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Set forth below are the aggregate amounts, as of December 31, 2010, of our future contractual financing and licensing obligations under our existing debt and other contractual arrangements:

Contractual Obligations	Payments Due by Period				
	Total	Less than 1 year	1-3 years (in millions of Won)	3-5 years	More than 5 years
Long-Term Debt, including current portion	(Won)3,429,461	(Won)886,561	(Won)1,906,489	(Won)633,213	(Won)3,198
Fixed License Payment	91,275	18,255	36,510	36,510	—
Long-Term Other Payables	392,564	86,460	291,827	14,277	—
Total	<u>(Won)3,913,300</u>	<u>(Won)991,276</u>	<u>(Won)2,234,826</u>	<u>(Won)684,001</u>	<u>(Won)3,198</u>
Estimates of interest payment based on contractual interest rates effective as of December 31, 2010	283,644	108,943	127,156	47,425	120

In addition to fixed license payments listed above that we are obligated to make under certain technology license agreements, we also have continuing obligations to make cash royalty payments under our technology license agreements, the amount of which are generally determined based on a percentage of sales of our TFT-LCD products.

Expenses relating to our license fees and royalty payments under existing license agreements were (Won)31 billion in 2009 and (Won)33 billion (US\$29 million) in 2010, representing 4.0% of our research and development expenses in 2009 and 3.0% in 2010. We expect to make additional license fee payments as we enter into new technology license agreements from time to time with third parties.

### Taxation

The effective statutory corporate income tax rate applicable to us is 11% (including local income surtax) for the first (Won)200 million of our taxable income and 24.2% (including local income surtax) for our taxable income in excess of (Won)200 million in 2010.

### Tax Credits

We are entitled to tax credits relating to certain investment and technology and human resources development under the Special Tax Treatment Control Law. Specifically, we are entitled to a tax credit of 10% for our capital investments made on or before June 30, 2003, 15% for our capital investments made on or before December 31, 2004, 10% for our capital investments made on or before December 31, 2005, 7% for our capital investments made on or before December 31, 2008 and 10% for our capital investments made on or before December 31, 2009, each in proportion to the percentage of equity investment in us other than foreign direct equity investment.

In addition, pursuant to the Special Tax Treatment Control Law, we were entitled to a separate additional tax credit of 10% on the positive difference between the total amount of capital investments we made in 2009 and the average of the amount of capital investments we made in the three preceding fiscal years. 2009 was the last taxable year for companies, including us, to benefit from this tax credit, which has expired and is no longer available from 2010.

We are entitled to a tax credit of up to 40% of the increase in certain expenses incurred in connection with technology and human resources development over the average of such expenses during the previous four years.

Tax credits not utilized in the fiscal year during which the relevant investment was made may be carried forward over the next five years in the case of capital investments and five years in the case of investments relating to technology and human resources development. As of December 31, 2010, we had available deferred tax assets related to these credits in the amount of (Won)795 billion (US\$703 million), which may be utilized against future income tax liabilities through 2014.

### Item 5.C. Research and Development, Patents and Licenses, etc.

#### Research and Development

The TFT-LCD industry is subject to rapid technological changes. We believe that effective research and development is essential to maintaining our position as one of the industry's leading technology innovators. Our research and product development expenditures amounted to (Won)774 billion in 2009 and (Won)1,117 billion (US\$988 million) in 2010, representing 3.8% of our sales in 2009 and 4.4% in 2010.

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Our research and development activities primarily focus on the development of new and improved products. For example, in 2008, we displayed the world's first panel for notebook computers that could change its horizontal viewing angle from 175 degrees to 60 degrees with a built-in adjustable viewing image control, thereby significantly reducing privacy concerns while using notebook computers in public areas. In 2008, we also developed the world's first TFT-LCD panel for notebook computers that applied RGB LED backlight technology, thereby offering more colors and a better contrast ratio than conventional models that used cold cathode fluorescent lamps. In addition, in 2008, we developed the world's largest 27-inch panel for desktop monitors at the time that applied black data insertion technology, which enabled us to achieve a motion picture response time equivalent to panels that used 120Hz driving technology without increasing our production costs. In 2009, we announced the world's first commercial launch of a three-dimensional multi-vision display panel that can display full high definition resolution. In 2010, we introduced three-dimensional displays utilizing film patterned retarder and shutter glass methodologies. Our three-dimensional LCD panel for use with polarized glasses received the Gold Award for Display of the Year at the Society of Information Display in 2010.

We believe that the trends for display products in the future are the widespread use of affordable large-size flat panel products with higher performance qualities and the use of different types of display products for a variety of purposes, such as using flexible display panels in a range of products or using large-size display panels for public display or advertising. To meet the demands of the future trends, we have formulated a long-term research and development strategy aimed at enhancing the process, device and design aspects of the existing products and diversifying the use of display panels as new opportunities arise with the development of communication systems and information technology. Accordingly, we have developed long-term alternative technologies, such as LED backlight technology, which is thin and light and is expected to provide reduced power consumption using environmentally friendly components. We have developed large-size high resolution LED backlight TFT-LCD panels for the categories of 42-inch, 47-inch and 55-inch panels for televisions. We have also developed copper line technology, a technology that takes advantage of copper's low electrical resistance to improve the transmission of video signals even across large-size TFT-LCD screens, resulting in sharp image quality with minimal distortion. We were the first company to apply copper line technology to high-resolution TFT-LCD panels. We have also developed TruMotion 480Hz driving technology based on copper line, scanning backlight technology and other new circuit algorithms. TruMotion 480Hz driving technology decreases motion blur by quadrupling the speed of the prior conventional frame rate of 120 Hz. Using this technology, we developed high-resolution TFT-LCD panels for televisions, ranging in size from 32 inches to 55 inches. In addition, in continual cooperation with our television end-brand customers, we have developed various mounting technologies, such as "user direct mounting" and through-hole mounting technology, to provide more mounting options and further enhance the marketability of their products. In order to stay technologically ahead in the TFT-LCD industry, we are focusing on evolving our existing display panels so that they become slimmer and narrower and become more environmentally friendly by using less power. For example, in 2008, we succeeded in developing one of the world's most energy efficient TFT-LCD panel for 32-inch televisions that can operate on up to 56% less power and a ultra slim 47-inch TFT-LCD panel with a thickness of 8.9mm in 2008. In 2010, we developed a TFT-LCD panel for 42-inch televisions that can operate on up to 25% less power and uses environmentally friendly components including halogen free parts.

