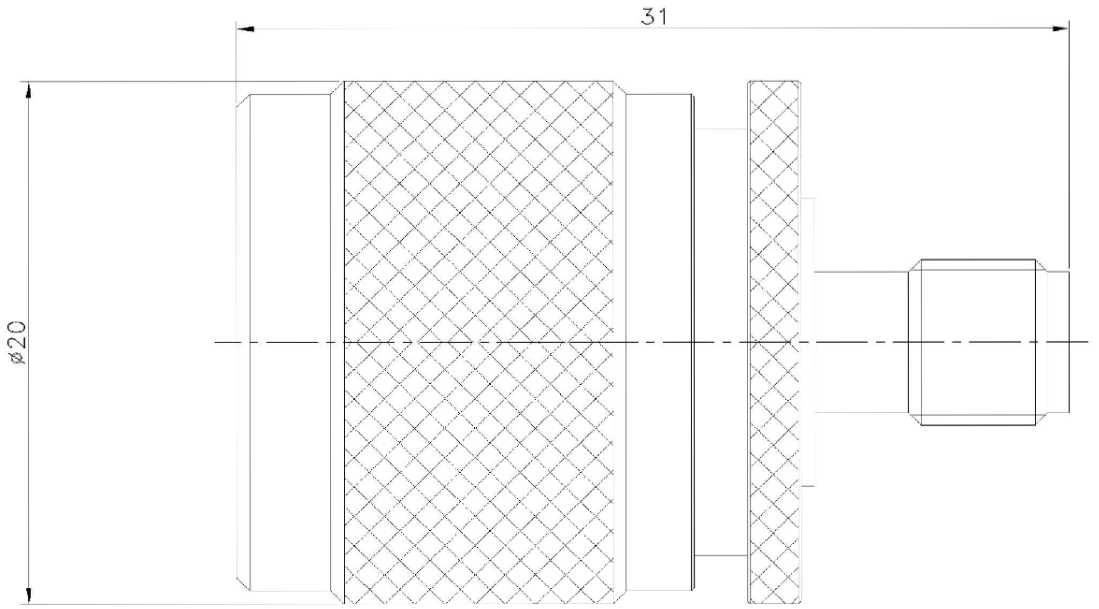
Connector	SMA plug
Temperature	−40 ºF ... +185 ºF (−40 ºC ... +85 ºC)
Radome color	Black
Radome material	PC
Weight	0.17 lb (0.076 kg)
Protection class	IP65

Table 6: Environmental and mechanical characteristics

4 Accessories

WWAN-N-O-N-S (N adapter)

Order number: 942 042-106



Frequency range	0 GHz ... 6 GHz
Impedance	50 Ω
VSWR (Voltage Standing Wave Ratio)	≤ 1.5

Table 7: Electrical specifications

Connector	N plug to SMA socket
Operating temperature	−40 ºF ... +185 ºF (−40 ºC ... +85 ºC)
Weight	0.07 lb (0,032 kg)
Protection class	IP65

Table 8: Environmental and mechanical characteristics

A Further support

Technical questions

For technical questions, please contact any Hirschmann dealer in your area or Hirschmann directly.

You find the addresses of our partners on the Internet at http://www.hirschmann.com.

A list of local telephone numbers and email addresses for technical support directly from Hirschmann is available at https://hirschmann-support.belden.eu.com.

This site also includes a free of charge knowledge base and a software download section.

Hirschmann Competence Center

The Hirschmann Competence Center is ahead of its competitors on three counts with its complete range of innovative services:

- Consulting incorporates comprehensive technical advice, from system evaluation through network planning to project planning.
- Training offers you an introduction to the basics, product briefing and user training with certification.
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- Support ranges from the first installation through the standby service to maintenance concepts.

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