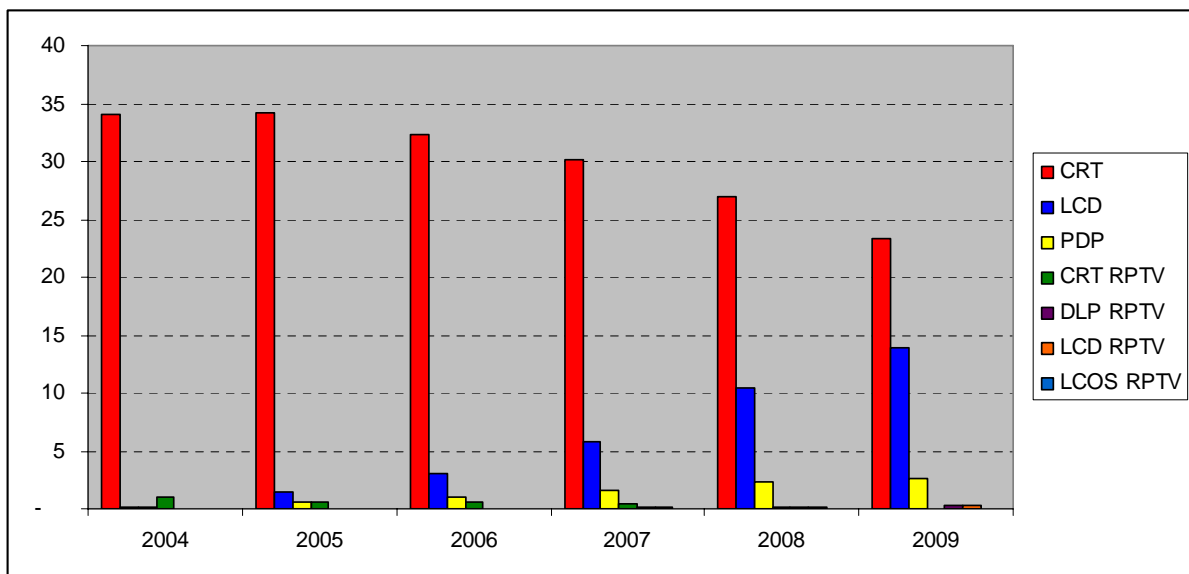


China TV Market Trends by Technology

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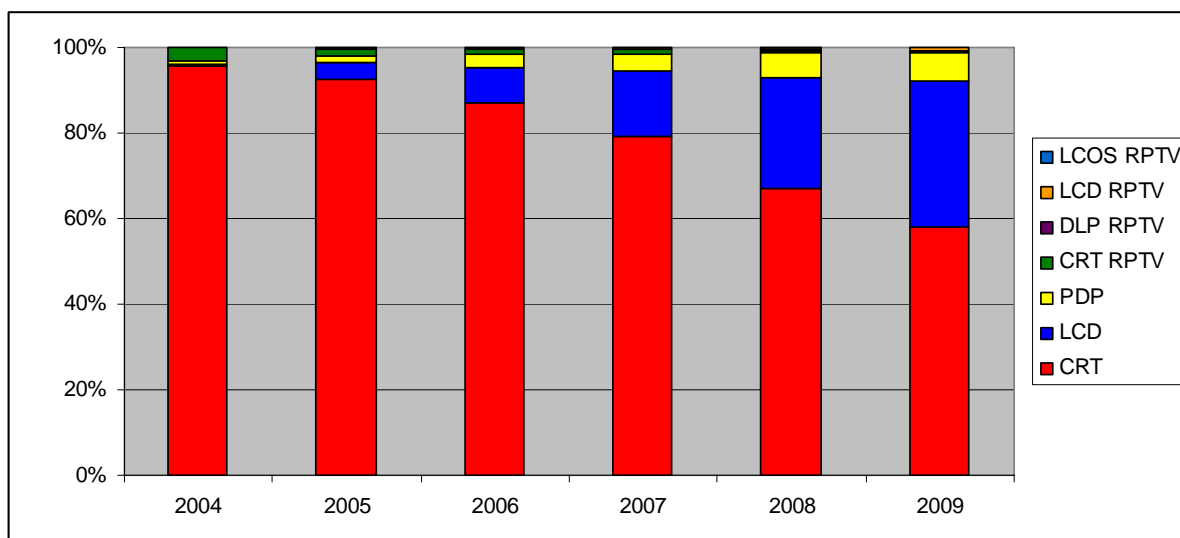
The China TV market is young and rapidly-developing, growing from less than 10K units sold in the 1980s to become today's largest TV market across the globe. For the China TV market, the 1980s were a growth period, and the 1990s were a time of maturing. In 2000, the TV demand was around 33M units and still continues to grow. Growth mainly comes from rapid commercialization of the new TV display technologies, such as PDP, LCD, RPTV and others. And industry insiders are increasingly paying attention to opportunities and threats posed by the transition period from CRT era to FPD (Flat Panel Display) era. This article is a general analysis of China TV market performance and future development trends by the major TV display technologies, such as CRT/Slim TV, LCD TV, PDP TV, CRT RPTV and MD RPTV (Micro-Display Rear Projection Television).

