POWER LINE COMMUNICATION (PLC) SYSTEMS MARKET

(By Technologies-Narrowband & Broadband, Applications-Smart Grid, In-Door Networking, Long Haul & M2M, Verticals-Industrial, Residential & Commercial & Geography)

-GLOBAL ASSESSMENT & FORECAST-(2013-2018)

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Report Description

Key Take-Aways

- Global Power Line Communication (PLC) Systems market statistics with detailed classifications and splits by revenue and volume
- The report covers the expected penetration rate of PLC System in each application, vertical, and geography, which gives an in-depth insight of the extent to which the particular application will be successful.
- The key trends related to the product technology, prices, and the applications that shape and influence the PLC systems market are mentioned in the report.
- Analysis of the global PLC Systems market with special focus on high growth application in each vertical and fast growing application market segments
- Impact analysis of the market dynamics with factors currently driving and restraining the growth of the market, along with their impact in the short, medium, and long term landscapes
- Detailed Porter's analysis, BCG matrix, industry's SWOT analysis, market life cycle analysis along with technology & market roadmaps, evolution & time-lines of each type of PLC systems and their respective markets
- Complete value chain, allied industry segments & value chain analysis of the global PLC systems industry and their impacts on the market
- Illustrative and detailed segmentation of the global PLC systems market by end-user verticals and applications
- Detailed segmentation of global PLC systems market by technology with a focus on cross segment markets like verticals, applications, and geographies
- Illustrative segmentation, analysis, and forecast of the major geographical markets to give an overall view of the PLC systems market
- The future of each type of PLC systems market & industry from both - technical and market-oriented perspectives with techno-market oriented roadmaps till 2017
- The global consumption of each type of PLC systems in smart grid applications segments & products and expected consumptions & potential revenue for the next five years
- Detailed competitive landscape with identification of the key players with respect to each type of PLC systems market, in-depth market share analysis with individual revenue, market shares, and market share rankings
- Competitive intelligence from the company profiles, key player strategies, game-changing developments such as product launches and acquisitions

Report Overview

The PLC systems market segmentation revolves around the four major market parameters; namely technology, verticals, applications, and geography.

The technology segmentation for the PLC market is broadly divided into two groups; narrowband and broadband. Advancements in communications technology off late have made narrowband PLC a commercially viable solution for providing communication networks over power lines. Narrowband PLC can be defined as communication transmission over power line in the range of 0-500 KHz. For Narrowband, the bit rate is usually <1 Mbps (Mega bits per second). The market for narrowband PLC is huge as it is the most sought-after technology for implementing smart meter projects. Automated Meter Reading (AMR) is one of the biggest applications of smart grids and PLC. Any form of PLC that transfers data at >1 Mbps is categorized under Broadband PLC. It is used in applications like providing broadband Internet access over power lines (BPL) and in-door networking. Broadband PLC like N-PLC, has no unified standards as of now, the G.Hn and the IEEE 1901 are among the major standards for B-PLC. Both these segments can be further divided based on applications, voltage level, and whether they are used in transmission or distribution.

Report Description

The potential applications of PLC systems are numerous. Considering the applications that have been commercialized, this report segments them into three broad verticals; namely residential, commercial, and industrial. PLC is used in residential homes, buildings, and houses for a number of applications. Most of the usage of PLC is in connection with smart grid applications and home-utility services. The other applications include net-washing, e-cooking, etc. Commercially, there are many applications that use power line communications; among them are electric sub-metering, localized alarm systems, energy saving systems for commercial buildings, etc. It is to be noted here that a commercial building in this context is any building that is not residential and has its own transformer. The industrial sections includes various sectors wherein power line communication is used, namely Consumer Electronics, Automotive, Railroad and Transportation, Utilities, Oil and Gas, Healthcare, Telecommunications, and Others.

