ADAS and Autonomous Driving Industry Chain Report 2018 (III)– Automotive Radar

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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.

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Abstract

ADAS and Autonomous Driving Industry Chain Report 2018 – Automotive Radar at 284 pages in length highlights the followings:
Introduction to automotive radar
Automotive radar market size and forecast
Application trends of automotive MMW radar
Application trends of automotive LiDAR
Global automotive radar companies
Chinese automotive radar companies

Automotive radars mainly fall into MMW radar, LiDAR and ultrasonic radar. According to the report, China's MMW radar market size reached approximately RMB1.34 billion in 2017, a figure projected to hit RMB9.67 billion in 2021, with an AAGR of about 70.6% between 2016 and 2021.

LiDAR has been a favorite of capital market since 2017. But as things now stand, MMW radar is the fastest-growing market. The report suggests in the first five months of 2018, installment of OEM MMW radars for passenger cars in China reached as many as 1.406 million units, a year-on-year spurt of 112.7%.

By comparing the three types of sensors in the chart below, MMW radar outperforms LiDAR synthetically at the present stage.

As concerns MMW radar market segments, 24GHz radar still prevails in shipment. In the early days, 24GHz radar was often used for short and mid-range detection, while 77GHz radar found its way into long-range detection. As the technology gets improved with lower cost and better performance, there is a tendency for 77GHz radar to replace 24GHz radar. The year 2017 saw shipments of 77GHz MMW radars for LCA/RCTA soar.

In terms of total volume, 24GHz side-looking short range radar (SRR) is now still the mainstream, for example, some OEMs like Mercedes-Benz and PSA which generally use forward-looking long range radars (LRR) also employ 24GHz radars, leaving such a type of radar with a rosy prospect in the short run; additionally, most new products of world-renowned suppliers including Bosch and Continental will have a frequency band of 76-77GHz. So it is expected that 77GHz radar will forereach 24GHz radar in market size around 2020.

Traditional tier1 suppliers such as Bosch, Continental and Hella still rule the roost in MMW radar market, taking the lion's share of the market. Chinese MMW radar vendors foray into the OEM market in efforts to cooperate with home automakers though starting from the aftermarket.

Muniu Tech has received orders for tens of thousands of its radars from aftermarket. WHST Co., Ltd. has acquired OEM orders for its 24Ghz rear side radars from a Chinese auto brand -- Changfeng Leopaard. It is expected that at least ten new models in 2019 will utilize the MMW radars from WHST Co., Ltd.

LiDAR has been an innovation hotspot in autonomous driving area at home and abroad. Traditional auto giants and startups without exception invest more in LiDAR and stage mergers & acquisitions. As for technology, mechanical multi-beam LiDAR has been applied massively in self-driving prototype cars, but solid-state LiDAR is more applicable to mass production if used in automobiles, being a future development trend of radar.

In current stage, LiDAR still faces some challenges, for instance, uncertain technology roadmaps, high price and hard to meet automotive requirements. Meanwhile, the maturing technology, next-generation high precision MMW radar for imaging, will be a competitor of LiDAR. LiDAR technology is and yet developing by leaps and bounds, increasingly incentivizing LiDAR suppliers. In 2018, Quanergy would produce LiDARs in its partner, Sensata's plant in Changzhou City, Jiangsu Province, China, with capacity initially reaching estimated 10 million units and expectedly climbing to hundreds of millions of units to meet the rising market demand, said Louay Eldada, a co-founder and the CEO of Quanergy at the beginning of this year.

Apart from Quanergy, some Chinese LiDAR players like RoboSense, Surestar, Hesai and LeiShen Intelligent System also have constructed their own factories and are expanding capacity. LiDAR market is predicted to boom in 2021.

MMW radar and LiDAR each have merits and demerits in size, price, applied scene, imaging, ranging, positioning and object detection. Both of them fall short of requirements self-driving cars demand in perception of external environment. Fusion of radar and camera is a solution to acquisition of more accurate environment data and redundancy increase in a bid to secure ADAS and automated driving system's stability and safety in full measure.

Rating: H = High, M=Medium, L = Low	Camera	Radar	LiDAR
Object Detection	M	H	H
Classification	H	M	L
Close-Proximity Detection	M	H	L
Speed Detection	L	H	M
Lane Detection	H	L	L
Traffic Sign Recognition	H	L	L
Range	H (200m)	H (250m)	M (120m)
Work in Rain, Fog, Snow	L	H	M
Work in Low Light	L	H	H
Work in Bright Light	M	H	H
Size	Small	Small	Medium
Cost	$	$$	$$$$

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