Figure 1 China TV Shipment by Technology (000s)



Source: DisplaySearch Quarterly Global TV Shipment and Forecast Report, Q4'05

Figure 2 China TV Market Share by Technology (000s)



Source: DisplaySearch Quarterly Global TV Shipment and Forecast Report, Q4'05

China TV Demand Forecast

In the coming years, FPD TV, DTV and 2008 Beijing Olympic Games will further the development of the China TV industry, expanding the domestic demand from 37M in 2005 units to 40M units in 2008. In spite of its dominating position in the future years, CRT demand will fall from 34M units in 2005 to 23M in 2009, with FPD TV's share growing, lead by LCD TV and PDP TV. For LCD TV, its domestic demand is expected to reach 3M in 2006, and 10M in 2008. For PDP TV, DisplaySearch forecasts that shipments will reach 1M in 2006 and 2M in 2008. For RPTV, it will see a downward trend. CRT RPTV is forecasted to disappear from the China TV market in 2008, while MD RPTV will grow due to its high definition and the advantages of 50"+ products. For RPTV, we expect that overall shipments will fall from 700K in 2005 to less than 500K in 2009.

With a population of 1.3 billion, China has a large TV consumer group, but income varies widely. The average Chinese GDP is just over \$1000 per year, but the rural area with 60% of the total population has limited purchasing ability. Because of the large population, this situation will continue for a long time. As a result, the traditional CRT TV will continue to dominate the market. Due to the development imbalance between cities, the main urban consumers of high-end products are in the coastal cities, whose population is about 200M with GDP over \$3000. However, the second tier cities with around \$2000 of GDP per capita and a population of 350M are large potential markets for high-end products. From this point, the consumption of FPD TV in the second tier cities will trigger the overall development of the domestic consumption market. DisplaySearch forecasts that this will follow the 2008 Olympic Games.