The PLC market is also mapped against geography. The market by geography is further segmented into regions such as Americas, Europe, APAC, and ROW, which gives a detailed insight about the potential regions for the PLC systems market. The report also describes the concentrated regional pockets that are critical for revenue generation. Apart from market segmentation, the report also includes critical market data showing the price trend analysis for PLC Systems, and market dynamics such as; drivers, restraints, and opportunities.

Markets Covered

The global PLC systems market is segmented into:

- Technology: Narrowband & Broadband
- Applications: Applications of the PLC System market are split into four major types, namely smart grid, indoor networking, long haul, and Machine to Machine (M2M). Each of the four applications is further divided into specific types such as utility and non utility.
- Verticals: The types of applications are termed as verticals and they are broadly classified as residential, commercial, and industrial. Each vertical is further segmented into related sub verticals.
- Geographies: Americas, Europe, Asia-Pacific (APAC), and Rest of the World (ROW).

Stakeholders

- Software manufacturers
- Hardware (Smart Meter) Manufacturers
- Smart Sensors Manufacturers
- Communication Network Providers
- Power Utilities
- PLC Chipset or Silicon Vendors (ODM)
- PLC Device Manufacturers (OEM)
- PLC chipset intellectual property players
- PLC chipset software platform developers
- ODM and OEM technology solution providers
- Distributors and traders
- Research organizations
- PLC Standards Organizations, Forums, Alliances and Associations

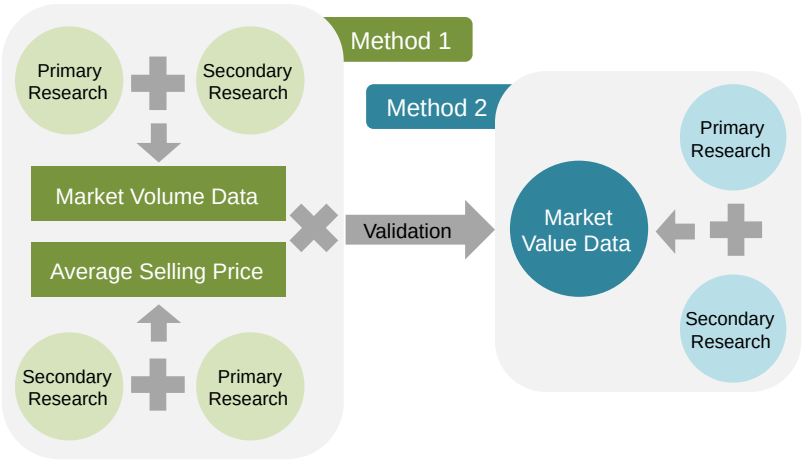
Report Description

Research Methodology

The research study involves the usage of extensive secondary sources; directories, and databases such as IEEE, WSTS, Hoovers, Bloomberg, Business-week, Factiva, and One-Source, and so on to identify and collect information useful for this extensive technical, market-oriented, and commercial study of this global market. The primary sources are mainly several industry experts from core and related industries and preferred suppliers, manufacturers, distributors, administrators, solution providers, technology developers, alliances, standards & certification organizations from companies, organizations related to all the segments of this industry's value chain. All the primary sources were interviewed to obtain and verify critical qualitative & quantitative information as well as assess the future prospects.

The market value is estimated from the applications' side. Using the demand side market, supply side requirements were calculated. Two different methods are adopted for estimation of numbers for the applications market. The market data for commercialized segment was calculated using primary and secondary data. Therefore, it is calculated using the existing data from secondary and primary sources.

Figure Research Methodology



As shown in the figure, the data for existing applications is calculated using the combination of shipment and average selling price; called as method 1. Another method of directly calculating the market value from data sources is also used; this is termed as method 2. Thus, if the data obtained from both the methods match, validation is done.

