

User Manual of R-HFA GEN2

1. Concept

R-HFA GEN2 is a kick-sensor based on AWRL1422 radar chip installed behind the rear bumper of a car, used for hands-free access to the trunk.

With an automatic tailgate operation, the trunk can be opened or closed with no-touch activation. The Radar sensor detects a forward-directed foot motion in the central rear area and the trunk lid can be opened or closed automatically.

1.1. Installation and maintenance

The product is factory fitted in the bumper of the vehicles. It is not possible to buy this product separately. The status of the product can be read via diagnostic connections using special workshop tools. In addition, the Central Electronic Module in the vehicle monitors the communication (LIN bus) from the product and in case of missing or invalid communication, it is alerted and will display a warning to the driver. Maintenance and replacement of the product can only be performed by certified workshops.

1.2. Performing the foot movement

1. Stand in the middle behind the vehicle at approx. one arm's length away from the rear of the vehicle.
2. Wave a foot under the vehicle in the direction of travel and immediately

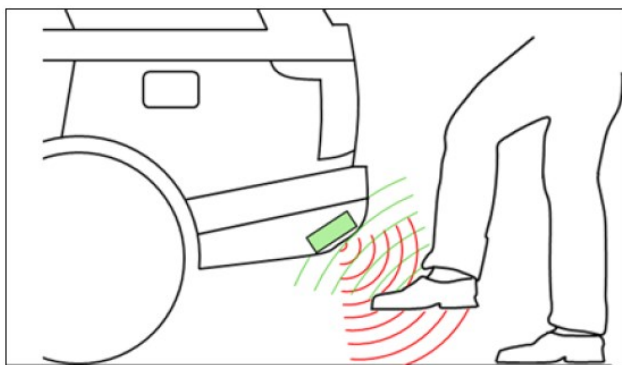


Figure 1 Performing the foot movement

Minimum safety distance for the device and the antenna is 20 cm.

2. Operating modes

R-HFA GEN2 has different operating modes, shown on figure 2.

Mode	LIN	Radar
Sleep/Off	OFF	OFF
Standby	ON	OFF
Gesture Detect	ON	ON (25ms Sampling)

Power mode RadarHfA (AWRL1422)

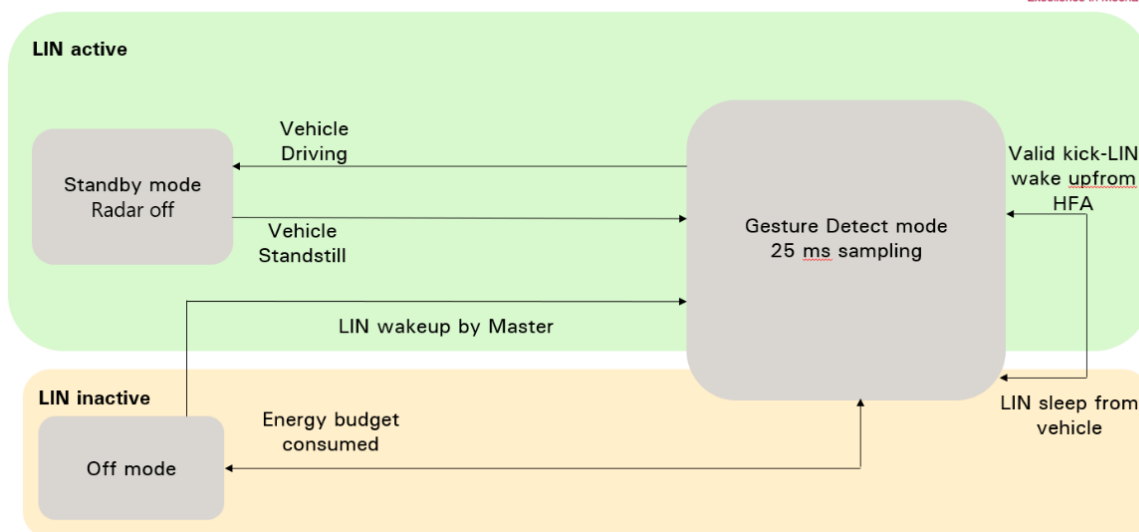


Figure 2 Operating modes

3. Device characteristics

Voltage	
Min	8,0V
Mean	12,0V
Max	16,0V
Temperature	
Min	-40°C
Max	+ 105°C
Communication Bus	LIN (2.x)
Radar	
Min Frequency	77,005 GHz
Max Frequency	78,995 GHz
Modulation (32 Chirps per radar cycle)	Chirp Sequence FMCW
Sampling rate	5 MSps
Chirp Slope	111.79f
Peak transmit power at boresight (EIRP)	+ 13.9 dBm

4. Device photographs

Top side of the device is given on Image 1.



