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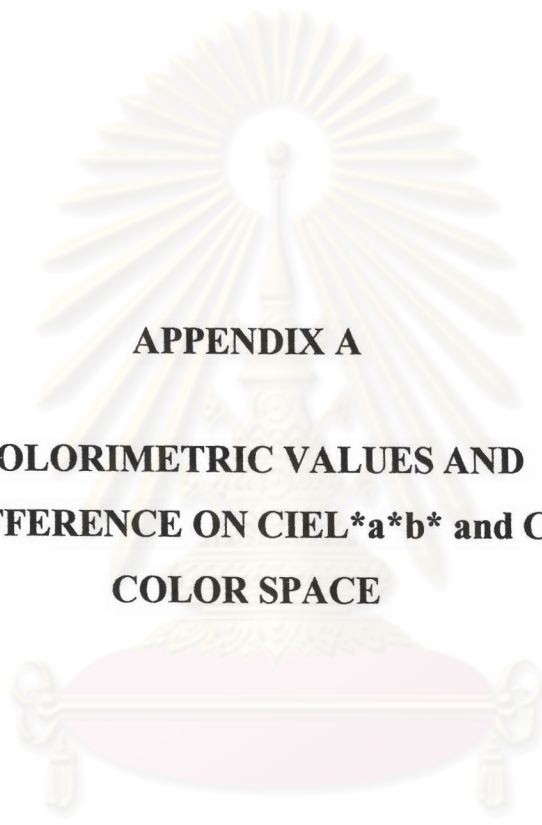
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APPENDICES

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย



APPENDIX A
COLORIMETRIC VALUES AND
COLOR DIFFERENCE ON CIEL*a*b* and CIEL*C*h
COLOR SPACE

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Table A-1 Colorimetric values of color samples and color difference, lightness difference, chroma difference and hue difference each color combination pairs

color combination	L*		a*		b*		C*		h		L*		a*		b*		C*		h		deltaE*	deltaL*	deltaC*	deltaH*
	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color				
205. V2 - W	48.60	62.91	17.90	65.41	15.88	93.25	1.10	-0.86	1.40	321.88	78.52	44.65	64.01	8.67										
8. V2 - Gy5.5	48.60	62.91	17.90	65.41	15.88	55.85	-1.41	2.10	2.52	123.83	66.63	7.25	62.89	20.77										
165. V2 - Bk	48.60	62.91	17.90	65.41	15.88	22.37	-0.68	-0.99	1.20	235.51	71.33	26.23	64.21	16.66										
141. V2 - V8	48.60	62.91	17.90	65.41	15.88	82.68	6.28	83.92	84.15	85.72	93.42	34.08	18.74	84.94										
170. V2 - V12	48.60	62.91	17.90	65.41	15.88	58.88	-50.20	25.74	56.42	152.85	113.85	10.28	8.99	113.02										
34. V2 - V18	48.60	62.91	17.90	65.41	15.88	45.52	-3.71	-39.42	39.59	264.62	87.94	3.08	25.82	84.01										
244. V2 - V22	48.60	62.91	17.90	65.41	15.88	42.04	26.05	-29.42	39.30	311.52	60.34	6.56	26.11	54.00										
219. V2 - I12	48.60	62.91	17.90	65.41	15.88	74.01	30.63	10.97	32.53	19.70	41.66	25.41	32.88	2.99										
147. V2 - I18	48.60	62.91	17.90	65.41	15.88	87.27	1.76	49.29	49.32	87.95	78.87	38.67	16.09	66.83										
180. V2 - I112	48.60	62.91	17.90	65.41	15.88	77.52	-25.40	15.39	29.69	148.79	92.96	28.92	35.72	80.80										
231. V2 - I118	48.60	62.91	17.90	65.41	15.88	68.44	-8.53	-21.76	23.37	248.60	84.08	19.84	42.04	70.07										
201. V2 - I122	48.60	62.91	17.90	65.41	15.88	69.55	15.84	-12.25	20.02	322.27	59.70	20.95	45.39	32.62										
39. V2 - d2	48.60	62.91	17.90	65.41	15.88	52.11	23.53	9.36	25.32	21.68	40.45	3.51	40.09	4.06										
253. V2 - d8	48.60	62.91	17.90	65.41	15.88	62.05	4.20	34.34	34.59	83.03	62.43	13.45	30.82	52.60										
76. V2 - d12	48.60	62.91	17.90	65.41	15.88	53.62	-20.80	12.80	24.42	148.40	84.02	5.02	40.99	73.17										
48. V2 - d18	48.60	62.91	17.90	65.41	15.88	39.37	-5.16	-14.85	15.73	250.83	76.10	9.23	49.68	56.90										
114. V2 - d22	48.60	62.91	17.90	65.41	15.88	40.61	11.85	-9.77	15.35	320.50	58.62	7.99	50.06	29.44										
103. V2 - dk2	48.60	62.91	17.90	65.41	15.88	46.53	2.20	32.26	23.25	9.57	62.42	2.07	42.16	45.98										
53. V2 - dk8	48.60	62.91	17.90	65.41	15.88	46.53	2.20	32.26	32.33	86.10	62.42	2.07	33.08	52.89										
133. V2 - dk12	48.60	62.91	17.90	65.41	15.88	38.95	-18.50	9.73	20.91	152.26	82.39	9.65	44.50	68.66										
158. V2 - dk18	48.60	62.91	17.90	65.41	15.88	30.42	-5.29	-15.71	16.57	251.38	78.18	18.18	48.84	58.27										
16. V2 - dk22	48.60	62.91	17.90	65.41	15.88	28.43	10.57	-9.54	14.24	317.94	62.44	20.17	51.17	29.56										
65. V8 - W	82.68	6.28	83.92	84.15	85.72	93.25	1.10	-0.86	1.40	321.88	85.59	10.57	82.75	19.16										
131. V8 - Gy5.5	82.68	6.28	83.92	84.15	85.72	55.85	-1.41	2.10	2.52	123.83	86.45	26.83	81.63	9.50										

