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## APPENDIX

• **Table A4.1** Screen qualities obtained from the experiment with 100% tamol effect  
**Slurry condition :** Normal pH 8.2 (100% tamol)

% EQ	Green dot size ( $\mu\text{m}$ )/ panel position					$\Delta x$ $\Delta y$	$\Delta X, \Delta Y$ measuring position										Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9		Center/Corner	5	10	11	R1	1	3	7	9	R2			
115%	175	170	170	170	170	175/170	x	256	254	252	2	252	251	251	253	2	B/B	B/B	Normal
							y	287	284	282	2	281	282	278	286	7			
100%	165	160	160	160	160	165/160	x	257	254	253	1	254	252	255	255	3	B/B	B/B	Normal
							y	288	285	284	1	285	284	284	288	4			
85%	155	150	150	140	145	155/146	x	255	250	253	3	249	252	251	254	5	B/B	B/B	Some phosphor film peeled off
							y	285	281	284	3	280	285	280	283	5			
70%	140	135	140	140	135	140/138	x	256	254	252	2	251	253	253	253	2	B/B	B/B	Some phosphor film peeled off
							y	286	286	281	5	280	283	285	282	5			

**Table A4.2** Screen qualities obtained from the experiment with 90% tamol effect  
**Slurry condition :** pH 7.8 or 90% tamol

% EQ	Green dot size ( $\mu\text{m}$ )/ panel position					$\Delta x$ $\Delta y$	$\Delta X, \Delta Y$ measuring position										Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9		Center/Corner	5	10	11	R1	1	3	7	9	R2			
115%	170	165	160	170	160	170/164	x	256	255	251	4	252	252	254	254	2	B/B	B/B	Normal
							y	285	288	280	8	282	283	285	282	3			
100%	160	150	150	155	145	160/150	x	254	248	252	4	252	252	250	252	2	B <sup>+</sup> /B	B/B	Normal Good pin hole
							y	285	280	284	4	282	284	279	282	5			
85%	160	155	150	150	145	160/150	x	257	255	252	3	254	251	251	253	3	B <sup>+</sup> /B	B/B	Good pin hole but some phosphor film peeled off
							y	287	282	282	0	281	281	281	280	1			
70%	150	140	140	140	140	150/140	x	256	254	253	1	255	253	252	254	3	B/B	B/B <sup>-</sup>	Some phosphor film peeled off
							y	288	284	281	3	287	286	282	282	5			

**Table A4.3** Screen qualities obtained from the experiment with 70% tamol effect  
**Slurry condition :** pH 7.8 or 70% tamol

% EQ	Green dot size ( $\mu\text{m}$ )/ panel position					$\Delta x$	$\Delta X, \Delta Y$ measuring position										Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9		Center/Corner	$\Delta y$	5	10	11	R1	1	3	7	9			
115%	170	160	160	160	160	170/160	x	257	254	252	2	253	251	250	252	3	B/B	B/B	Normal, Good pin hole
							y	289	287	286	1	285	286	285	286	1			
100%	170	150	160	150	155	170/154	x	257	252	252	0	251	253	249	252	4	B/B <sup>-</sup>	B/B	Slightly poor pin hole
							y	289	288	285	3	284	286	283	281	5			
85%	155	150	145	150	140	155/146	x	255	251	251	0	250	250	251	251	1	B/B <sup>-</sup>	B/B <sup>-</sup>	Slightly poor pin hole and some phosphor film peeled off
							y	285	282	284	2	281	283	280	284	4			
70%	150	140	140	135	150/139	150/139	x	253	249	251	4	252	252	249	251	3	B/B <sup>-</sup>	B/C	Some phosphor film peeled off
							y	283	282	281	2	283	283	278	281	5			

**Table A4.4** Screen qualities obtained from the experiment with 50% tamol effect  
**Slurry condition : pH 7.8 or 50% tamol**

% EQ	Green dot size ( $\mu\text{m}$ )/ panel position					$\Delta x$	$\Delta X, \Delta Y$ measuring position										Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9		Center/Corner	$\Delta y$	5	10	11	R1	1	3	7	9			
115%	165	165	160	155	160	165/160	x	256	254	253	1	253	251	252	252	2	B/B	B/B	Normal
							y	285	285	281	4	283	282	280	282	3			
100%	165	160	160	150	160	165/155	x	256	251	254	3	252	254	249	254	5	B/B	B/B	Slightly poor pin hole
							y	286	284	284	0	284	285	280	285	5			
85%	155	150	150	150	145	155/148	x	256	252	253	1	252	255	251	252	4	B/B	B/B	Slightly poor pin hole and some phosphor film peeled off
							y	288	284	282	2	283	283	280	284	4			
70%	150	145	140	145	140	150/142	x	255	253	252	1	252	252	251	253	2	B/B	B/C	Poor pin hole and some slightly phosphor film peeled off
							y	284	285	279	6	282	280	282	282	2			