Source: MarketsandMarkets Analysis

Key Data Points from Secondary Sources

- Data for extensive and exhaustive segmentation and classification of the global wireless chipsets market
- Revenue of the companies from annual reports and database portals such as Manta, Factiva, and Dun & Bradstreet
- Market growth rates and potential applications from technical papers and published research reports
- The major players in the market along with their recent activities to help the market grow
- Validation and triangulation of all the numbers and graphs
- Segmentation breakups, split-ups, and percentage shares

Report Description

- Data for market revenue and volume
- Key industry trends of the top players of the wireless chipsets market
- Qualitative insights into various aspects of the market, key trends, emerging areas
- Quantitative data for mathematical and statistical calculations
- Company statistics (quantitative) and developments (qualitative) for company profiles

Key Data Points from Primary Sources

- Validation of various data points determined from secondary research and analysis. Data points such as commercialization year, penetration rate, and expected shipments
- Market dynamics: drivers and restraints of the overall market
- Future prospects for the PLC System market
- Average selling prices of PLC System for various technologies and applications
- Current and proposed production volumes of particular categories by market players
- Validation of numbers of the various product and end-user application markets
- Pricing estimation and validation of the pricing and forecasting model
- Market shares of key industry players in the market
- Percentage split of individual markets for geographical analysis of the wireless chipsets market
- Forecasting for various market segments of the overall markets and validation of the forecasted data
- Technological landscape, competition between technologies, industry preferences, market dynamics

Assumption Made

All the general assumptions, terminologies & application key notes for market statistics & calculations, year-wise assumptions, forecast assumptions, and related important aspects for this research study are mentioned below.

Parameter	Assumption
Currency value	All the forecasts are done with the revenue and volume calculated under the standard assumption that the globally accepted currency - the U.S. Dollar's value remains constant over the next five years.
Exchange rates and currency Conversion	For conversion of various currencies to USD, average historical exchange rates were used according to the year specified. For all historical and current exchange rates required for calculations & currency conversions - OANDA - website was used in this research study.

Report Description

Parameter	Assumption
Average Selling Prices (ASP)	The ASPs (average selling prices), wherever applied, are calculated using all kinds of suitable statistical and mathematical methods and considering external qualitative factors affecting the prices. All the calculations interconnected between the tables are done considering the finalized ASPs.
Niche market segments	For niche market segments where accurate data of the respective time line was not available, the data was calculated using trend line analysis. In some instances, where mathematical and statistical models could not be applied to arrive at the number, generalization of specific related trends to that particular market was done.
Qualitative analysis	The qualitative analysis done from the quantitative data arrived at is solely based on the understanding of the market and its trends by the team of experts involved in making this report.
Mutually Exclusive and Exhaustive classification	All market segments and sub-market segments listed in this report through various forms of classification are considered to be mutually exclusive of each other, with no overlap among them. Also, for each type of classification, all sub-market segments listed under a market are exhaustive in nature, i.e. they cover the whole market. In cases where other fields may be present, where the listed market segments do not cover the entire market, a category “others” is mentioned in the split-up of market statistics in the market data tables. Throughout the report, in any classification, non-inclusion of “others” field in market tables directly implies that listed market segments fully cover the respective parent market.
Difference in M2M application and Indoor Networking	M2M application of PLC includes all appliance used in industrial and commercial verticals, where as Indoor networking application includes all home appliance.

Key Companies of Primary Research

Few among the major companies of the semiconductor industry whose executives were involved in extensive primary research conversations for making this report are listed below.

- Alcatel Lucent (France)
- Amperion, Inc. (U.S.)
- Echelon Corp. (U.S.)
- Power Plus Communications AG (Germany)
- Maven Systems (India)
- Ariane Controls (Canada)

Report Description

- D-Link Corporation (Taiwan)
- TP-Link (China)
- Asoka Corporation (U.S.)
- Atheros Communications (U.S.)
- NXP (Netherlands)
- TI (U.S.)
- Semitech semiconductor (U.S.)
- Freescale (U.S.)
- ADD (U.S.)
- Fujitsu Semiconductor Ltd.(Japan)
- Marvell (U.S.)
- ON Semiconductor (U.S.)
- ST&T Electric Corporation (Taiwan)
- Maxim Integrated (U.S.)
- Billion Electric (Taiwan)
- Corinex (U.S.)
- Yitran Communications Ltd. (Israel)
- Cypress Semiconductor Corp. (U.S.)
- Broadcom Corp. (U.S.)
- ABB (China)

Executive Summary

Power line communication (PLC) is a type of communication technology that enables the use of existing wiring infrastructure to transfer data and information over power lines. There is a constant demand for reliable, cost-effective, and high performance communication networking technology in multiple domains across different verticals.