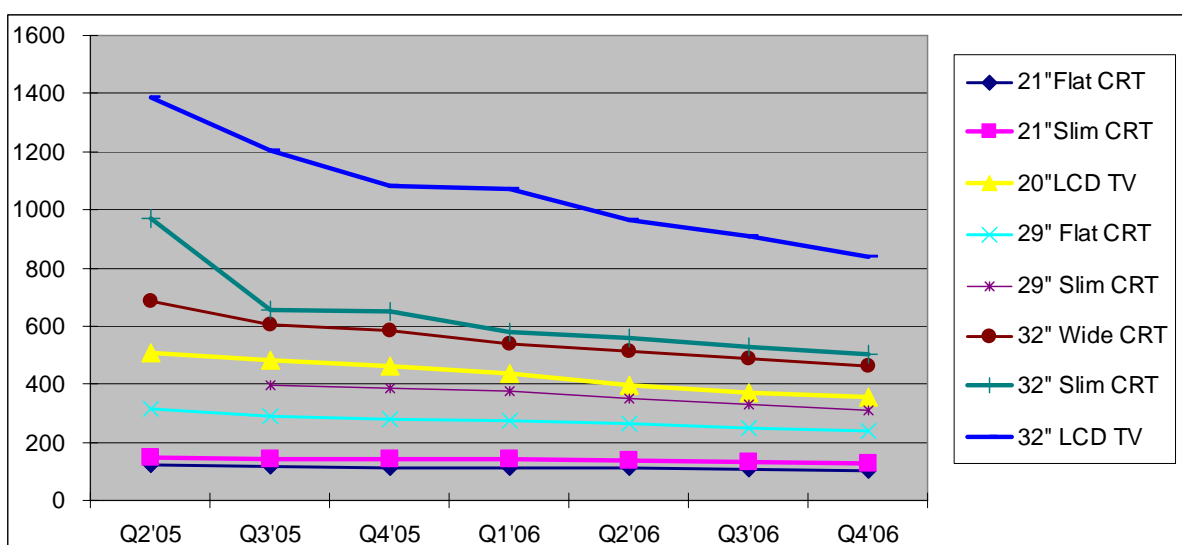
Compared with other TV markets, China has the most frequent price wars. China TV makers usually expand their market shares with aggressive pricing, which weakens the profitability of the entire industry; at the same time, it promotes the advantages of China TV makers in cost control and sales distribution. According to DisplaySearch's survey of prices in the global TV market, the China market has the lowest prices for key sizes of LCD TVs and PDP TVs in the world, so market growth of high-end and new products always exceeds expectations of industry participants.

CRT TV

Since CRT TV dominates the China market, trends in this technology are important. Unlike FPD TVs, China controls most of the global supply chain for CRT TVs, including both Wide CRT and Slim CRT. Mainly in China market, there are 28" Wide, 32" Wide and 36" Wide CRT TVs, and 21", 29" and 32" Slim CRT TVs. Questions about Slim CRT and Wide CRT include their development potential, their competition pressure and competition advantages.

All other aspects being equal, price is the most important aspect when consumers make their choices. As a result, we begin by discussing market price and forecasts for key products and the price index of some relevant products from the point of cost and price.

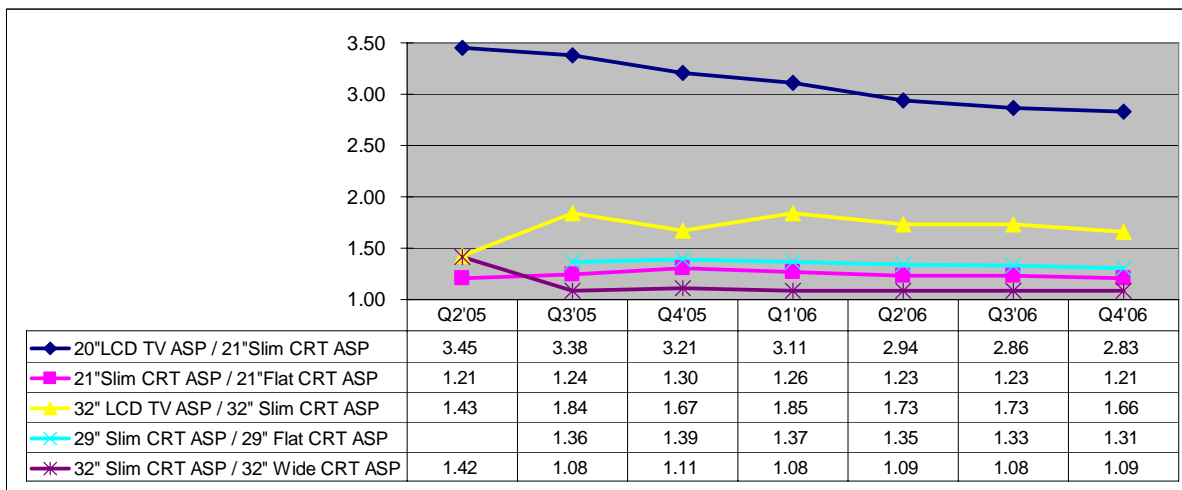
Figure 3 Price Trends by Size and Technology (US\$)



Excludes non-Chinese brands

Source: DisplaySearch

Figure 4 Price Multipliers for LCD TVs vs. Slim CRT TVs and Slim CRT TVs vs. Flat CRT TVs



Source: DisplaySearch

Wide CRT TVs

For its low cost and small size, 32" Wide CRT TVs has been the most popular size since Wide CRT TVs were launched. Due to its excellent picture, low market price and long lifetime, Wide CRT TVs also have excellent market performance over FPD TVs.