**Table B4.1** Screen qualities obtained from the 1<sup>st</sup> experiment with slurry pH 6.0

Slurry condition : pH 6.0

Exposure machine No. : 1

% EQ	Green dot size ( $\mu\text{m}$ )/ panel position					$\Delta x$ $\Delta y$	$\Delta X, \Delta Y$ measuring position										Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9		Avg. Corner	5	10	11	R1	1	3	7	9	R2			
115%	173	160	173	160	160	163	x	256	254	251	3	251	252	254	253	3	B/B	B/B	Found some dots of phosphor peeled off at corner
							y	284	278	277	1	279	280	276	280	4			
100%	163	155	160	155	155	156	x	258	255	253	2	252	253	254	256	4	B/B	B/B	Found some dots of phosphor peeled off at center and corner
							y	283	278	280	2	279	279	279	285	6			
85%	155	148	155	150	145	150	x	254	252	250	2	250	250	250	251	1	B/B	B/B	Found phosphor film peeled off to all screen
							y	270	271	273	2	270	273	272	275	3			
70%	150	135	135	145	135	138	x	257	255	254	1	255	255	252	254	3	B/B	C/C	Found phosphor film peeled off to all screen, poor sharpness
							y	232	281	280	1	279	280	279	281	2			



**Table B4.2** Screen qualities obtained from the 1<sup>st</sup> experiment with slurry pH 6.5

Slurry condition : pH 6.5

Exposure machine No. : 1

1<sup>st</sup> experiment

% EQ	Green dot size ( $\mu\text{m}$ )/ panel position					Avg. Corner	$\Delta x$		$\Delta X, \Delta Y$ measuring position										Pinhole (center/corner)	Sharpness (center/corner)	Other
	5	1	3	7	9		$\Delta x$	$\Delta y$	5	10	11	R1	1	3	7	9	R2				
115%	175	170	175	170	168	171	x	255	254	252	2	255	253	252	250	5	B/B	B/B	No defect		
								y	284	282	280	2	285	283	279	280				6	
100%	165	155	170	160	160	161	x	256	256	256	0	254	253	254	256	2	B/B	B/B	Greenish different at pos5 and pos3		
								y	252	282	279	3	281	264	279	277				17	
85%	160	155	148	150	150	151	x	258	255	252	3	252	253	254	253	2	B/B	B/B	Found some phosphor film peeled off at center and corner		
								y	287	281	283	2	280	283	277	285				8	
70%	150	145	150	145	150	148	x	259	255	253	2	254	254	254	255	1	B/B	B/B	Found phosphor film peeled off to all screen		
								y	285	279	279	0	280	280	278	283				5	

1<sup>st</sup> experiment

**Table B4.3** Screen qualities obtained from the 1<sup>st</sup> experiment with slurry pH 7.0

**Slurry condition :** pH 7.0

**Exposure machine No. :** 1

% EQ	Green dot size ( $\mu\text{m}$ )/ panel position					$\Delta x$ $\Delta y$	$\Delta X, \Delta Y$ measuring position										Pinhole (center/corner)	Sharpness (center/corner)	Other
	5	1	3	7	9		Avg. Corner	5	10	11	RI	1	3	7	9	R2			
115%	165	160	165	155	165	161	x	253	251	254	3	251	255	252	255	4	B/B	B/B	No defect
							y	289	286	284	2	286	284	284	284	2			
100%	160	160	160	155	160	159	x	253	251	253	2	249	254	251	253	5	B/B	B/B	No defect
							y	287	285	284	1	282	283	281	283	2			
85%	160	150	145	148	148	148	x	254	249	252	3	252	252	249	251	3	B/B	B <sup>+</sup> /B <sup>-</sup>	Found some phosphor film peeled off at center and corner, poor sharpness
							y	284	280	282	2	281	282	278	279	3			
70%	150	140	135	140	139	139	x	251	252	249	3	249	254	250	254	5	B/B	B <sup>+</sup> /B <sup>-</sup>	Found phosphor film peeled off to all screen, poor sharpness
							y	271	282	281	1	280	284	279	282	5			

**Table B4.4** Screen qualities obtained from the 1<sup>st</sup> experiment with slurry pH 7.5

Slurry condition : pH 7.5

Exposure machine No. : 1

% EQ	Green dot size ( $\mu\text{m}$ )/ panel position					$\Delta x$ $\Delta y$	$\Delta X, \Delta Y$ measuring position										Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9		Avg. Corner	5	10	11	RI	1	3	7	9	R2			
115%	170	165	160	168	160	163	x	255	254	251	3	252	254	251	250	4	B/B	B/B	No defect
							y	286	283	282	1	281	286	278	282	8			
100%	170	160	160	160	155	159	x	255	251	252	1	255	253	251	253	4	B/B	B/B	No defect
							y	286	280	280	0	278	281	279	282	4			
85%	163	160	155	150	150	154	x	257	257	252	5	258	255	255	253	5	B/B	B <sup>-</sup> /B <sup>-</sup>	Found some phosphor film peeled off at center and corner, poor sharpness
							y	285	282	280	2	282	285	277	277	8			
70%	160	140	145	150	150	146	x	258	255	253	2	254	259	253	257	6	B/B	B <sup>-</sup> /B <sup>-</sup>	Found phosphor film peeled off to all screen, poor sharpness
							y	273	282	283	1	281	281	280	276	5			

