Global and China Automotive Radar Industry Report, 2015-2020

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STUDY GOAL AND OBJECTIVES

This report provides the industry executives with strategically significant competitor information, analysis, insight and projection on the competitive pattern and key companies in the industry, crucial to the development and implementation of effective business, marketing and R&D programs.

REPORT OBJECTIVES

- To establish a comprehensive, factual, annually updated and cost-effective information base on market size, competition patterns, market segments, goals and strategies of the leading players in the market, reviews and forecasts.
- To assist potential market entrants in evaluating prospective acquisition and joint venture candidates.
- To complement the organizations' internal competitor information gathering efforts with strategic analysis, data interpretation and insight.
- To suggest for concerned investors in line with the current development of this industry as well as the development tendency.
- To help company to succeed in a competitive market, and

METHODOLOGY

Both primary and secondary research methodologies were used in preparing this study. Initially, a comprehensive and exhaustive search of the literature on this industry was conducted. These sources included related books and journals, trade literature, marketing literature, other product/promotional literature, annual reports, security analyst reports, and other publications. Subsequently, telephone interviews or email correspondence was conducted with marketing executives etc. Other sources included related magazines, academics, and consulting companies.

INFORMATION SOURCES

The primary information sources include Company Reports, and National Bureau of Statistics of China etc.

Abstract

Global and China Automotive Radar Industry Report, 2015-2020 contains the followings:
1 Status Quo of ADAS in China
2 Automotive Radar Market and Industry
3 Automotive Millimeter-wave Radar Application Trends
4 Automotive Lidar Application Trends
5 9 Automotive Radar Companies
6 ADAS Development Trends

Automotive radars fall into ultrasonic radar, millimeter-wave radar and lidar. The detection distance of ultrasonic radar is usually not more than 5 meters, mainly suitable for parking assistance.

Compared with cameras and lidars, the more popular millimeter-wave radars are the only sensors not subject to weather and light. Millimeter-wave radars outperform cameras in terms of velocity and distance detection overwhelmingly, while cameras are better than millimeter-wave radars at object classification and recognition, but inferior to lidars. In 2015, the global market size of automotive millimeter-wave radars hit about USD1.936 billion; it is expected to reach USD2.46 billion in 2016 and USD5.12 billion in 2020, with the most remarkable growth potentials in the field of electronic products.

Lidar enjoys absolute superiority in object tracking, and also perform well in detection accuracy. In future, both of millimeter-wave radar and Lidar will surpass cameras and embrace broader development potentials, and cameras can be only used as the assistant to radars.

At present, millimeter-wave radars consist of 24GHz and 77GHz types, which are subdivided into narrowband (NB) and ultra-wideband (UWB); according to detection range, there are SRR, MRR and LRR. 24GHz radars are mainly applied to blind spot detection (BSD), lane change assist (LCA), traffic jam assist, rear pre-crash system (RPS) and the like. 77GHz radars are primarily used for adaptive cruise control (ACC), autonomous emergency braking (AEB) and so forth.

Currently, Stop & Go ACC mostly uses three radars. A 77GHz LRR in the middle of a car detects the distance of 150-250 meters with the angle of about 10°; both sides of the car have one 24GHz MRR with the angle of about 30° and the detection distance of 50-70 meters.

ACC and AEB are the most practical ADAS functions, and will become the standard configuration of medium and high-end cars in the future. So, 77GHz radars have been developing quickly with the estimated market size of USD1.036 billion in 2015 and USD2.39 billion in 2018.

Millimeter-wave radar companies are vigorously developing the next-generation 79GHz radars whose detection accuracy is 2- to 4-fold of the current 77GHz radars. 79GHz radars are capable of detecting pedestrians and bicycles, showing a huge space for development; generally, 79GHz can detect objects within 70 meters and may become the mainstream of MRR, or erode some market shares of 24GHz radars in future. 79GHz radars are expected to be available in the market in 2018. Japan's Fujitsu Ten, Panasonic and Denso are the tycoons in this area.

Lidar basically offers simultaneous 3D digital model for autonomous driving. Lidar comprises two categories, namely fixed beam lidar (unit price: not higher than USD60) and scanning beam lidar (unit price: higher than USD10,000). In the early twenty-first century, a millimeter-wave radar was priced at around USD10,000. With powerful strength in the laser field, Japanese vendors successively developed fixed beam lidars to replace millimeter-wave radars. Yet as the price of MMW radar plummeted, the fixed beam lidar fade out in the market. But recently, fixed beam lidars have bounced back, especially Continental's MFL featured with a low price and a small size substitutes millimeter-wave radars partly again. Nevertheless, the detection distance of only 10-12 meters means the potential for expansion.

The expensive laser scanner is most commonly used for VelodyneHDL-64E at the top of Google autonomous-driving vehicles. The high costs are mainly reflected in optical and mechanical parts, particularly optical parts must be made by hand in a long time and unable to be mass-produced. Furthermore, laser diode (Ld), photodiode detector and FPGA are costly as well. The most effective way to reduce costs is to replace mechanical and optical parts with MEMS Micro Mirror. With matured technology, MEMS Micro Mirror has realized commercialization in the field of projectors, but it needs to be improved for lidars. The current defect lies in the angle and a low reflectivity in the case of close distance. For instance, Quanergy's lidars only fetch the reflectivity of 10% in 100-meter distance, much lower than 80-90% of traditional lidars. A traditional 8-line laser scanner costs about USD3,000-4,000, while Quanergy who uses 8-line scanning claims that mass production can cut down the cost to USD100, which is possible.

The ultrasonic radar field is dominated by Bosch, Panasonic and Valeo, with inadequate market competition and stable prices. Hella acts as the champion in the 24GHz radar field. TRW has enhanced R & D after being merged by ZF. Continental holds large shares in Stop & Go ACC. As for the 77GHz radar realm, Bosch takes the first place by the farthest LRR3 detection range of 250 meters, but Bosch merely targets Audi and Volkswagen; while Continental Automotive serves a number of customers with diversified product lines. In the Japanese market, Fujitsu Ten ranks first and Denso second.

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