As a high-end CRT product, 32" Wide CRT TVs are sold currently in the first and second class markets, like 32" LCD. In 2004, shipments of 32" Wide CRT TVs and LCD TVs were 24K and 22K, respectively. In 2005, the shipment of 32" Wide CRT was about 90K, while 32" LCD TV saw rapid growth and became the best seller among all kinds of LCD TVs. Although sales of 32" Wide CRT TVs were not as good as LCD TVs, it gained a share compared to traditional CRT TVs. So 32" Wide CRT TVs can be expected to compete favorably with LCD TVs for a long time.

Slim CRT TVs

Due to the essential difference in technology and cost structure between Slim CRT TVs and LCD TVs, LCD TVs are priced nearly twice as much as Slim CRT TVs, in spite of the former continuous price cuts. Even as the costs of the two technologies decrease, LCD TVs will continue to be twice as expensive as Slim CRT TVs. In addition, due to the big gap in income levels, those who replace CRT TVs or LCD TVs will tend to purchase the same technology. Then the challenge for Slim CRT TVs will be how to maintain the CRT market share.

CRT TVs range in size from 14" to 34", similar to LCD TVs. Due to the lower price, 30" and smaller CRT TVs will have less aggressive competition than other kinds of TVs.

The short-term rivals of 21" and 29" Slim CRT TVs will be the same-size traditional CRT TVs. 29" Slim CRT TVs will also have competition from 26", 27" and 32" LCD TVs. In a short term, 32" Slim CRT will see furious competition with standard-depth 32" Wide CRT TVs and 34" CRT TVs. In the future, 32" LCD TVs will also be a competitor in this market. The following is a brief forecast of Slim CRT TVs in the China TV market according to the supply chain sources and market demand.

Table 1 Slim CRT Demand Forecast (000s)

Size	2005	2006	2007
21" Slim	340	960	1500
29" Slim	28	240	640
32" Slim	18	120	200
Total	386	1320	2340