**Table B4.5** Screen qualities obtained from the 1<sup>st</sup> experiment with slurry pH 8.2

Slurry condition : pH 8.2

Exposure machine No. : 1

1<sup>st</sup> experiment

% EQ	Green dot size (μm)/ panel position					Δx Δy	Avg. Corner	ΔX, ΔY measuring position										Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9			5	10	11	R1	1	3	7	9	R2				
115%	175	160	160	160	165	161	x	254	253	253	0	248	252	252	253	5	B/B	B/B	No defect	
							y	289	286	285	1	283	281	283	278	5				
100%	160	150	155	155	153	x	257	253	251	2	250	250	253	252	3	B/B	B/B	No defect		
						y	287	282	281	1	281	280	279	280	2					
85%	150	145	140	135	144	x	254	252	250	2	251	253	251	256	5	B/B	B/B <sup>-</sup>	Found some phosphor film peeled off at corner		
						y	284	283	280	3	283	282	278	280	5					
70%	140	140	140	150	143	x	252	252	250	2	251	251	251	252	1	B/B	B <sup>-</sup> /B <sup>-</sup>	Found some phosphor film peeled off to all screen, poor sharpness		
						y	279	284	281	3	282	279	278	278	3					

**Table B4.6** Screen qualities obtained from the 1<sup>st</sup> experiment with slurry pH 8.5  
**Slurry condition :** pH 8.5  
**Exposure machine No. :** 1

% EQ	Green dot size (µm)/ panel position					Δx Δy	ΔX, ΔY measuring position										Pinhole (center/corner)	Sharpness (center/corner)	Other
	5	1	3	7	9		Avg. Corner	5	10	11	R1	1	3	7	9	R2			
115%	170	165	160	160	160	161	x	256	253	251	2	252	251	251	251	1	B/B	B/B	No defect
							y	283	280	276	4	278	280	274	273	5			
100%	165	160	155	155	160	158	x	256	253	250	3	250	249	250	251	2	B/B	B/B	No defect
							y	283	282	277	5	278	278	275	278	3			
85%	175	150	150	150	160	153	x	257	253	253	0	253	254	249	251	4	B/B	B/B	Found some phosphor film peeled off at center and corner
							y	287	283	282	1	281	280	277	280	4			
70%	150	130	130	140	140	135	x	255	253	251	2	250	251	251	250	1	B/B	B/C	Found some phosphor film peeled off to all screen, poor sharpness
							y	279	278	278	0	274	279	274	274	5			

**Table B4.7** Screen qualities obtained from the 1<sup>st</sup> experiment with slurry pH 9.0  
**Slurry condition :** pH 9.0  
**Exposure machine No. :** 1

1<sup>st</sup> experiment

% EQ	Green dot size ( $\mu\text{m}$ )/ panel position					$\Delta x$	$\Delta y$	$\Delta X, \Delta Y$ measuring position										Pinhole (center/corner)	Sharpness (center/corner)	Other
	5	1	3	7	9			Avg. Corner	5	10	11	R1	1	3	7	9	R2			
115%	160	155	150	155	160	155	x	253	250	251	1	249	249	248	250	2	B/B	B/B	No defect	
							y	281	278	276	2	276	275	274	274	2				
100%	170	155	160	160	155	158	x	254	251	252	1	252	252	248	252	3	B/B	B/B	No defect	
							y	283	280	278	2	283	278	274	280	9				
85%	155	145	145	150	150	148	x	255	252	249	3	249	252	250	252	3	B/B	B/B <sup>-</sup>	Found some phosphor film peeled off at center and corner	
							y	280	278	274	4	274	277	272	276	5				
70%	140	120	120	140	130	128	x	256	253	251	2	251	252	249	252	3	B/B	B/B <sup>-</sup>	Found some phosphor film peeled off to all screen	
							y	234	277	276	1	274	277	271	274	6				

**Table C4.1** Screen qualities obtained from the 2<sup>nd</sup> experiment with slurry pH 6.0  
**Slurry condition :** pH 6.0  
**Exposure machine No. :** 1

