



**Global and China Connectivity RF Industry  
Report, 2014-2015**

**Jun. 2015**

## 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

The report covers the followings:

- 1, Introduction to Connectivity RF
- 2, Analysis on Connectivity RF Market
- 3, Analysis on Connectivity RF Industry
4. Research on 20 Connectivity RF Companies

A Connectivity RF system is a radio frequency system consisting of electronic devices connected to the network, mainly applied to mobile phones, tablet PCs, laptops and WLAN / PAN now, and will find wide application in IoT (Internet of Things).

The Connectivity RF system market size reached approximately USD7.516 billion in 2014, showing a substantial rise of 23.4% over 2013. In 2015, the market size is expected to go up by 34.1% year on year to USD10.08 billion. It will maintain the growth rate of 17.3% by 2016, becoming the fastest growing field among all electronic components.

The rapid growth of the Connectivity RF system market is primarily prompted by 4G mobile phones. A standard 2G mobile phone requires a Connectivity RF system costing only about USD0.55, a 3G phone USD2.75, while a 4G phone up to USD8 and a global standard 4G phone USD13 or above. The penetration rate of 4G phones in China is the highest in the world. China's 4G mobile phone shipment only accounted for 2% of the total mobile phone shipment in December 2013, but the proportion jumped to 71% in December 2014 and more than 80% in March 2015.

## Ranking of Global Connectivity RF Companies by Revenue, 2011-2015

(USD mln)

	Region	2011	2012	2013	2014	2015	Category
Murata (excluding communication modules)	Japan	220	270	350	520	710	Filters
TDK	Japan	200	250	320	490	680	Filters
IQE	UK	94	110	173	138	158	Epilayer
VPEC	Taiwan	73	101	72	68	91	Epilayer
AXT	USA	104	88	85	84	90	Substrate
Win Semiconductor	Taiwan	294	365	352	326	504	Foundry
AWSC	Taiwan	56	65	36	88	267	Foundry
TRIQUINT	USA	896	829	893	1,025		IDM
Avago Technologies	USA	888	1,126	1,210	1,708	2,480	IDM
Anadigics	USA	153	113	134	86	80	IDM
RFMD	USA	902	810	1,172	1,332		IDM
SKYWORKS	USA	1,477	1,819	1,820	2,592	3,188	IDM
Qorvo	USA					2,510	

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In 2015, a wave of 4G phone replacement will speed up worldwide, which will stimulate the Connectivity RF system market. The rapid growth of 802.11ac is another driving engine. Less than 10% of WiFi supported 802.11ac in 2014, while the proportion is expected to be 80% in 2018. The Connectivity RF cost of 802.11ac is much higher than that of the current mainstream 802.11a/b/g. The next development direction of LTE will be carrier aggregation (CA). The shipment of mobile phones supporting carrier aggregation only amounted to 108 million units in 2014, and is expected to reach 1.185 billion units by 2018. Carrier aggregation makes Connectivity RF more complex and costly.

The core of a Connectivity RF system includes PA and filters (the fastest growing segment). LTE-FDD's Band 8, 13 and 26 need TC-SAW, Band 4, 5, 12, 17, 20, 27 and 28 require SAW, Band 2, 3, 7, 23, 25 and 30 demand BAW, while LTE-TDD's Band 38, 40, 41, 42 and 43 use SAW.

In the highly concentrated Connectivity RF system industry, the top five companies enjoy over 97% market share, which is hard for small firms to survive. One reason is that PA requires unique GaAs wafers instead of the traditional Si wafers; the other reason rests with the high production threshold in the filter field. All laboratories can accomplish trial production, but only a handful of companies (mainly Japanese companies) are capable to conduct mass production with high consistency and quality. Major SAW companies embrace Murata, TDK and Fujitsu. Panasonic and Qorvo target TC-SAW. Avago, Qorvo, Taiyoyuden and TDK focus on BAW.

Qorvo is a new company after the merger of RFMD and Triquint. Taiwanese companies witness the fastest growth in 2015. For example, Skyworks and Avago outsource considerable products to their foundries Win and AWSC respectively, especially Avago lavishes huge capital on acquisitions to significantly reduce manufacturing costs, so that AWSC's revenue will ascend by at least 200% in 2015.

### **1 Overview of Connectivity RF**

- 1.1 Brief Introduction to Connectivity RF
- 1.2 Brief Introduction to GaAs
- 1.3 Comparison between GaAs, GaN and SiGe

### **2 Connectivity RF Industry**

- 2.1 Connectivity RF Market Size
- 2.2 Connectivity RF Industry Chain
- 2.3 Analysis of RF System of Latest Handsets
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- 2.5 Mobile Phone Antenna Switch
- 2.6 Ranking of Connectivity RF Companies

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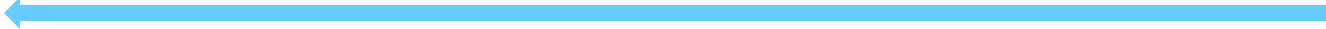
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