Table A-1 Colorimetric values of color samples and color difference, lightness difference, chroma difference and hue difference each color combination pairs (cont.)

color combination	L*		a*		b*		C*		h		L*		a*		b*		C*		h		deltaL*	deltaE*	deltaC*	deltaH*
	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color				
60. V8 - Bk	82.68	6.28	83.92	84.15	85.72	22.37	-0.68	-0.99	1.20	235.51	104.38	60.31	82.95	19.43										
176. V8 - V12	82.68	6.28	83.92	84.15	85.72	58.88	-50.20	25.74	56.42	152.85	84.51	23.80	27.73	76.20										
149. V8 - V18	82.68	6.28	83.92	84.15	85.72	45.52	-3.71	-39.42	39.59	264.62	129.20	37.16	44.56	115.44										
138. V8 - V22	82.68	6.28	83.92	84.15	85.72	42.04	26.05	-29.42	39.30	311.52	122.02	40.64	44.85	105.95										
121. V8 - l12	82.68	6.28	83.92	84.15	85.72	74.01	30.63	10.97	32.53	19.70	77.39	8.67	51.62	57.01										
125. V8 - l18	82.68	6.28	83.92	84.15	85.72	87.27	1.76	49.29	49.32	87.95	35.22	4.59	34.83	2.56										
19. V8 - l12	82.68	6.28	83.92	84.15	85.72	77.52	-25.40	15.39	29.69	148.79	75.67	5.16	54.46	52.29										
166. V8 - l118	82.68	6.28	83.92	84.15	85.72	68.44	-8.53	-21.76	23.37	248.60	107.66	14.24	60.78	87.71										
235. V8 - l122	82.68	6.28	83.92	84.15	85.72	69.55	15.84	-12.25	20.02	322.27	97.53	13.13	64.13	72.30										
14. V8 - d2	82.68	6.28	83.92	84.15	85.72	52.11	23.53	9.36	25.32	21.68	82.41	30.57	58.83	48.95										
26. V8 - d8	82.68	6.28	83.92	84.15	85.72	62.05	4.20	34.34	34.59	83.03	53.74	20.63	49.56	2.51										
157. V8 - d12	82.68	6.28	83.92	84.15	85.72	53.62	-20.80	12.80	24.42	148.40	81.46	29.06	59.73	47.16										
222. V8 - d18	82.68	6.28	83.92	84.15	85.72	39.37	-5.16	-14.85	15.73	250.83	108.45	43.31	68.42	72.15										
97. V8 - d22	82.68	6.28	83.92	84.15	85.72	40.61	11.85	-9.77	15.35	320.50	102.85	42.07	68.80	63.84										
92. V8 - dk2	82.68	6.28	83.92	84.15	85.72	33.08	22.93	3.87	23.25	9.57	95.63	49.60	60.90	54.56										
144. V8 - dk8	82.68	6.28	83.92	84.15	85.72	46.53	2.20	32.26	32.33	86.10	63.18	36.15	51.82	0.30										
112. V8 - dk12	82.68	6.28	83.92	84.15	85.72	38.95	-18.50	9.73	20.91	152.26	89.61	43.73	63.24	46.03										
243. V8 - dk18	82.68	6.28	83.92	84.15	85.72	30.42	-5.29	-15.71	16.57	251.38	113.10	52.26	67.58	74.11										
104. V8 - dk22	82.68	6.28	83.92	84.15	85.72	28.43	10.57	-9.54	14.24	317.94	108.15	54.25	69.91	62.18										
191. V12 - W	58.88	-50.20	25.74	56.42	152.85	93.25	1.10	-0.86	1.40	321.88	67.24	34.37	55.02	17.66										
160. V12 - Gy5.5	58.88	-50.20	25.74	56.42	152.85	55.85	-1.41	2.10	2.52	123.83	54.30	3.03	53.90	5.84										
135. V12 - Bk	58.88	-50.20	25.74	56.42	152.85	22.37	-0.68	-0.99	1.20	235.51	67.08	36.51	55.22	10.84										
139. V12 - V18	58.88	-50.20	25.74	56.42	152.85	45.52	-3.71	-39.42	39.59	264.62	81.15	13.36	16.83	78.26										
132. V12 - V22	58.88	-50.20	25.74	56.42	152.85	42.04	26.05	-29.42	39.30	311.52	95.60	16.84	17.12	92.54										