% EQ	Green dot size (µm)/ panel position						Avg. Corner	Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9	174				
115%	180	175	175	175	170	175	B/B	B/B	Big dot size, found one dot of phosphor peeled off.	
	180	175	170	175	175					
	180	175	180	170	175					
	180	180	180	175	180					
	180	180	175	170	170					
100%	<b>180</b>	<b>177</b>	<b>176</b>	<b>173</b>	<b>174</b>	156	B/B	B/B	Found 2 dots of phosphor peeled off at corner.	
	165	155	160	160	155					
	165	155	155	160	155					
	165	155	155	155	155					
	165	150	160	155	155					
85%	165	160	155	155	160	160	B/B	B/C	Found area of phosphor film peeled off to all screen about 100 cm <sup>2</sup> area, poor sharpness.	
	<b>165</b>	<b>159</b>	<b>158</b>	<b>163</b>	<b>161</b>					
	165	155	160	165	165					
	165	160	160	165	160					
	165	160	160	160	160					
70%	165	160	150	160	155	139	B/B	C/C	Found area of phosphor film peeled off to all screen about 120 cm <sup>2</sup> area, poor sharpness.	
	<b>165</b>	<b>159</b>	<b>158</b>	<b>163</b>	<b>161</b>					
	150	140	140	140	135					
	155	140	135	135	140					
	150	135	135	135	130					
	150	135	140	140	145					
	155	150	155	135	130					
	<b>152</b>	<b>140</b>	<b>141</b>	<b>137</b>	<b>136</b>					

**Table C4.2** Screen qualities obtained from the 2<sup>nd</sup> experiment with slurry pH 6.5

2<sup>nd</sup> experiment

Slurry condition : pH 6.5  
Exposure machine No. : 1

% EQ	Green dot size (µm)/ panel position					Avg. Corner	Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9				
115%	170	170	170	160	165	166	B/B	B/B	Big dot size, no other defects.
	175	160	170	165	170				
	175	165	165	165	160				
	175	165	170	170	165				
	175	165	175	170	160				
	<b>174</b>	<b>165</b>	<b>170</b>	<b>166</b>	<b>164</b>				
100%	165	160	160	165	160	163	B/B	B/B	No defect
	165	160	160	165	160				
	170	165	160	160	165				
	165	165	165	165	165				
	165	160	165	165	160				
	<b>166</b>	<b>162</b>	<b>162</b>	<b>164</b>	<b>162</b>				
85%	168	150	150	145	145	149	B/B	B/B	Found area of phosphor film peeled off at center and corner about 72 cm <sup>2</sup> area, sharpness at corner is better than pH 6.0
	155	150	150	145	150				
	155	155	150	150	145				
	160	150	150	150	150				
	160	155	150	145	150				
	<b>160</b>	<b>152</b>	<b>150</b>	<b>147</b>	<b>148</b>				
70%	145	140	150	140	140	145	B/B	B/B	Found area of phosphor film peeled off to all screen about 240 cm <sup>2</sup> area, sharpness at corner is better than pH 6.0
	145	145	145	145	140				
	145	145	145	145	135				
	155	145	145	140	150				
	160	150	140	150	155				
	<b>150</b>	<b>145</b>	<b>145</b>	<b>144</b>	<b>144</b>				



**Table C4.3** Screen qualities obtained from the 2<sup>nd</sup> experiment with slurry pH 7.0

**2<sup>nd</sup> experiment**

**Slurry condition :** pH 7.0

**Exposure machine No. :** 1

% EQ	Green dot size (µm)/ panel position								Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9	Avg. Corner					
115%	175	170	170	165	165	169	B/B	B/B	No defect		
	165	165	170	170	170						
	175	170	165	170	170						
	175	170	170	165	165						
	170	170	175	170	165						
	<b>172</b>	<b>169</b>	<b>170</b>	<b>168</b>	<b>167</b>						
100%	165	160	160	165	160	160	B/B	B/B	No defect		
	165	155	160	165	160						
	165	155	160	155	160						
	160	155	160	165	160						
	165	160	165	165	160						
	<b>164</b>	<b>157</b>	<b>161</b>	<b>163</b>	<b>160</b>						
85%	160	150	155	150	160	152	B/B	B/B	Found area of phosphor film peeled off at center and corner about 20 cm <sup>2</sup> area		
	165	150	150	155	150						
	170	155	150	150	150						
	160	150	150	150	150						
	170	155	155	150	150						
	<b>165</b>	<b>152</b>	<b>152</b>	<b>151</b>	<b>152</b>						
70%	155	140	140	140	135	138	B/B	B/B	Found area of phosphor film peeled off to all screen about 70 cm <sup>2</sup> area, poor sharpness at corner		
	160	135	135	145	140						
	160	140	140	135	135						
	155	135	140	140	140						
	155	135	140	140	130						
	<b>157</b>	<b>137</b>	<b>139</b>	<b>140</b>	<b>136</b>						