As the product lifecycle of flat panel displays is approaching maturity, we plan to further focus on developing a next generation flat panel display technology, such as AMOLED, that can replace existing liquid crystal display panels or plasma display panels, while also exploring new growth industries, such as solar cell panels. AMOLED is a next generation flat panel display technology particularly because it is able to display clearer images of fast moving objects than conventional technology. We have already established ourselves as the leading developer of flexible displays. In 2008, we developed a flexible color e-book with the world's highest resolution at the time. We were also the first to apply non-laser crystallization technology to the production of AMOLED. In 2009, we developed the world's first 11.5-inch flexible e-paper for e-books with in-cell touch screen function, and we also developed a 19-inch e-paper, the world's largest at the time.

In order to maintain our position as one of the industry's technology leaders, we believe it is important not only to increase direct spending on research and development, but also to manage our research and development capability effectively in order to successfully implement our long-term strategy. Therefore, we complement our in-house research and development capability with collaborations with universities and other third parties. For example, we provide project-based funding to both domestic and overseas universities as a means to recruit promising engineering students and to research and develop new technologies. We also enter into joint research and development agreements from time to time with third parties for the development of technologies in specific fields. In addition, we belong to several display industry consortia, and we receive annual government funding to support our research and development efforts. In addition to these collaborations, we may form strategic technology alliances with the research arms of LG Electronics, as well as suppliers and equipment makers in "cluster" industries, that is, industries related to the TFT-LCD industry, in order to enhance our capability to develop new technology.

We have developed a research and development management system whereby we encourage our engineers to propose new projects freely and to implement rigorous evaluation criteria for each stage of project development. We select our projects primarily based on their feasibility and alignment with our research and development strategy, and we review the progress of all ongoing projects on a quarterly basis. As of December 31, 2010, we employed approximately 3,380 engineers, researchers, designers, technicians and support personnel in connection with our research and development activities.

While we primarily rely on our own capacity for the development of new technologies in the TFT-LCD design and manufacturing process, we rely on third parties for certain key technologies to enhance our technology leadership, as further described in “–Intellectual Property” below.

## **Intellectual Property**

### ***Overview***

As of March 31, 2011, we held a total of 15,049 patents, including 6,724 in Korea and 8,325 in other countries, including in the United States, China, Japan, Germany, France, Great Britain and Taiwan. These include patents for TFT-LCD manufacturing processes, products and applications. These patents will expire at various dates upon the expiration of their respective terms ranging from 2011 to 2030.

As part of our ongoing efforts to prevent infringements on our intellectual property rights and to keep abreast of critical technology developments by our competitors, we closely monitor patent applications in Korea, Japan and the United States. We also plan to initiate monitoring activities in China. We intend to continue to file patent applications, where appropriate, to protect our proprietary technologies.

We enter into confidentiality agreements with each of our employees and consultants upon the commencement of an employment or consulting relationship. These agreements generally provide that all inventions, ideas, discoveries, improvements and copyrightable material made or conceived by the individual arising out of the employment or consulting relationship and all confidential information developed or made known to the individual during the term of the relationship are our exclusive property.

### ***License Agreements***

We enter into license or cross-license agreements from time to time with third parties with respect to various device and process technologies to complement our in-house research and development. We engage in regular discussions with third parties to identify potential areas for additional licensing of key technologies.

Expenses relating to our license fees and royalty payments under existing license agreements were (Won)31 billion in 2009 and (Won)33 billion (US\$29 million) in 2010, representing 4.0% of our research and development expenses in 2009 and 3.0% in 2010. We recognized royalty income (a part as revenue and the remainder as other operating income) in the amount of US\$25 million in 2009 and 2010.

We have a license agreement with each of Lemelson Foundation, Columbia University, Penn State University, Honeywell International, Honeywell Intellectual Properties, Plasma Physics Corporation and Fergason Patent Properties. Each license agreement provides for a non-exclusive license under certain patents relating to TFT-LCD technologies.

We entered into a license agreement with Semiconductor Energy Laboratory which provides for a non-exclusive license under certain patents relating to amorphous silicon TFT technology and LTPS AMOLED technologies. For IPS technologies, we entered into a non-exclusive license agreement with Merck & Co.

We entered into a cross-license agreement with each of Hitachi, HannStar and Hydis for a non-exclusive license under certain patents relating to display technologies.

We entered into separate cross-license agreements with each of NEC and Chunghwa Picture Tubes in connection with the settlement of certain patent infringement lawsuits. Under the agreements, each party grants the other party a license under certain patents relating to TFT-LCD technologies.

We are licensed to use certain patents for our TFT-LCD products pursuant to a cross license agreement between Philips Electronics and Toshiba Corporation.