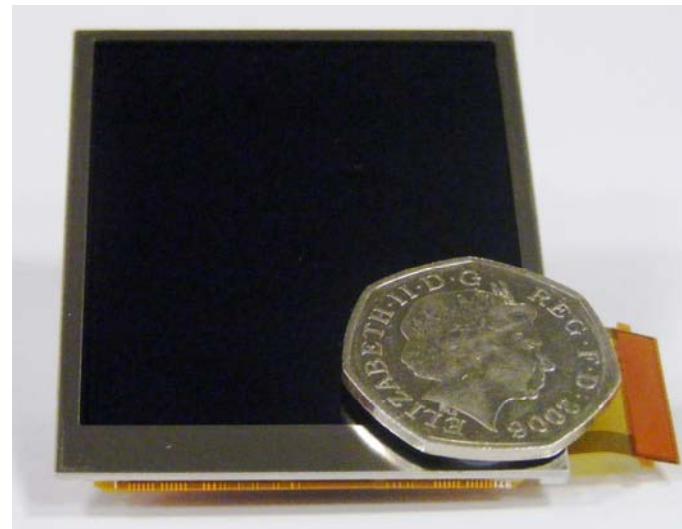


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DISPLAYS

# AMOLED



- WHY AMOLED

- COMPARISON OF AMOLED & TFT-LCD

- POWER CONSUMPTION, RESPONSE TIME & CONTRAST RATIO

- VIEW ANGLE

- LIFE TIME



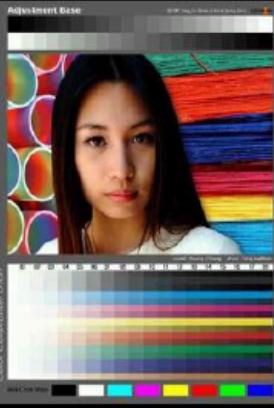
## Why AMOLED - Merit

- Supreme Image Quality
- Ultra Thin & Light
- Free of Viewing Angle
- Ultra Fast Response Time
- Wide Operation Temp. Range
- Low Power Consumption

## Small & Medium size panel comparison

Item	AMOLED	TFT-LCD
Contrast Ratio (Sunlight Readable)	Dark Room	>10,000:1
	Rainy	400
	Cloudy	190
	Sun light	50
Thickness	~ 1.3mm (typ.)	~2.0mm (typ.)
Response Time	~ 50 $\mu$ s	~25,000 $\mu$ s
Viewing Angle	180°(UD)/180°(LR)	100°(UD)/120°(LR)
Operation Temp.	-40°C~70°C	-20°C~70°C
Color Gamma	~73%	40%~60%

# Power Consumption Comparison

Pattern					
<b>Power Con.</b>	<b>AMOLED</b>	<b>168.75mW</b>	<b>176.25mW</b>	<b>90.75mW</b>	<b>146.25mW</b>
	<b>TFT-LCD</b>	<b>224.17mW</b>	<b>224.17mW</b>	<b>224.23mW</b>	<b>224.24mW</b>
<b>% (AMOLED/ TFT-LCD)</b>		<b>75.28%</b>	<b>78.62%</b>	<b>40.27%</b>	<b>65.22%</b>