Table A-1 Colorimetric values of color samples and color difference, lightness difference, chroma difference and hue difference each color combination pairs (cont.)

color combination	L*		a*		b*		C*		h		L*		a*		b*		C*		h		deltaL*		deltaE*		deltaC*		deltaH*		
	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color
15. V12 - lt2	58.88	74.01	-50.20	30.63	25.74	10.97	56.42	32.53	152.85	19.70	83.55	15.13	23.89	78.62															
87. V12 - lt8	58.88	87.27	-50.20	1.76	25.74	49.29	56.42	49.32	152.85	87.95	63.72	28.39	7.10	56.60															
44. V12 - lt12	58.88	77.52	-50.20	-25.40	25.74	15.39	56.42	29.69	152.85	148.79	32.70	18.64	26.73	2.77															
220. V12 - lt18	58.88	68.44	-50.20	-8.53	25.74	-21.76	56.42	23.37	152.85	248.60	63.91	9.56	33.05	53.85															
252. V12 - lt22	58.88	69.55	-50.20	15.84	25.74	-12.25	56.42	20.02	152.85	322.27	76.93	10.67	36.40	66.93															
35. V12 - d2	58.88	52.11	-50.20	23.53	25.74	9.36	56.42	25.32	152.85	21.68	75.83	6.77	31.10	68.83															
102. V12 - d8	58.88	62.05	-50.20	4.20	25.74	34.34	56.42	34.59	152.85	83.03	55.17	3.17	21.83	50.56															
206. V12 - d12	58.88	53.62	-50.20	-20.80	25.74	12.80	56.42	24.42	152.85	148.40	32.55	5.26	32.00	2.79															
151. V12 - d18	58.88	39.37	-50.20	-5.16	25.74	-14.85	56.42	15.73	152.85	250.83	63.69	19.51	40.69	44.95															
1. V12 - d22	58.88	40.61	-50.20	11.85	25.74	-9.77	56.42	15.35	152.85	320.50	24.29	1.43	41.07	47.69															
122. V12 - dk2	58.88	33.08	-50.20	22.93	25.74	3.87	56.42	23.25	152.85	9.57	80.57	25.80	33.17	68.75															
18. V12 - dk8	58.88	46.53	-50.20	2.20	25.74	32.26	56.42	32.33	152.85	86.10	54.23	12.35	24.09	46.99															
38. V12 - dk12	58.88	38.95	-50.20	-18.50	25.74	9.73	56.42	20.91	152.85	152.26	40.72	19.93	35.51	0.50															
200. V12 - dk18	58.88	30.42	-50.20	-5.29	25.74	-15.71	56.42	16.57	152.85	251.38	67.42	28.46	39.85	46.34															
6. V12 - dk22	58.88	28.43	-50.20	10.57	25.74	-9.54	56.42	14.24	152.85	317.94	76.58	30.45	42.18	56.20															
69. V18 - W	45.52	93.25	-3.71	1.10	-39.42	-0.86	39.59	1.40	264.62	321.88	61.55	47.73	38.19	7.18															
134. V18 - Gy5.5	45.52	55.85	-3.71	-1.41	-39.42	2.10	39.59	2.52	264.62	123.83	42.85	10.33	37.07	18.84															
42. V18 - Bk	45.52	22.37	-3.71	-0.68	-39.42	-0.99	39.59	1.20	264.62	235.51	44.97	23.15	38.39	3.50															
154. V18 - V22	45.52	42.04	-3.71	26.05	-39.42	-29.42	39.59	39.30	264.62	311.52	31.59	3.48	0.29	31.39															
178. V18 - lt2	45.52	74.01	-3.71	30.63	-39.42	10.97	39.59	32.53	264.62	19.70	67.31	28.49	7.06	60.57															
17. V18 - lt8	45.52	87.27	-3.71	1.76	-39.42	49.29	39.59	49.32	264.62	87.95	98.20	41.75	9.73	88.34															
189. V18 - lt12	45.52	77.52	-3.71	-25.40	-39.42	15.39	39.59	29.69	264.62	148.79	67.07	32.00	9.90	58.11															
215. V18 - lt18	45.52	68.44	-3.71	-8.53	-39.42	-21.76	39.59	23.37	264.62	248.60	29.33	22.92	16.22	8.49															
225. V18 - lt22	45.52	69.55	-3.71	15.84	-39.42	-12.25	39.59	20.02	264.62	322.27	41.21	24.03	19.57	27.16															

