PRESSE-INFORMATION
PRESS RELEASE

Automated driving functions: ZF captures 4D Full-Range Radar contract with Chinese OEM

- **ZF will produce Full-Range Radar for SAIC in China**
- **Four-dimensional, high-resolution radar enables advanced safety and automated driving functions**
- **192 channels – 16 times more resolution than typical automotive radar – for very detailed scene and object detection within a range of 350 meters.**

Friedrichshafen, Germany – ZF has received a production contract for its Full-Range Radar technology from China's SAIC Motor Corporation. The ZF Full-Range Radar perceives vehicle surroundings in four dimensions, including height, making it similar in capability to optical sensors such as cameras and LiDAR. In combination with these technologies, high-resolution radar can help provide the necessary safety and reliability for semi to highly automated driving including level 4.

Full-Range Radar technology offers high resolution for 4 dimensions: range, velocity, azimuth (horizontal) *and* elevation. The addition of the elevation angle helps generate an enhanced 3D image of the traffic situation, enriched with speed information, resulting in high-resolution environment sensing. This type of data helps a vehicle on a highway to detect the end of a traffic jam under a bridge at an early stage and brake accordingly. The Full-Range Radar also provides information that helps detect the edge of the road and whether there are free passing areas at the side of the road.

Full-Range Radar has considerably higher resolution than mid-range radars, which typically only have 12 channels (three transmitters, four receivers). In ZF's Full-Range Radar, the number of channels is 16 times greater: Four Monolithic Microwave Integrated Circuit (MMIC) chips are combined resulting in a total of 192 channels available.

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"ZF's Full-Range Radar represents a significant step forward in sensing technologies," explains Christophe Marnat, Executive Vice President, for ZF's Electronics and ADAS division. "With its high levels of object and scene recognition and long-range detection, the Full Range Radar is a key to help meet the high perception requirements of L3 and L4 AD at a competitive price level. This sensor is also capable of significantly increasing the potential performance of advanced safety and L2+ driving applications."

The Full Range Radar's high information density enables very detailed object recognition. For example, it receives around 10 data points from a pedestrian instead of just one or two compared to typical automotive radars, allowing more precise information as radars register the speed of the measured object for each measuring point. ZF's Full-Range Radar can even resolve the movement of individual limbs – allowing the sensor to potentially recognize in which direction the pedestrian is walking.

Equipped for the future with the ZF Full-Range Radar

Full-Range Radar is an important addition to ZF's comprehensive sensor set for automated driving functions. With an aperture angle of +/-60 degrees, it is designed for a wide range of situations: from slow city traffic to driving on country roads and highways. At 350 meters, the range is well above the current state-of-the-art. It utilizes the 77 gigahertz band and the Fast Ramp Frequency Modulated Continuous Wave (FMCW) modulation shared with other radar sensors from ZF.

ZF will begin supplying Full-Range Radar to SAIC in 2022.

Captions:
Image 1 (01_ZF_Christophe Marnat):
Christophe Marnat is Executive Vice President, ZF Electronics and ADAS division,
Image 2 (02_ZF_SAIC):

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From 2022 on: ZF will begin supplying Full-Range radar to SAIC in their R-Series models.

Image 3 (03_ZF_FRR_SensorPower):
Over 190 channels: ZF´s Full-Range Radar provides 16 times more resolution than typical automotive radar and can be combined with ZF's full suite of camera and LiDAR technologies as shown for highly accurate perception of the environment.

Images: ZF

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About ZF
ZF is a global technology company suppling systems for passenger cars, commercial vehicles and industrial technology, enabling the next generation of mobility. ZF allows vehicles to see, think and act. In the four technology domains of Vehicle Motion Control, Integrated Safety, Automated Driving, and Electric Mobility, ZF offers comprehensive product and software solutions for established vehicle manufacturers and newly emerging transport and mobility service providers. ZF electrifies a wide range of vehicle types. With its products, the company contributes to reducing emissions, protecting the climate and enhancing safe mobility.

In fiscal year 2020 ZF reported sales of €32.6 billion. The company employs more than 150,000 associates at approximately 270 locations in 42 countries.

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