Source: DisplaySearch

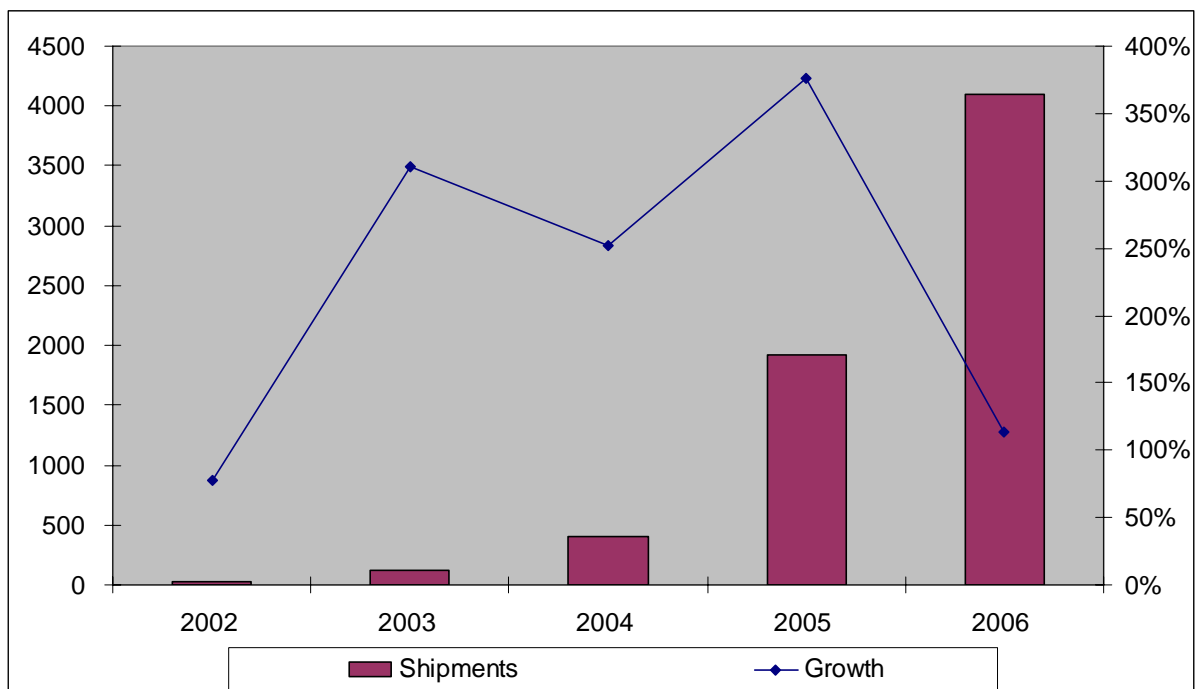
LCD TVs & PDP TVs

For the China FPD TV market in 2006, there is debate is about the scale of the market and many questions to answer. Which has the advantage, LCD or PDP? How much market demand will there be for HD PDP TVs? Which size LCD TV will dominate? For so many questions and arguing points, the main purpose is to find a chance for developing FPD TVs in China.

In fact, China FPD TV market has just started since 2004. Internal market shipments increased from 115K in 2003 to 405K in 2004, an increase of 252%. According to preliminary data, FPD TV shipments in the China internal market reached 1925K in 2005, increasing scale made a record of 376%. With supply chain's rapid growth and costs decreasing, and also with the aggressive market strategy of

China's TV manufacturers, FPD TVs will become more widely accepted by consumers. For this reason, DisplaySearch forecasts that the China FPD TV market will continue growing in the future four years, with internal shipments surpassing 4100K in 2006 and production value reaching US\$5 billion.

Figure 5 FPD TV Shipments and Growth (000s)