Table A-1 Colorimetric values of color samples and color difference, lightness difference, chroma difference and hue difference each color combination pairs (cont.)

color combination	L*		a*		b*		C*		h		deltaL*		deltaE*		deltaC*		deltaH*	
	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color
120. V18 - d2	45.52	52.11	-3.71	23.53	-39.42	9.36	39.59	25.32	264.62	21.68	56.26	6.59	14.27	54.02				
174. V18 - d8	45.52	62.05	-3.71	4.20	-39.42	34.34	39.59	34.59	264.62	83.03	76.00	16.53	5.00	74.01				
24. V18 - d12	45.52	53.62	-3.71	-20.80	-39.42	12.80	39.59	24.42	264.62	148.40	55.54	8.10	15.17	52.81				
86. V18 - d18	45.52	39.37	-3.71	-5.16	-39.42	-14.85	39.59	15.73	264.62	250.83	25.37	6.15	23.86	6.04				
186. V18 - d22	45.52	40.61	-3.71	11.85	-39.42	-9.77	39.59	15.35	264.62	320.50	33.84	4.91	24.24	23.10				
218. V18 - dk2	45.52	33.08	-3.71	22.93	-39.42	3.87	39.59	23.25	264.62	9.57	52.33	12.44	16.34	48.13				
241. V18 - dk8	45.52	46.53	-3.71	2.20	-39.42	32.26	39.59	32.33	264.62	86.10	71.93	1.01	7.26	71.56				
245. V18 - dk12	45.52	38.95	-3.71	-18.50	-39.42	9.73	39.59	20.91	264.62	152.26	51.75	6.57	18.68	47.81				
93. V18 - dk18	45.52	30.42	-3.71	-5.29	-39.42	-15.71	39.59	16.57	264.62	251.38	28.15	15.10	23.02	5.89				
111. V18 - dk22	45.52	28.43	-3.71	10.57	-39.42	-9.54	39.59	14.24	264.62	317.94	37.27	17.09	25.35	21.31				
98. V22 - W	42.04	93.25	26.05	1.10	-29.42	-0.86	39.30	1.40	311.52	321.88	63.72	51.21	37.90	1.33				
242. V22 - Gy5.5	42.04	55.85	26.05	-1.41	-29.42	2.10	39.30	2.52	311.52	123.83	44.03	13.81	36.78	19.87				
234. V22 - Bk	42.04	22.37	26.05	-0.68	-29.42	-0.99	39.30	1.20	311.52	235.51	43.70	19.67	38.10	8.43				
33. V22 - lt2	42.04	74.01	26.05	30.63	-29.42	10.97	39.30	32.53	311.52	19.70	51.71	31.97	6.77	40.08				
179. V22 - lt8	42.04	87.27	26.05	1.76	-29.42	49.29	39.30	49.32	311.52	87.95	93.97	45.23	10.02	81.76				
74. V22 - lt12	42.04	77.52	26.05	-25.40	-29.42	15.39	39.30	29.69	311.52	148.79	76.90	35.48	9.61	67.55				
9. V22 - lt18	42.04	68.44	26.05	-8.53	-29.42	-21.76	39.30	23.37	311.52	248.60	44.17	26.40	15.93	31.63				
182. V22 - lt22	42.04	69.55	26.05	15.84	-29.42	-12.25	39.30	20.02	311.52	322.27	34.00	27.51	19.28	5.23				
130. V22 - d2	42.04	52.11	26.05	23.53	-29.42	9.36	39.30	25.32	311.52	21.68	40.15	10.07	13.98	36.26				
68. V22 - d8	42.04	62.05	26.05	4.20	-29.42	34.34	39.30	34.59	311.52	83.03	70.31	20.01	4.71	67.24				
142. V22 - d12	42.04	53.62	26.05	-20.80	-29.42	12.80	39.30	24.42	311.52	148.40	64.12	11.58	14.88	61.29				
126. V22 - d18	42.04	39.37	26.05	-5.16	-29.42	-14.85	39.30	15.73	311.52	250.83	34.55	2.67	23.57	25.12				
100. V22 - d22	42.04	40.61	26.05	11.85	-29.42	-9.77	39.30	15.35	311.52	320.50	24.29	1.43	23.95	3.76				
163. V22 - dk2	42.04	33.08	26.05	22.93	-29.42	3.87	39.30	23.25	311.52	9.57	34.62	8.96	16.05	29.33				