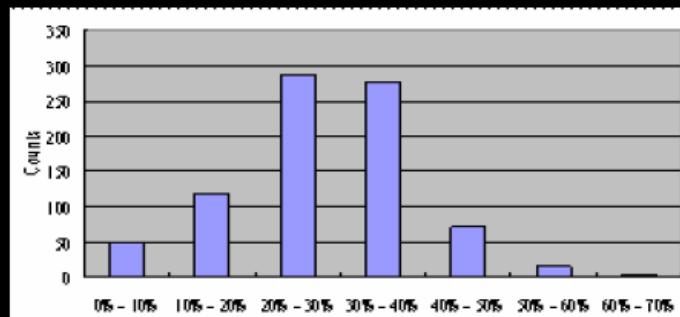
\*Brightness Based on 200 nits

\*Based on CMEL 2.4" AMOLED

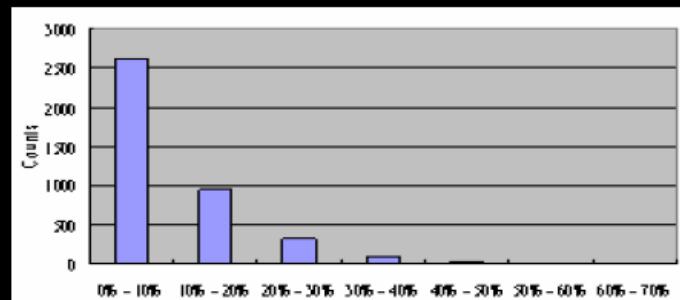
# Average Power Consumption of OLED

**AMOLED 2.4" panel PC =738 mW (@ 200 nits, 100% on)**

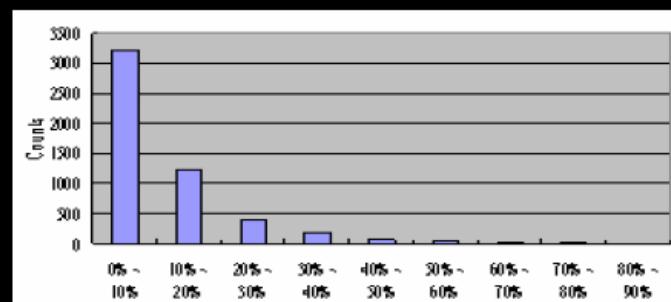
**photos average PC ~28.2% 222.5mW**  
 (DSC Photo – 818 pictures)



**Movie average PC ~ 9.57% 88.7mW**  
 (007:Casino Royal – 3960 pictures)



**Cartoon average PC ~ 11.06% 99.4mW**  
 (Teenage Mutant Ninja Turtles – 5176 pictures)



**Average PC < 30% full white PC**

# Fast Response Time for Moving Picture

**OLED Display**



**TFT - LCD Display**



**Response time ( $tr + tf$ ) < 50 us**

**$tr + tf > 25,000$  us**

■ **Slow response time will lower the resolution on moving picture**

# High Contrast Ratio

**OLED Display**



**OLED: > 10,000 : 1**

**TFT - LCD Display**



**TFT-LCD: < 500 : 1**

■ **High Contrast Ratio make image feel brighter**

## Horizontal View Angle Pictures



**CME**L  
AMOLED



**TFT** \_ **LCD**



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# Vertical View Angle Pictures



**CMEL  
AMOLED**



**TFT\_LCD**

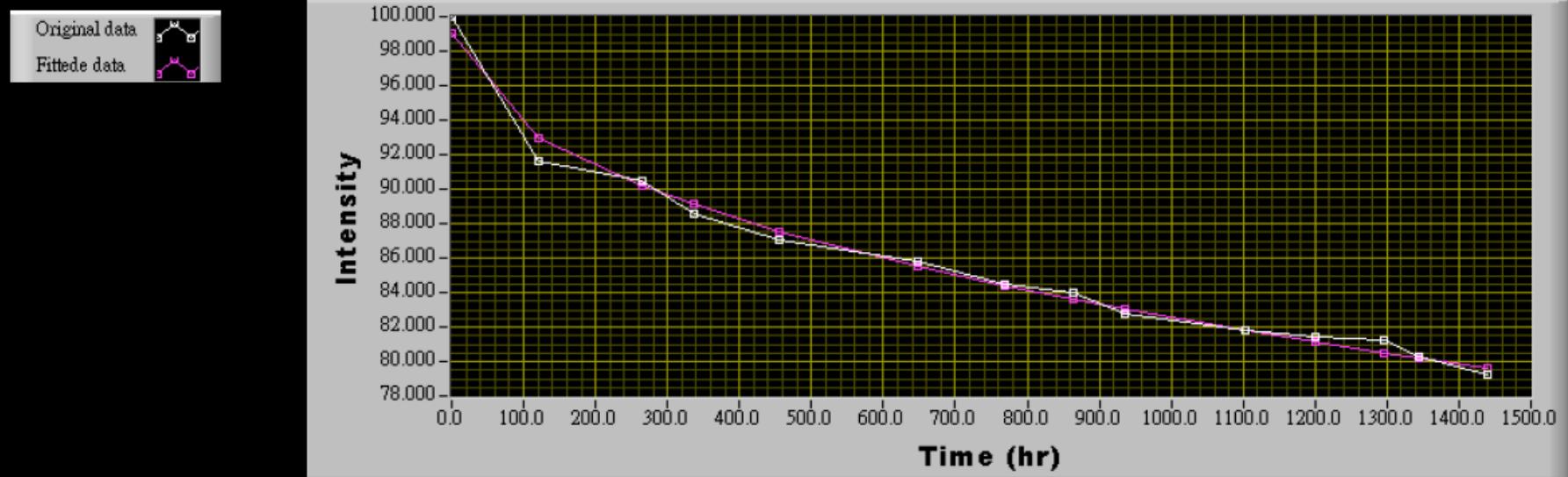


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# Life Time – 2.0" AMOLED

Experiment Start date : 2007 Jan.