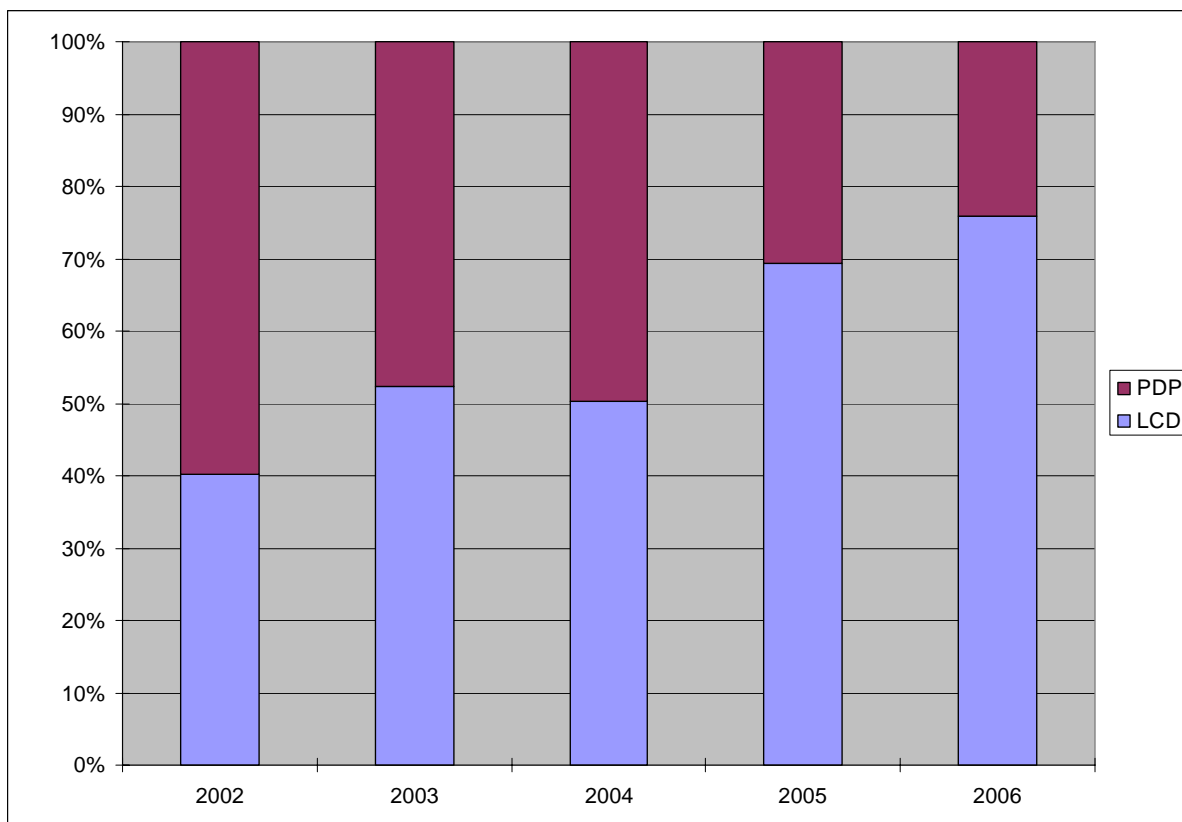


Source: DisplaySearch Quarterly Global TV Shipment and Forecast Report, Q4'05

There is always an argument about the advantages of PDP TVs and LCD TVs, lead by Panasonic's PDP group and Sharp's LCD group in China market. Until now, clear conclusion has been made: For the two different FPD TV technologies, LCD TVs will have more market share. In 2003 and 2004, when the FPD TV market had just begun, LCD TVs had a small lead over PDP TVs. In 2005, LCD TVs' market share increased to 69.3% of FPD TVs. In 2006, the market share for LCD TVs will continue to increase; DisplaySearch forecasts that it will be more than 75% of the FPD TV market.

What was the cause of LCD TVs' success in the FPD TV market? The reason is simple. In technologies, both products are rather mature. LCD TVs have a wide variety of sizes from 10" to 60", with some advantages in resolution and diversified products. PDP has advantages for products larger than 40". Whether for the panel or the whole set, LCD TV has more suppliers, especially internal manufacturers who have devoted many resources into the market. That's the reason why LCD TV shipments have had the advantage over PDP TVs since 2005.

Figure 6 2002-2006 LCD TV and PDP TV Market Share in China



Source: DisplaySearch

During the transition to 16:9 aspect ratio from the traditional 4:3 a theory in China states that when consumers shift from CRT (4:3) to LCD or PDP (16:9), they will maintain vertical height. In this case, the 21" CRT TV will shift to 26"/27" LCD TV, 25" CRT TV will shift to 30"/32" LCD TV, 29" CRT TV will shift to 37"/40" LCD TV or PDP TV, 34" CRT TV will shift to 40"/42" LCD TV or PDP TV, as shown in the following table:

Table 2 Comparing Sizes of Displays with 4:3 and 16:9 Aspect Ratios

Height	4:3 Diagonal	Similar to 4:3 Size	16:9 Diagonal	Similar to 16:9 Size
13"	21.7"	21"	26.5"	26"/27"
15"	25.0"	25"	30.6"	30"/32"
18"	30.0"	29"	36.7"	37"/40"
20"	33.3"	34"	40.8"	40"/42"

In the China CRT TV market in 2005, 20"-21" had a 46% share, 25"-29" had 48%, and others were mainly 34" CRT TV products. So in this changing process, most will shift to larger FPD TV products, and with the decreasing price of FPD TV products, the 37" FPD TV market has great potential. So, in the market for FPD TVs larger than 40", which one will have the advantage, LCD or PDP? In the initial development period of FPD TV products, there were almost no 40"+ LCD TV in the market due to high prices. Even in 2005, this 40"+ size category of LCD TV only took percent of 10% of the entire FPD TV market. DisplaySearch forecasts that the market share for 40"+ LCD TVs will surpass 20% in 2006.