Table A-1 Colorimetric values of color samples and color difference, lightness difference, chroma difference and hue difference each color combination pairs (cont.)

color combination	L*		a*		b*		C*		h		deltaL*		deltaE*		deltaC*		deltaH*	
	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color
106. lt8 - lt12	87.27	87.95	1.76	77.52	49.32	15.39	29.69	148.79	44.52	9.75	19.63	38.75						
40. lt8 - lt18	87.27	87.95	1.76	68.44	49.32	-21.76	23.37	248.60	74.22	18.83	25.95	66.94						
246. lt8 - lt22	87.27	87.95	1.76	69.55	49.32	15.84	20.02	322.27	65.57	17.72	29.30	55.92						
109. lt8 - d2	87.27	87.95	1.76	52.11	49.32	23.53	9.36	25.32	21.68	35.16	24.00	38.63						
152. lt8 - d8	87.27	87.95	1.76	62.05	49.32	4.20	34.34	34.59	83.03	25.22	14.73	3.53						
119. lt8 - d12	87.27	87.95	1.76	53.62	49.32	-20.80	12.80	24.42	148.40	33.65	24.90	34.94						
217. lt8 - d18	87.27	87.95	1.76	39.37	49.32	-5.16	-14.85	15.73	250.83	47.90	33.59	55.08						
169. lt8 - d22	87.27	87.95	1.76	40.61	49.32	11.85	-9.77	15.35	320.50	46.66	33.97	49.36						
61. lt8 - dk2	87.27	87.95	1.76	33.08	49.32	22.93	3.87	23.25	9.57	54.19	26.07	42.80						
82. lt8 - dk8	87.27	87.95	1.76	46.53	49.32	2.20	32.26	32.33	86.10	40.74	16.99	1.25						
238. lt8 - dk12	87.27	87.95	1.76	38.95	49.32	-18.50	9.73	20.91	152.26	48.32	28.41	34.18						
70. lt8 - dk18	87.27	87.95	1.76	30.42	49.32	-5.29	-15.71	16.57	251.38	56.85	32.75	56.59						
229. lt8 - dk22	87.27	87.95	1.76	28.43	49.32	10.57	-9.54	14.24	317.94	58.84	35.08	48.04						
230. lt12 - W	77.52	148.79	-25.40	93.25	29.69	1.10	-0.86	1.40	321.88	15.73	28.29	12.88						
124. lt12 - Gys.5	77.52	148.79	-25.40	55.85	29.69	-1.41	2.10	2.52	123.83	21.67	27.17	3.73						
66. lt12 - Bk	77.52	148.79	-25.40	22.37	29.69	-0.68	-0.99	1.20	235.51	55.15	28.49	8.23						
184. lt12 - lt18	77.52	148.79	-25.40	68.44	29.69	-8.53	-21.76	23.37	248.60	9.08	6.32	40.31						
159. lt12 - lt22	77.52	148.79	-25.40	69.55	29.69	15.84	-12.25	20.02	322.27	7.97	9.67	48.69						
52. lt12 - d2	77.52	148.79	-25.40	52.11	29.69	23.53	9.36	25.32	21.68	25.41	4.37	49.11						
72. lt12 - d8	77.52	148.79	-25.40	62.05	29.69	4.20	34.34	34.59	83.03	15.47	4.90	34.80						
203. lt12 - d12	77.52	148.79	-25.40	53.62	29.69	-20.80	12.80	24.42	148.40	23.90	5.27	0.31						
172. lt12 - d18	77.52	148.79	-25.40	39.37	29.69	-5.16	-14.85	15.73	250.83	38.15	13.96	33.60						
237. lt12 - d22	77.52	148.79	-25.40	40.61	29.69	11.85	-9.77	15.35	320.50	36.91	14.34	42.60						
226. lt12 - dk2	77.52	148.79	-25.40	33.08	29.69	22.93	3.87	23.25	9.57	44.44	6.44	49.26						

Table A-1 Colorimetric values of color samples and color difference, lightness difference, chroma difference and hue difference each color combination pairs (cont.)