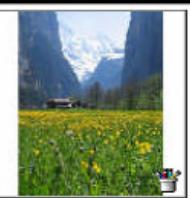
- Full pixel on lifetime: 14,513 hrs
- 30% Power Consumption pattern lifetime estimation: > 43,539 hrs (~3 times of full white)

\*Experiment before aging. Based on 150 nits.

## Pictures changing ( more than 100 various displays)



A\_0045.bmp



A02.bmp



cm13.bmp



PDA\_000.bmp



PDA\_001.bmp



PDA\_003.bmp



PDA\_005.bmp



PDA\_004.bmp



PDA\_002.bmp



A\_0028-1.bmp



A\_0034-1.bmp



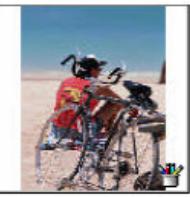
A\_0040-1.bmp



PR T0022.bmp



PR T0024.bmp



PR T0035.bmp



PR T0038.bmp



PR T0041.bmp



PR T0042.bmp



PR T0043.bmp



PR T0044.bmp



PR T0045.bmp



PR T0046.bmp



PR T0047.bmp



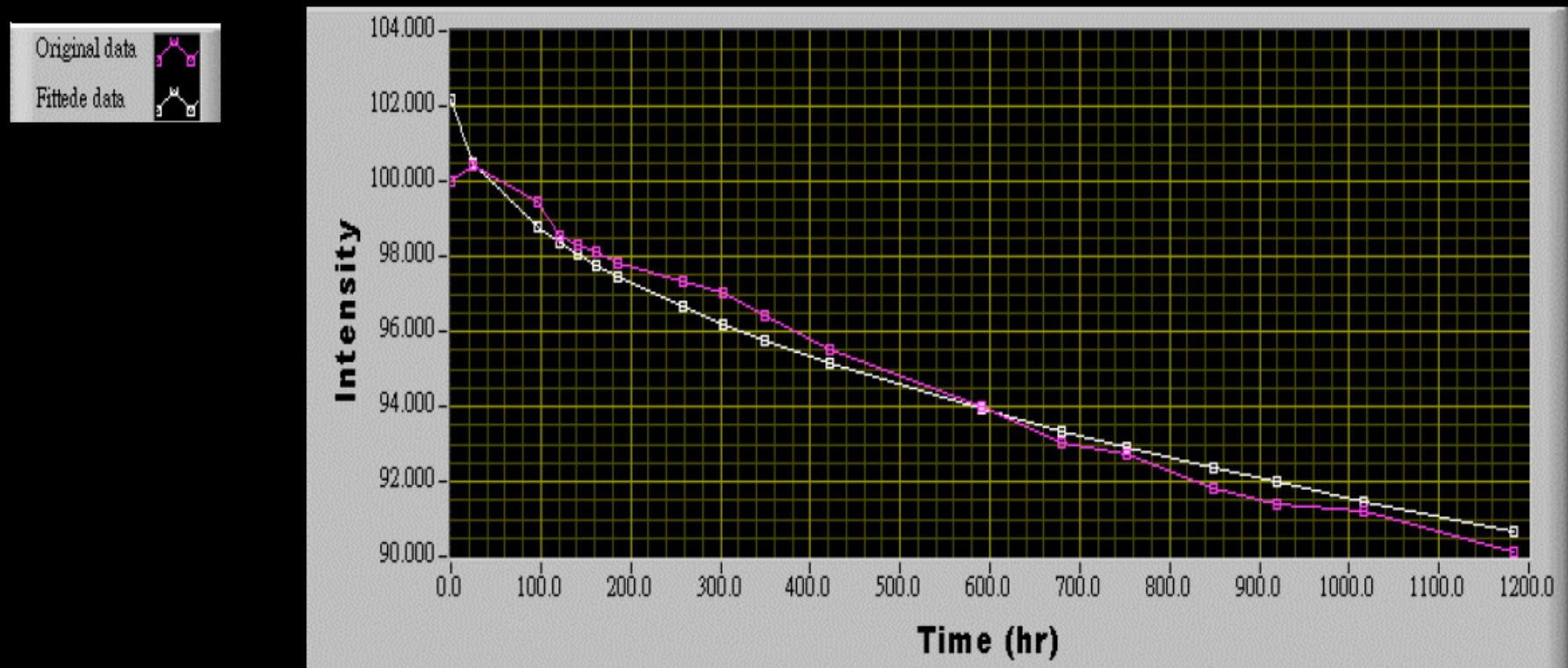
PR T0048.bmp

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# Life Time – 2.4" AMOLED

## Lifetime Evaluation based on 30% Power Consumption



- Lifetime is around 39877 hrs -

# Interested in finding out more?

Our dedicated technical support team will be very happy to answer any question that you may have on AMOLED and assist with your design, please contact us at:

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