

# TRANSPARENT FILM ANTENNA

## ADDITIONAL INSTALLATION SPACE IN THE VEHICLE

### TRANSPARENCY OF MORE THAN 80%

The Conventional Film Antennas from Hirschmann Car Communication are typically found in concealed areas throughout the vehicle. These areas must assure that the radio waves can reach the Film Antenna without disruption. Therefore, installation spaces behind plastic parts such as spoilers, exterior mirrors or car bumpers are preferred.

The rear window is another popular place for antennas as they can almost invisibly be integrated into the window (integrated antenna systems). However, there are technical limitations with regard to the harness as soon as higher-frequency services such as mobile communication come into play.

The **Transparent Film Antennas** can open up more installation space for the increasing number of vehicle antennas. The antennas can be attached to fixed side windows in the front or the rear, e.g. typical small triangular windows. A fine-meshed design of thin silver lines on the film makes the antenna almost invisible. Hirschmann Car Communication developed a special screen printing process which allows reliable mass production (line width < 200  $\mu\text{m}$ ). The Transparent Film Antennas perform just as well as a full-surface antenna.

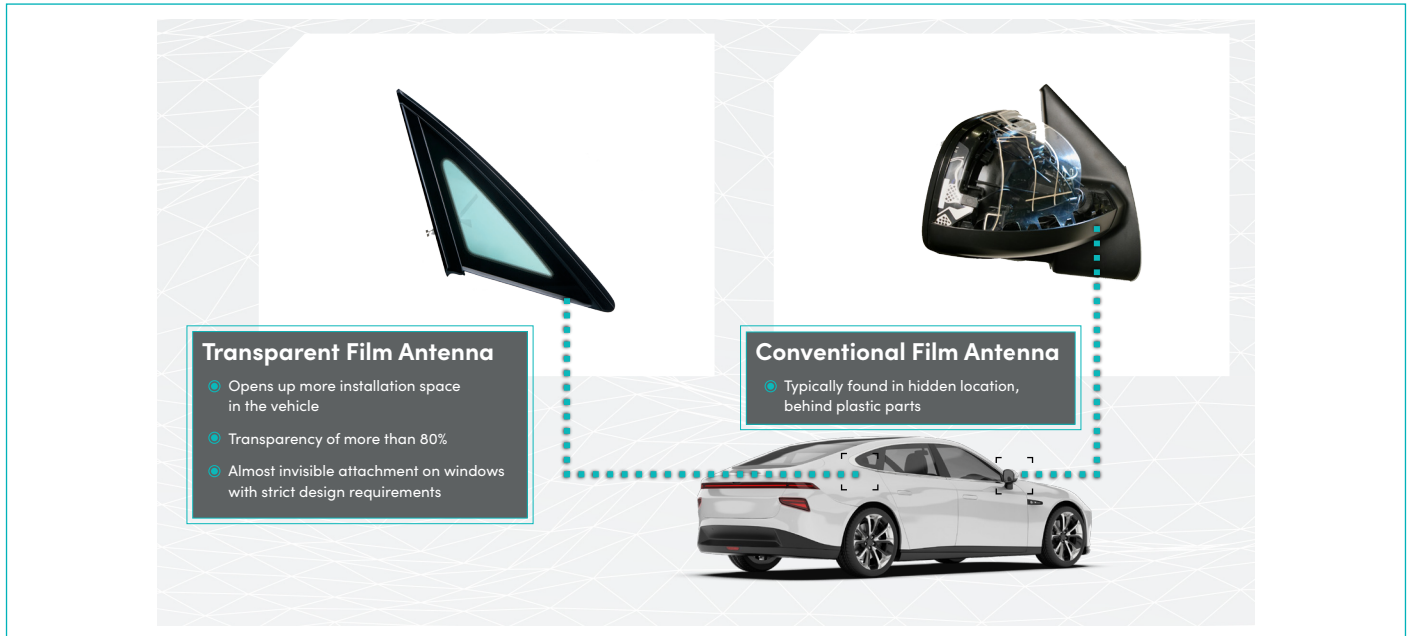
They can be used in a frequency range up to 6 GHz. Thanks to their form factor, they are particularly suited to mobile communication and WLAN services.



### PRODUCT FEATURES

- Technology can be used for antennas in the frequency range up to 6 GHz (e.g. for 5G, WLAN, DAB, DVB-T, ...)
- PET substrate film, thickness between 125  $\mu\text{m}$  and 175  $\mu\text{m}$
- Line width < 200  $\mu\text{m}$ ;
  - less silver consumption
  - transparent effect
- Including feeding line with connector
- Application example of an 5G antenna (607 MHz – 5.69 GHz): the film requires an area of around 50  $\text{cm}^2$ ; free space of around 300  $\text{cm}^2$  is required for its installation
- Optimized HF performance

## COMPARISON OF TRANSPARENT AND CONVENTIONAL FILM ANTENNA



## TRANSPARENT FILM ANTENNA ON A TRIANGULAR WINDOW IN THE VEHICLE – INTERIOR AND EXTERIOR VIEW – ALLOWS ALMOST INVISIBLE ATTACHMENT



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