**Table C4.4** Screen qualities obtained from the 2<sup>nd</sup> experiment with slurry pH 7.5

Slurry condition : pH 7.5

Exposure machine No. : 1

**2<sup>nd</sup> experiment**

% EQ	Green dot size (µm)/ panel position					Avg. Corner	Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9				
115%	170	170	170	170	165	168	B/B	B/B	No defect
	170	170	170	165	170				
	170	170	165	160	170				
	170	170	170	170	165				
	170	170	175	165	165				
	<b>170</b>	<b>170</b>	<b>170</b>	<b>166</b>	<b>167</b>				
100%	165	160	160	155	160	158	B/B	B/B	No defect
	165	160	160	160	160				
	160	160	155	155	160				
	165	155	160	160	155				
	160	155	155	160	160				
	<b>163</b>	<b>158</b>	<b>158</b>	<b>158</b>	<b>159</b>				
85%	160	150	150	150	150	154	B/B	B/C	Found area of phosphor film peeled off at center and corner about 20 cm <sup>2</sup> area
	160	150	160	155	160				
	155	155	155	150	160				
	160	160	150	150	150				
	160	155	160	150	150				
	<b>159</b>	<b>154</b>	<b>155</b>	<b>151</b>	<b>154</b>				
70%	150	140	130	140	130	139	B/B	B/C	Found area of phosphor film peeled off to all screen about 80 cm <sup>2</sup> area, poor sharpness at corner
	160	135	140	145	140				
	155	140	140	135	145				
	155	135	145	140	140				
	160	135	140	140	140				
	<b>156</b>	<b>137</b>	<b>139</b>	<b>140</b>	<b>139</b>				

**Table C4.5** Screen qualities obtained from the 2<sup>nd</sup> experiment with slurry pH 8.2  
**Slurry condition :** pH 8.2  
**Exposure machine No. :** 1

% EQ	Green dot size (µm)/ panel position								Avg. Corner	Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9	9	9	9				
115%	170	160	165	165	165	165	165	165	165	B/B	B/B	No defect
	165	165	170	165	165	165	165	165				
	165	165	165	170	165	165	165	165				
	165	165	165	165	165	165	165	165				
	165	165	165	165	165	165	165	165				
100%	166	164	166	166	166	166	165	160	157	B/B	B/B	No defect
	160	155	160	155	155	155	155	155				
	165	155	160	155	155	155	160	155				
	165	160	155	155	155	160	155	155				
	165	160	160	160	160	155	155	155				
85%	164	158	158	156	157	157	150	140	145	B/B	B/C	Found area of phosphor film peeled off at center and corner about 30 cm <sup>2</sup> area
	160	150	145	145	145	145	140	140				
	160	145	145	150	140	145	145	145				
	155	145	155	145	145	145	130	140				
	160	140	145	150	140	145	140	140				
70%	155	145	148	147	141	141	140	140	134	B/B	B/C	Found area of phosphor film peeled off to all screen about 80 cm <sup>2</sup> area
	155	140	135	135	140	140	140	140				
	155	135	130	135	140	140	140	140				
	150	135	130	135	140	140	130	130				
	150	135	130	130	130	130	130	130				
	150	135	130	135	130	130	130	130				
	152	136	131	134	136	136	136	136				

**Table C4.6** Screen qualities obtained from the 2<sup>nd</sup> experiment with slurry pH 8.5

**Slurry condition :** pH 8.5

**Exposure machine No. :** 1

2<sup>nd</sup> experiment

% EQ	Green dot size (µm)/ panel position								Avg. Corner	Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9	9	9	9				
115%	170	160	165	170	165	165	B/B	B/B	No defect			
	170	165	170	165	165							
	170	165	165	165	170							
	175	165	165	165	165							
	170	160	165	165	165							
	<b>171</b>	<b>163</b>	<b>166</b>	<b>166</b>	<b>166</b>							
100%	160	160	160	155	160	157	B/B	B/B	No defect			
	165	160	160	155	155							
	165	155	155	155	160							
	165	160	160	155	155							
	160	160	155	155	155							
	<b>163</b>	<b>159</b>	<b>158</b>	<b>155</b>	<b>157</b>							
85%	150	150	150	150	150	150	B/B	B/C	Found uncountable area of phosphor film peeled off to all screen			
	155	145	155	150	150							
	155	150	145	150	145							
	150	150	155	150	150							
	155	150	150	145	150							
	<b>153</b>	<b>149</b>	<b>151</b>	<b>149</b>	<b>149</b>							
70%	140	140	130	135	140	137	B/B	B/C	Found uncountable area of phosphor film peeled off to all screen			
	140	135	140	140	140							
	135	135	140	135	140							
	140	140	135	130	135							
	140	135	135	135	135							
	<b>139</b>	<b>137</b>	<b>136</b>	<b>135</b>	<b>138</b>							