color combination	L*		a*		b*		C*		h		L*		a*		b*		C*		h		deltaL*	deltaE*	deltaC*	deltaH*
	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color				
145.it22-d18	69.55	15.84	-12.25	20.02	322.27	39.37	-5.16	15.73	-14.85	15.73	250.83	36.86	30.18	4.29	20.72									
11.it22 - d22	69.55	15.84	-12.25	20.02	322.27	40.61	11.85	15.35	-9.77	15.35	320.50	29.32	28.94	4.67	0.51									
81. it22 - dk2	69.55	15.84	-12.25	20.02	322.27	33.08	22.93	23.25	3.87	23.25	9.57	40.50	36.47	3.23	17.31									
150.it22-dk8	69.55	15.84	-12.25	20.02	322.27	46.53	2.20	32.33	32.26	32.33	86.10	51.93	23.02	12.31	44.90									
188.it22-dk12	69.55	15.84	-12.25	20.02	322.27	38.95	-18.50	20.91	9.73	20.91	152.26	50.98	30.60	0.89	40.76									
128.it22-dk18	69.55	15.84	-12.25	20.02	322.27	30.42	-5.29	16.57	-15.71	16.57	251.38	44.60	39.13	3.45	21.13									
7.it22 - dk22	69.55	15.84	-12.25	20.02	322.27	28.43	10.57	14.24	-9.54	14.24	317.94	41.54	41.12	5.78	1.31									
32. d2 - W	52.11	23.53	9.36	25.32	21.68	93.25	1.10	1.40	-0.86	1.40	321.88	47.96	41.14	23.92	5.95									
101.d2-Gy5.5	52.11	23.53	9.36	25.32	21.68	55.85	-1.41	2.52	2.10	2.52	123.83	26.24	3.74	22.80	12.44									
127. d2 - Bk	52.11	23.53	9.36	25.32	21.68	22.37	-0.68	1.20	-0.99	1.20	235.51	39.72	29.74	24.12	10.56									
209. d2 - d8	52.11	23.53	9.36	25.32	21.68	62.05	4.20	34.34	34.34	34.59	83.03	33.11	9.94	9.27	30.19									
10.d2 - d12	52.11	23.53	9.36	25.32	21.68	53.62	-20.80	24.42	12.80	24.42	148.40	44.49	1.51	0.90	44.45									
143. d2 - d18	52.11	23.53	9.36	25.32	21.68	39.37	-5.16	15.73	-14.85	15.73	250.83	39.64	12.74	9.59	36.29									
136. d2 - d22	52.11	23.53	9.36	25.32	21.68	40.61	11.85	15.35	-9.77	15.35	320.50	25.19	11.50	9.97	20.07									
64. d2 - dk2	52.11	23.53	9.36	25.32	21.68	33.08	22.93	23.25	3.87	23.25	9.57	19.82	19.03	2.07	5.12									
57. d2 - dk8	52.11	23.53	9.36	25.32	21.68	46.53	2.20	32.33	32.26	32.33	86.10	31.79	5.58	7.01	30.50									
91. d2-dk12	52.11	23.53	9.36	25.32	21.68	38.95	-18.50	20.91	9.73	20.91	152.26	44.04	13.16	4.41	41.80									
239.d2-dk18	52.11	23.53	9.36	25.32	21.68	30.42	-5.29	16.57	-15.71	16.57	251.38	43.93	21.69	8.75	37.18									
187.d2-dk22	52.11	23.53	9.36	25.32	21.68	28.43	10.57	14.24	-9.54	14.24	317.94	32.95	23.68	11.08	20.06									
29.d8 - W	62.05	4.20	34.34	34.59	83.03	93.25	1.10	1.40	-0.86	1.40	321.88	47.14	31.20	33.19	12.13									
37.d8 -Gy5.5	62.05	4.20	34.34	34.59	83.03	55.85	-1.41	2.52	2.10	2.52	123.83	33.31	6.20	32.07	6.51									
240. d8 - Bk	62.05	4.20	34.34	34.59	83.03	22.37	-0.68	1.20	-0.99	1.20	235.51	53.35	39.68	33.39	12.54									
50. d8 - d12	62.05	4.20	34.34	34.59	83.03	53.62	-20.80	24.42	12.80	24.42	148.40	34.06	8.43	10.17	31.39									
156. d8 - d18	62.05	4.20	34.34	34.59	83.03	39.37	-5.16	15.73	-14.85	15.73	250.83	54.97	22.68	18.86	46.38									

Table A-1 Colorimetric values of color samples and color difference, lightness difference, chroma difference and hue difference each color combination pairs (cont.)

