

LED Lighting - Key Patent Analysis: Remote Phosphor

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Abstracts

LEDs, which are semi-conductor devices that convert electricity into light by the properties of compound semi-conductors, have higher energy efficiency and cost less for replacement due to longer lifetimes than existing lighting systems, and have high resistance to impact or vibration. Furthermore, LEDs have advantages in terms of energy saving and protection of the environment since they do not use toxic substances such as mercury, which give an impetus to their market entry as new lighting systems to replace existing lighting systems.

To facilitate replacement of existing lighting systems, there is intense competition to develop technologies for improving LED efficiency as well as low cost production. Among them, the remote phosphor method is adopted by many companies, since it can improve white LED efficiency by 30 to 40% compared with existing ones by minimizing heat generation and light losses. Some companies such as Intematix, and Cree, have occupied patent rights in advance. Especially the specialized phosphor manufacturer Intematix is taking aggressive steps to protect its technologies. The company, for instance, has uploaded a video that publicizes its intellectual properties and IP licensing. In addition, Cree and Philips have signed a mutual patent licensing agreement for LED technologies including remote phosphors. ABL IP as one of NPEs (non-practicing entities) is very aggressive in patent acquisition in this filed.

Since phosphors are one of the fields where a strong patent barrier has been established by a few companies, there are a considerable number of patents in dispute, and new patent issues continue to emerge. Considering major Korean, Japanese, and Taiwanese LED companies began R&D on remote phosphors somewhat late, fierce patent disputes are expected in the field of remote phosphor.

In this context, SNE presents analysis of the key patents of remote phosphors. From a population of 5,568 patents that have been published until October, 2012, in Korea, the

United States, Japan, and Europe, total 356 patents have been selected as validated patents on the field of remote phosphor. Among them, 91 cases have been selected as key patents, for which technology flowcharts and patent summaries are provided. For top patent applicants such as Intermatix, Philips, and Osram, in-depth analysis is provided including technology flow charges and key patent analysis for each company.

In particular, according to the result of the patent analysis, ABL IP, which specializes in purchasing patents, is in the upper ranks. This suggests it is more important to prepare future patent disputes.

This report is expected to be a great help to examine the patent trend and related key patents in the field of remote phosphor and establish counterstrategies.

This report features

Analysis of 356 key patents worldwide and patent summaries of 91 key patents in total 175 pages

Analysis of overall patent trend, key patent trend, and patent issues

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