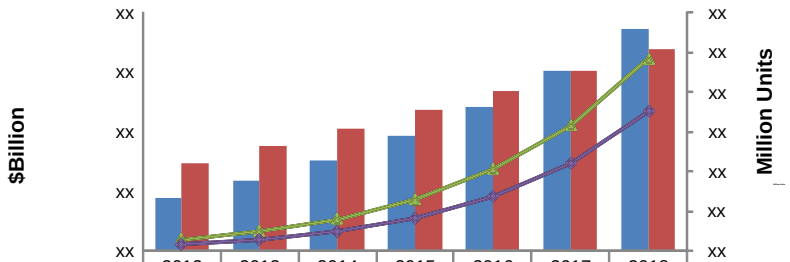
Based on the data rate that is transferred over the power lines, PLC system market is classified as Narrowband PLC and Broadband PLC. Advancements in communications technology off late have made narrowband PLC a commercially viable solution for providing communication networks over power lines. Narrowband PLC can be defined as communication transmission over power line in the range 0-500 KHz. The market for B-PLC mainly revolves around the Broadband-over power line market (BPL), which is the major application. As compared to N-PLC, broadband PLC has a relatively minor market share.

Both - narrowband and broadband PLC are used in each of the market verticals; namely Residential, Commercial, and Industrial. PLC is used in residential homes, buildings, and houses in connection with smart grid applications and home-utility services net-washing, e-cooking, etc. Commercially, there are many applications sectors that use power line communications; among them are electric sub-metering, localized alarm systems, energy saving systems for commercial buildings, etc. The industrial section includes various sectors wherein power line communication is used, namely Consumer Electronics, Automotive, Railroad and transportation, Utilities, Oil and Gas, Healthcare and Telecommunications. The expected market revenue split in 2013 among the three verticals, i.e. industrial, residential, and commercial is at 33.2%, 30%, and 26.6% respectively.

PLC is being used in a host of emerging and existing applications, including smart grid, home automation, vehicle automation, broadband over power line, M2M communications, etc. One of the major uses of PLC is in smart grid where it is used in automatic meter reading (AMR) and automatic meter management (AMM), building automation, security, electric vehicle charging, in micro-inverters for alternative sources of energy, temperature and lighting. The major application of Power Line Communications (PLC) is in smart grid. It is expected to hold around 75% of market in 2012.

This report also segments the global PLC market by geography considering four segments such as the Americas, Europe, Asia-Pacific (APAC), and Rest of the World (ROW). The PLC market is highly geography specific, with Europe leading the pack due to its early acceptance of the PLC technology. U.S. is the biggest market in the Americas and its major revenue is from B-PLC applications like in-in-door networking and control. APAC is an emerging market for PLC.

Figure Global Power Line Communications Systems Market Revenue ($Billion) & Unit Shipments (Million), By Technology, 2012 – 2018