color combination	L*		a*		b*		C*		h		L*		a*		b*		C*		h		deltaL*		deltaE*		deltaC*		deltaH*		
	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color
196. d8 - d22	62.05	40.61	4.20	11.85	34.34	-9.77	34.59	15.35	83.03	320.50	49.64	21.44	19.24	40.42															
232. d8 - dk2	62.05	33.08	4.20	22.93	34.34	3.87	34.59	23.25	83.03	9.57	46.03	28.97	11.34	33.92															
183. d8 - dk8	62.05	46.53	4.20	2.20	34.34	32.26	34.59	32.33	83.03	86.10	15.79	15.52	2.26	1.79															
63. d8 - dk12	62.05	38.95	4.20	-18.50	34.34	9.73	34.59	20.91	83.03	152.26	40.68	23.10	13.68	30.56															
227.d8-dk18	62.05	30.42	4.20	-5.29	34.34	-15.71	34.59	16.57	83.03	251.38	59.96	31.63	18.02	47.65															
43. d8 - dk22	62.05	28.43	4.20	10.57	34.34	-9.54	34.59	14.24	83.03	317.94	55.64	33.62	20.35	39.39															
85. d12 - W	53.62	93.25	-20.80	1.10	12.80	-0.86	24.42	1.40	148.40	321.88	47.29	39.63	23.02	11.67															
223.d12-Gy5.5	53.62	55.85	-20.80	-1.41	12.80	2.10	24.42	2.52	148.40	123.83	22.26	2.23	21.90	3.29															
155.d12-Bk	53.62	22.37	-20.80	-0.68	12.80	-0.99	24.42	1.20	148.40	235.51	39.64	31.25	23.22	7.47															
247.d12-d18	53.62	39.37	-20.80	-5.16	12.80	-14.85	24.42	15.73	148.40	250.83	34.82	14.25	8.69	30.56															
221.d12-d22	53.62	40.61	-20.80	11.85	12.80	-9.77	24.42	15.35	148.40	320.50	41.77	13.01	9.07	38.64															
55.d12-dk2	53.62	33.08	-20.80	22.93	12.80	3.87	24.42	23.25	148.40	9.57	49.13	20.54	1.17	44.62															
214.d12-dk8	53.62	46.53	-20.80	2.20	12.80	32.26	24.42	32.33	148.40	86.10	30.95	7.09	7.91	29.07															
233.d12-dk12	53.62	38.95	-20.80	-18.50	12.80	9.73	24.42	20.91	148.40	152.26	15.16	14.67	3.51	1.55															
107.d12-dk18	53.62	30.42	-20.80	-5.29	12.80	-15.71	24.42	16.57	148.40	251.38	39.90	23.20	7.85	31.49															
110.d12-dk22	53.62	28.43	-20.80	10.57	12.80	-9.54	24.42	14.24	148.40	317.94	46.02	25.19	10.18	37.14															
113. d18 - W	39.37	93.25	-5.16	1.10	-14.85	-0.86	15.73	1.40	250.83	321.88	56.02	53.88	14.33	5.44															
13. d18 - Bk	39.37	22.37	-5.16	-0.68	-14.85	-0.99	15.73	1.20	250.83	235.51	22.39	17.00	14.53	1.02															
77.d18 - Gy5.5	39.37	55.85	-5.16	-1.41	-14.85	2.10	15.73	2.52	250.83	123.83	23.94	16.48	13.21	11.26															
62. d18 - d22	39.37	40.61	-5.16	11.85	-14.85	-9.77	15.73	15.35	250.83	320.50	17.80	1.24	0.38	17.75															
95. d18 - dk2	39.37	33.08	-5.16	22.93	-14.85	3.87	15.73	23.25	250.83	9.57	34.34	6.29	7.52	32.91															
117.d18-dk8	39.37	46.53	-5.16	2.20	-14.85	32.26	15.73	32.33	250.83	86.10	48.22	7.16	16.60	44.70															
88.d18-dk12	39.37	38.95	-5.16	-18.50	-14.85	9.73	15.73	20.91	250.83	152.26	27.97	0.42	5.18	27.48															
31.d18-dk18	39.37	30.42	-5.16	-5.29	-14.85	-15.71	15.73	16.57	250.83	251.38	8.99	8.95	0.84	0.23															

Table A-1 Colorimetric values of color samples and color difference, lightness difference, chroma difference and hue difference each color combination pairs (cont.)