**Table C4.7** Screen qualities obtained from the 2<sup>nd</sup> experiment with slurry pH 9.0

Slurry condition : pH 9.0

Exposure machine No. : 1

2<sup>nd</sup> experiment

% EQ	Green dot size (µm)/ panel position								Avg. Corner	Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9	161	156	141				
115%	170	160	165	155	165	161	B/B	B/B	Found 3 dots of phosphor film peeled off			
	170	160	160	165	165							
	170	160	160	160	160							
	170	155	165	165	160							
	175	160	155	170	155							
	<b>171</b>	<b>159</b>	<b>161</b>	<b>163</b>	<b>161</b>							
100%	170	155	155	150	160	156	B/B	B/B	No defect			
	165	155	160	155	155							
	170	160	155	160	160							
	165	155	155	150	155							
	170	165	155	155	155							
	<b>168</b>	<b>158</b>	<b>156</b>	<b>154</b>	<b>157</b>							
85%	155	140	140	140	145	141	B/B	B/C	Found area of phosphor film peeled off to all screen about 45 cm <sup>2</sup> area			
	155	145	145	145	130							
	160	140	140	140	130							
	160	145	140	140	140							
	155	140	140	140	155							
	<b>157</b>	<b>142</b>	<b>141</b>	<b>141</b>	<b>140</b>							
70%	150	140	130	140	145	140	B/B	B/C	Found area of phosphor film peeled off to all screen about 130 cm <sup>2</sup> area			
	155	140	140	140	150							
	155	140	145	135	130							
	150	140	130	140	135							
	150	140	145	140	145							
	<b>152</b>	<b>140</b>	<b>138</b>	<b>139</b>	<b>141</b>							

**Table D4.1** Screen qualities obtained from the 3<sup>rd</sup> experiment with slurry pH 6.2  
**Slurry condition :** pH 6.2  
**Exposure machine No. :** 1

3<sup>rd</sup> experiment

% EQ	Green dot size ( $\mu\text{m}$ )/ panel position								Avg. Corner	Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9	9	7	3				
115%	185	175	180	175	175	175	175	175	175	B/B	B/B	Big dot size, Found one dot of phosphor peeled off.
	185	175	180	170	175	175	175	175				
	185	175	175	175	175	175	175	175				
	185	170	175	170	170	170	170	170				
	185	170	180	175	175	175	175	175				
100%	<b>185</b>	<b>173</b>	<b>178</b>	<b>173</b>	<b>174</b>	<b>174</b>	<b>174</b>	<b>174</b>	175	B/B	B/B	Found two dots of phosphor peeled off
	180	170	175	175	175	175	175	175				
	180	170	175	175	180	175	180	180				
	180	175	175	175	170	175	170	170				
	180	170	175	170	175	175	175	175				
85%	180	180	180	175	175	175	175	175	163	B/B	B/B <sup>-</sup>	Found area of phosphor film peeled off to all screen about 85 cm <sup>2</sup> area, poor sharpness
	<b>180</b>	<b>173</b>	<b>176</b>	<b>174</b>	<b>175</b>	<b>174</b>	<b>175</b>	<b>175</b>				
	170	160	160	165	165	165	165	165				
	170	160	165	165	165	165	165	165				
	160	160	165	165	165	165	165	165				
70%	170	160	160	160	170	170	170	170	153	B/B	C/C	Found area of phosphor film peeled off to all screen about 120 cm <sup>2</sup> area, poor sharpness
	165	160	165	160	170	170	170	170				
	<b>167</b>	<b>160</b>	<b>163</b>	<b>163</b>	<b>167</b>	<b>163</b>	<b>167</b>	<b>167</b>				
	160	150	155	150	155	150	155	155				
	160	150	160	150	150	150	150	150				
	160	150	160	150	150	150	150	150	153	B/B	C/C	Found area of phosphor film peeled off to all screen about 120 cm <sup>2</sup> area, poor sharpness
	160	150	160	150	155	150	155	155				
	160	150	160	150	150	150	150	150				
	160	150	160	150	155	150	155	155				
	160	150	160	150	155	150	155	155				
	<b>160</b>	<b>150</b>	<b>159</b>	<b>150</b>	<b>150</b>	<b>150</b>	<b>153</b>	<b>153</b>				

**Table D4.2** Screen qualities obtained from the 3<sup>rd</sup> experiment with slurry pH 7.1

Slurry condition : pH 7.1

Exposure machine No. : 1

% EQ	Green dot size (µm)/ panel position								Avg. Corner	Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9	165	162	165				
115%	180	165	160	160	165	163	B/B	B/B	No defect			
	175	160	165	160	165							
	175	165	160	160	165							
	175	165	160	160	165							
	180	160	165	160	165							
	<b>177</b>	<b>163</b>	<b>162</b>	<b>160</b>	<b>165</b>							
100%	165	150	155	150	150	151	B/B	B/B	No defect			
	165	150	150	150	155							
	165	150	150	150	155							
	165	150	150	150	150							
	165	150	150	150	150							
	<b>165</b>	<b>150</b>	<b>151</b>	<b>150</b>	<b>152</b>							
85%	165	155	158	155	155	155	B/B	B/B	Found 5 dots of phosphor peeled off, poor sharpness			
	165	160	155	155	155							
	165	155	155	155	155							
	165	150	155	155	155							
	165	150	155	155	155							
	<b>165</b>	<b>150</b>	<b>155</b>	<b>155</b>	<b>155</b>							
70%	155	140	135	140	140	140	B/B	B/C	Found area of phosphor film peeled off to all screen about 50 cm <sup>2</sup> area, poor sharpness			
	155	140	140	140	140							
	155	140	140	140	140							
	155	140	140	140	140							
	155	140	140	140	140							
	<b>155</b>	<b>140</b>	<b>139</b>	<b>140</b>	<b>140</b>							