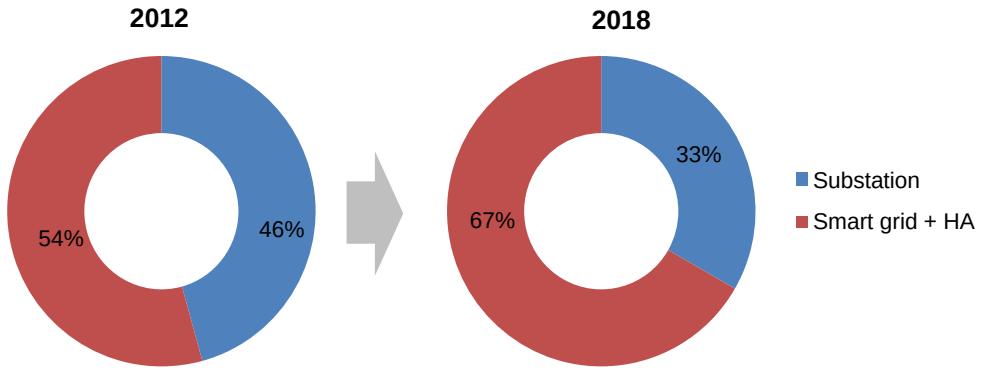
	2012	2013	2014	2015	2016	2017	2018
Narrowband Revenues	0.88	xx	xx	xx	xx	xx	3.73
Broadband Revenues	1.47	xx	xx	xx	xx	xx	3.37
Narrowband Volumes	14.64	xx	xx	xx	xx	xx	241.95
Broadband Volumes	8.24	xx	xx	xx	xx	xx	175.21

Executive Summary

The global PLC revenue market is expected to grow from $2.94 billion in 2013 to $7.10 billion in 2018 at a CAGR of 19.3%. In terms of revenue, the broadband market is larger than the narrowband market with a split of 60-40 favoring broadband in 2012. This is mainly because B-PLC is a high revenue market while N-PLC is a high volume market. The N-PLC revenue market is expected to grow at a CAGR of 25.9% as compared to that of B-PLC at 13.8% from 2013 to 2018. The reason for the faster N-PLC growth is the increasing demand for PLC in command and control applications that require low data transfer rate.

The global PLC unit shipment market is expected to grow from 38.90 million units in 2013 to 417.16 million units in 2018 at a CAGR of 60.7%. The N-PLC shipment market is larger than that of B-PLC. The reason behind this is that the average selling price (ASP) of a narrowband PLC system is lesser than that of a B-PLC system. The expected CAGR of N-PLC and B-PLC unit shipments are 58.1% and 64.8% respectively from 2013 to 2018.

Figure Global Power Line Communications Systems Market, By Major Areas of Applications-revenues (2012 & 2018)



The above figure depicts revenue splits among major applications of PLC systems. As of 2012, revenues generated from implementation of PLC system in substation automation are expected to have around 46% of market share. Narrowband based PLC technology is preferred, both by utilities and other major vendors of power grid, in this high voltage and low bit rate application of PLC. Hence it is a high value and low volume segment. Smart grid and home automation application market is expected to hold 54% in 2012 and it is expected to increase its share to 67% in 2018. This is expected to be driven by implementation of smart grid across geographies and increasing implementation of home automation.

Table of Contents

Table of Contents

Table of Contents

Table of Contents

➢*Details on financials, product & services, strategy, and developments might not be captured in case of unlisted companies.

List of Tables

List of Tables

List of Tables

List of Tables

List of Figures

Sample Tables

Table Global Power Line Communications Market Revenue, By Technology, 2012 – 2018 ($Billion)

Region	2012	2013	2014	2015	2016	2017	2018	CAGR% (2013-2018)
Narrowband								
Broadband								
Total								

Table Global Power Line Communications Market Revenue, Verticals, 2012 – 2018 ($Billion)

Vertical	2012	2013	2014	2015	2016	2017	2018	CAGR% (2013-2018)
Industrial								
Residential								
Commercial								
Others								
Total								

Table Global Power Line Communications Market Revenue, By Applications, 2012 – 2018 ($Billion)

Application	2012	2013	2014	2015	2016	2017	2018	CAGR% (2013-2018)
Smart Grid								
Indoor networking								
Long Haul								
M2M								
Others								
Total								

Table Global Power Line Communications Market Revenue, By Geography, 2012 – 2018 ($Billion)

Region	2012	2013	2014	2015	2016	2017	2018	CAGR% (2013-2018)
Americas								
Europe								
APAC								
ROW								
Total								

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Report code: SE 1670