However, PDP TVs will not lose their leading position in 40"+ category in China market, primarily due to lower prices for PDP TVs. Because both are mature products, the time that LCD TVs will surpass PDP TV in 40"+ products depends on the speed of the LCD TV cost reduction. According to our forecast, PDP TVs will still be the winner in this size for another two or three years.

What is the outlook for HD (High Definition) PDP TV products in the China TV market? In the current China PDP TV market, SD (Standard Definition) PDP TV has about 90% share. The reason for this condition is that PDP panel manufacturers have concentrated on decreasing prices to increase market share, and the easiest way to lower prices is to promote SD products. SD products are retreating in the international market, especially in developed countries. PDP flat panel suppliers hoped to maintain the life cycle of the SD panel, and China market became their best choice. The last factor is that the consumer in China is not so mature, so they consider prices without the differences that cause the price difference. HD PDP TV has some advantages in the long-term:

- Digital broadcasting program began, making HD display a basic requirement for TVs
- Consumers gradually mature, increasing the importance of HD
- From the supply chain side, the price gap between HD and SD panel is growing smaller
- Manufacturers, led by Hitachi, are pushing HD PDP TV, as an important strategy for China PDP manufacturers to realize diversity

So to meet the challenge of larger LCD TVs, if PDP TV will lose to the LCD TV if it does not make the transition to HD as quickly. DisplaySearch forecasts that China HD PDP TV will have more than 25% share of all PDP TVs in 2006.

CRT RPTV & MD RPTV

In China, RPTV blossomed quickly, but withered soon. In 2001, most of RPTV makers were foreign brands. Since Changhong led in developing RPTV, the RPTV market grew to 1000K. At that time, as a mainstay and high-end product, CRT RPTV was priced at ¥10,000-20,000RMB (\$1,240-2,480). LCD RPTV was priced even higher. But until 2005, due to size, low luminance, narrow viewing angles and short lifetime for bulbs, makers in China, such as Haier, Hisense and Skyworth, paid less attention to RPTV, emphasizing FPD TV instead. As a result of this, in China, RPTV represented a poor quality and out-of-date product. Actually, among all large size TVs, RPTV is a good choice in terms of quality and price.

As mentioned, as a result of lack of proper introduction and due to information from media and TV makers, Chinese consumers are not so experienced in choosing RPTV products. In addition, Chinese makers' inexperience with the core technology, core resources and long-term strategy makes them unclear on what they should produce. That is the reason why RPTV became a flash in a pan. We forecast that CRT RPTV will disappear from China market by 2008.

Can CRT RPTV naturally transition to MD RPTV as it fades away? In the current situation, the MD RPTV market is unfavorable. Foreign brands rather than domestic brands have taken the lead in MD RPTVs. In 2005, shipments of MD RPTV were less than 100K, much less than that of LCD TVs and PDP TVs, which were near 2000K. Although MD RPTV includes 3LCD, DLP and LCOS, their mission has become jointly withstanding the competition from PDP TVs and LCD TVs.

On the other hand, due to recent publicity, MD RPTV has achieved great progress in the RPTV market. However, people still regard it as an out-of-date product. Despite the LCD RPTV that Sony recently launched was not named as RPTV, consumers still called it RPTV, so consumers need to be educated about this technology

At present, mainstream RPTV products are smaller than 50". Due to product cost and obstacles to the FPD TV products, RPTVs above 50" are under relatively low pressure from PDP TVs. As consumers' living environments improve and commercial uses (such as hospital, school, airport and public display area) continue to expand rapidly, consumers will gradually accept RPTV products with manufacturers' aggressive efforts.

So DisplaySearch forecasts that the RPTV market in China area will decrease due to the decrease in popularity of CRT RPTV, but the larger MD RPTVs, which are mainly above 50" for family use and commercial areas, will have larger chances for growth. Our forecast is that MD-RPTV shipments will surpass 100K in 2006, and increase to 500K in 2008.