**Table D4.3** Screen qualities obtained from the 3<sup>rd</sup> experiment with slurry pH 8.2  
**Slurry condition :** pH 8.2  
**Exposure machine No. :** 1

3<sup>rd</sup> experiment

% EQ	Green dot size (µm)/ panel position						Avg. Corner	Pinhole (center/corner)	Sharpness	Other
	5	1	3	7	9	15				
115%	175	165	165	160	155	162	B/B	B/B	No defect	
	175	165	165	160	160					
	175	165	160	160	160					
	175	165	160	160	160					
	175	165	160	160	160					
	175	165	162	160	159					
100%	163	155	155	155	150	154	B/B	B/B	No defect	
	165	155	155	155	150					
	160	155	155	155	150					
	165	155	155	155	150					
	165	155	155	155	150					
	165	155	155	155	150					
85%	164	155	155	155	150	147	B/B	B/C	Found 5 dots of phosphor peeled off, poor sharpness	
	160	150	140	150	145					
	160	145	150	145	150					
	155	145	145	140	150					
	155	145	150	150	150					
	160	145	150	145	145					
70%	158	146	147	146	148	134	B/B	B/C	Found area of phosphor film peeled off to all screen about 60 cm <sup>2</sup> area, poor sharpness	
	155	130	135	130	135					
	150	135	135	130	135					
	155	135	135	130	135					
	155	135	135	130	135					
	155	135	135	130	135					
	154	134	135	130	135					



**Table D4.4** Screen qualities obtained from the 3<sup>rd</sup> experiment with slurry pH 9.0  
**Slurry condition :** pH 9.0  
**Exposure machine No. :** 1

% EQ	Green dot size (µm)/ panel position									Pinhole rank	Sharpness	Other
	5	1	3	7	9	Avg. Corner						
115%	170	165	160	165	165	164	B/B	B/B	No defect			
	175	160	160	165	165							
	175	165	165	165	165							
	170	165	165	165	165							
	175	160	165	165	165							
	<b>173</b>	<b>163</b>	<b>163</b>	<b>165</b>	<b>165</b>							
100%	175	150	150	155	150	150	B/B	B/B	No defect			
	170	145	148	153	155							
	175	143	145	153	155							
	170	140	148	150	155							
	175	150	145	155	155							
	<b>173</b>	<b>146</b>	<b>147</b>	<b>153</b>	<b>154</b>							
85%	165	140	145	145	145	145	B/B	B/B	Found 2 dots of phosphor film peeled off, poor sharpness			
	165	150	145	145	145							
	165	150	145	145	145							
	165	145	145	145	145							
	165	145	145	145	145							
	<b>165</b>	<b>146</b>	<b>145</b>	<b>145</b>	<b>145</b>							
70%	150	135	130	130	130	130	B/B	B/C	Found area of phosphor film peeled off to all screen about 30 cm <sup>2</sup> area, poor sharpness			
	155	130	130	130	130							
	150	125	130	130	130							
	155	130	130	130	130							
	155	135	130	130	130							
	<b>153</b>	<b>131</b>	<b>130</b>	<b>130</b>	<b>130</b>							

**Table E4.1** The screened panel qualities obtained from the 2<sup>nd</sup> experiment with slurry pH 7.0 before making finished tubes

Slurry condition : pH 7.0

Exposure condition : Machine no.1 (100% exposure)

No.	Green dot size ( $\mu\text{m}$ ) / panel position					$\Delta x$	$\Delta X, \Delta Y$ measuring position										Pinhole Sharpness (center/corner)	Other	
	5	1	3	7	9		Avg. Corner	$\Delta y$	5	10	11	R1	1	3	7	9			R2
1	170	160	160	165	165	163	x	258	256	253	3	256	254	255	257	3	B/B	B/B	No defect
							y	293	289	285	4	285	287	287	288	3			
2	175	165	160	160	165	163	x	262	257	257	0	256	256	257	258	2	B/B	B/B	No defect
							y	292	289	286	3	287	289	288	289	2			
3	175	170	165	160	165	165	x	263	259	255	4	256	254	260	256	6	B/B	B/B	No defect
							y	294	291	287	4	286	288	288	290	4			
4	170	160	165	160	161	161	x	260	256	253	3	254	254	255	254	1	B/B	B/B	No defect
							y	291	287	284	3	285	289	282	287	7			
5	170	160	160	160	160	160	x	261	257	257	0	254	256	256	257	3	B/B	B/B	No defect
							y	293	288	290	2	286	292	285	288	7			