Image 1 Top side of R-HFA GEN2 with cover

Bottom side of the device is given on Images 2-5.

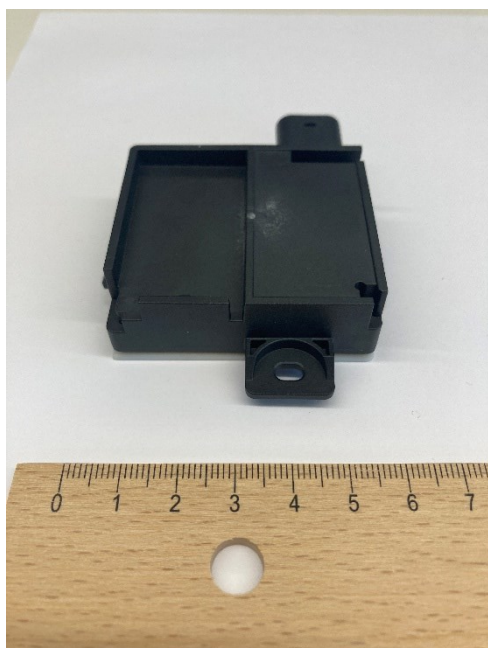


Image 2 Side A

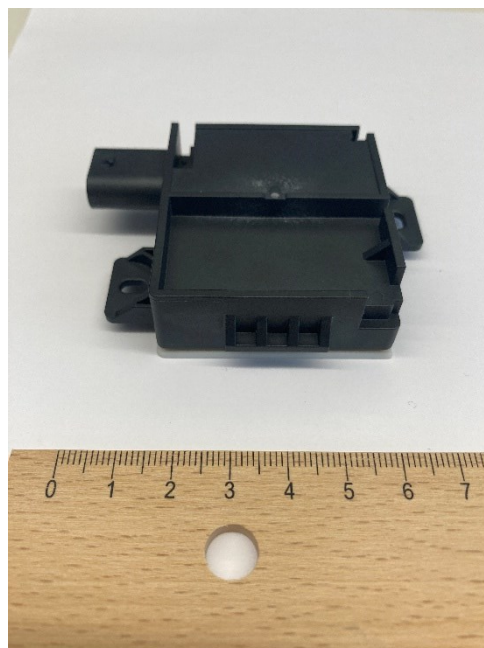


Image 3 Side B



Image 4 Side C

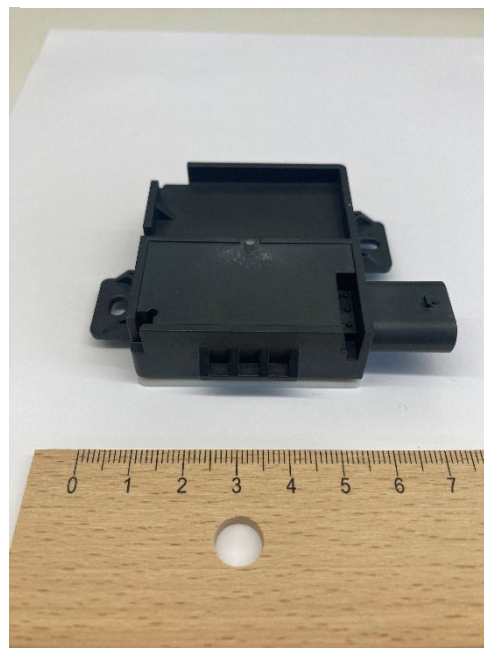


Image 5 Side D

5. Japan

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Page:4/6

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Japanese Radio Law (電波法) compliance:

The device R-HFA GEN2 is granted pursuant to the Japanese Radio Law (電波法). This device should not be modified (otherwise the granted designation number will become invalid).



R 202-JCE148

6. Canada

NOTICE:

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This equipment complies with ISSED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiators and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Cet équipement est conforme aux limites d'exposition aux rayonnements ISSED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps. Ce transmetteur ne doit pas être placé au même endroit ou utilisé simultanément avec un autre transmetteur ou antenne.

7. United States of America

NOTICE:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference
2. This device must accept any interference received, including interference that may cause undesired operation.

Radio frequency radiation exposure Information: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Changes or modifications made to this equipment not expressly approved by Brose Fahrzeugteile SE & Co. Kommanditgesellschaft, Bamberg may void the FCC authorization to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Regards,

Brose Fahrzeugteile
SE & Co. Kommanditgesellschaft, Bamberg