**Table E4.2** The screened panel qualities obtained from the 2<sup>nd</sup> experiment with slurry pH 7.5 before making finished tubes

**Slurry condition :** pH 7.5

**Exposure condition :** Machine no.1 (100% exposure)

No.	Green dot size ( $\mu\text{m}$ ) / panel position					$\Delta x$ $\Delta y$	$\Delta X, \Delta Y$ measuring position										Pinhole (center/corner)	Sharpness (center/corner)	Other
	5	1	3	7	9		Avg. Corner	5	10	11	R1	1	3	7	9	R2			
1	170	160	160	160	165	161	x	263	258	257	1	255	254	256	259	5	B/B	B/B	No defect
							y	294	288	286	2	284	286	286	288	4			
2	170	160	160	160	160	160	x	260	258	254	4	256	254	256	254	2	B/B	B/B	No defect
							y	291	286	284	2	286	285	286	285	1			
3	170	160	160	155	158	158	x	261	256	256	0	257	256	255	255	2	B/B	B/B	No defect
							y	292	288	288	0	285	289	285	287	4			
4	170	160	160	160	161	161	x	261	258	257	1	259	258	253	257	6	B/B	B/B	No defect
							y	293	291	287	4	294	290	283	288	7			
5	170	160	160	160	161	161	x	263	259	255	4	257	255	257	256	2	B/B	B/B	No defect
							y	293	288	287	1	286	287	287	286	1			

**Table F4.1** Screen qualities obtained from the 2<sup>nd</sup> experiment with slurry pH 7.0 after making finished tube

**Slurry condition :** pH 7.0

**Exposure condition :** Machine no.1 (100% exposure)

Tube No.	$\Delta x$ $\Delta y$	$\Delta X, \Delta Y$ measuring position										WU level	Avg. FLO (Cd/m <sup>2</sup> )	Avg. CB (%)		
		5	10	11	RI	1	3	7	9	R2	R3					
1	x	281	280	277	3	277	275	276	278	3	278	276	278	3	6	R(FLO) = 30.5 G(FLO) = 109.7 B(FLO) = 14.6 94.9%
	y	311	308	305	3	301	302	301	303	2	303	301	303	2	10	
2	x	280	278	279	1	275	276	276	278	3	278	276	278	3	5	
	y	310	308	307	1	303	305	303	306	3	306	303	306	3	7	
3	x	281	279	277	2	276	274	276	275	2	275	276	275	2	7	
	y	311	309	306	3	303	304	303	305	2	305	303	305	2	8	
4	x	280	279	278	1	274	276	276	277	3	277	276	277	3	6	
	y	310	308	308	0	302	307	300	303	7	303	300	303	7	10	
5	x	281	280	279	1	276	276	277	277	1	277	277	277	1	5	
	y	311	309	309	0	303	306	306	305	3	305	306	305	3	8	

**Table F4.2** Screen qualities obtained from the 2<sup>nd</sup> experiment with slurry pH 7.5 after making finished tube

**Slurry condition :** pH 7.5

**Exposure condition :** Machine no.1 (100% exposure)

Tube No.	$\Delta x$ $\Delta y$	$\Delta X, \Delta Y$ measuring position										WU level	Avg. FLO (Cd/m <sup>2</sup> )	Avg. CB (%)	
		5	10	11	R1	1	3	7	9	R2	R3				
1	x	281	280	278	2	276	275	276	278	3	276	6	4.5	R(FLO) = 30.7 G(FLO) = 109.7 B(FLO) = 14.3	93.9%
	y	311	308	307	1	303	305	302	305	3	303	9			
2	x	280	279	278	1	274	275	276	276	2	276	6			
	y	311	307	307	0	303	303	301	303	2	303	10			
3	x	281	279	278	1	277	277	275	275	2	275	6			
	y	311	307	308	1	302	305	299	303	6	303	12			
4	x	281	280	279	1	277	277	274	278	4	274	7			
	y	311	309	307	2	306	304	301	304	5	304	10			
5	x	281	279	277	2	274	275	276	275	2	276	7			
	y	311	307	306	1	301	303	300	302	3	302	11			

## VITA

Usa Chewarattanaphan was born on July 12, 1973 in Lampang, Thailand. She received the Bachelor of Science degree in Chemistry, Chiang Mai University, in 1995. In the same year, she worked for Minebea Thai Co., Ltd. as a researcher of Research & Development Center for 1 year. After that, she has worked for Toshiba Display Devices (Thailand) Co., Ltd. as engineer of manufacturing engineering department since 1996. In 1998, she was a student in graduate school at Chulalongkorn University studying in the Program of Petrochemistry and Polymer Science. She graduated with Master Degree of Science in 2000.