color combination	L*		a*		b*		C*		h		L*		a*		b*		C*		h		deltaL*		deltaE*		deltaC*		deltaH*		
	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color	right color	left color
199.d18-dk22	39.37	28.43	-5.16	10.57	-14.85	9.54	15.73	14.24	250.83	317.94	28.43	10.57	-9.54	14.24	19.88	10.94	1.49	16.54											
167.d22-W	40.61	93.25	11.85	1.10	-9.77	-0.86	15.35	1.40	320.50	321.88	93.25	1.10	-0.86	1.40	54.46	52.64	13.95	0.59											
177.d22-Gy5.5	40.61	55.85	11.85	-1.41	-9.77	2.10	15.35	2.52	320.50	123.83	55.85	-1.41	2.10	2.52	23.43	15.24	12.83	12.33											
148.d22-Bk	40.61	22.37	11.85	-0.68	-9.77	-0.99	15.35	1.20	320.50	235.51	22.37	-0.68	-0.99	1.20	23.81	18.24	14.15	5.82											
216.d22-dk2	40.61	33.08	11.85	22.93	-9.77	3.87	15.35	23.25	320.50	9.57	33.08	22.93	3.87	19.12	7.53	7.90	15.70												
161.d22-dk8	40.61	46.53	11.85	2.20	-9.77	32.26	15.35	32.33	320.50	86.10	46.53	2.20	32.26	43.53	5.92	16.98	39.64												
36.d22-dk12	40.61	38.95	11.85	-18.50	-9.77	9.73	15.35	20.91	320.50	152.26	38.95	-18.50	9.73	36.11	1.66	5.56	35.64												
73.d22-dk18	40.61	30.42	11.85	-5.29	-9.77	-15.71	15.35	16.57	320.50	251.38	30.42	-5.29	-15.71	20.81	10.19	1.22	18.10												
20.d22-dk22	40.61	28.43	11.85	10.57	-9.77	-9.54	15.35	14.24	320.50	317.94	28.43	10.57	-9.54	12.25	12.18	1.11	0.68												
3.dk2-W	33.08	93.25	22.93	1.10	3.87	-0.86	23.25	1.40	9.57	321.88	93.25	1.10	-0.86	64.18	60.17	21.85	4.64												
27.dk2-Gy5.5	33.08	55.85	22.93	-1.41	3.87	2.10	23.25	2.52	9.57	123.83	55.85	-1.41	2.10	33.38	22.77	20.73	12.88												
208.dk2-Bk	33.08	22.37	22.93	-0.68	3.87	-0.99	23.25	1.20	9.57	235.51	22.37	-0.68	-0.99	26.38	10.71	22.05	9.74												
21.dk2-dk8	33.08	46.53	22.93	2.20	3.87	32.26	23.25	32.33	9.57	86.10	46.53	2.20	32.26	37.64	13.45	9.08	33.96												
168.dk2-dk12	33.08	38.95	22.93	-18.50	3.87	9.73	23.25	20.91	9.57	152.26	38.95	-18.50	9.73	42.25	5.87	2.34	41.78												
12.dk2-dk18	33.08	30.42	22.93	-5.29	3.87	-15.71	23.25	16.57	9.57	251.38	30.42	-5.29	-15.71	34.45	2.66	6.68	33.69												
195.dk2-dk22	33.08	28.43	22.93	10.57	3.87	-9.54	23.25	14.24	9.57	317.94	28.43	10.57	-9.54	18.82	4.65	9.01	15.86												
236.dk8-W	46.53	93.25	2.20	1.10	32.26	-0.86	32.33	1.40	86.10	321.88	93.25	1.10	-0.86	57.28	46.72	30.93	11.89												
108.dk8-Gy5.5	46.53	55.85	2.20	-1.41	32.26	2.10	32.33	2.52	86.10	123.83	55.85	-1.41	2.10	31.77	9.32	29.81	5.83												
123.dk8-Bk	46.53	22.37	2.20	-0.68	32.26	-0.99	32.33	1.20	86.10	235.51	22.37	-0.68	-0.99	41.20	24.16	31.13	12.03												
99.dk8-dk12	46.53	38.95	2.20	-18.50	32.26	9.73	32.33	20.91	86.10	152.26	38.95	-18.50	9.73	31.52	7.58	11.42	28.38												
137.dk8-dk18	46.53	30.42	2.20	-5.29	32.26	-15.71	32.33	16.57	86.10	251.38	30.42	-5.29	-15.71	51.15	16.11	15.76	45.92												
251.dk8-dk22	46.53	28.43	2.20	10.57	32.26	-9.54	32.33	14.24	86.10	317.94	28.43	10.57	-9.54	46.31	18.10	18.09	38.60												
118.dk12-W	38.95	93.25	-18.50	1.10	9.73	-0.86	20.91	1.40	152.26	321.88	93.25	1.10	-0.86	58.69	54.30	19.51	10.75												
181.dk12-Gy5.5	38.95	55.85	-18.50	-1.41	9.73	2.10	20.91	2.52	152.26	123.83	55.85	-1.41	2.10	25.22	16.90	18.39	3.48												



APPENDIX B

**VISUAL ASSESSMENT VALUES OF COLOR COMBINATION
FROM THAI OBSERVERS**

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Table B-1 Visual assessment values of color combination through 7-point method from Thai observers

color combination	Visual Assessment Values													
	dark-light	hard-soft	cool-warm	turbid-transparent	pale-deep	vague-distinct	light-heavy	sombrivid	weak-strong	passive-dynamic	plain-gaudy	subdued-striking	disharmony-harmony	dislike-like
205. V2 - W	67.65	-18.63	50.00	36.27	48.04	71.57	22.55	67.65	34.31	70.59	59.80	78.43	18.63	8.82
8. V2 - Gy5.5	59.80	-47.06	62.75	-3.92	60.78	60.78	55.88	52.94	42.16	55.88	68.63	71.57	-44.12	-30.39
165. V2 - Bk	24.51	-61.76	58.82	-22.55	74.51	68.63	59.80	35.29	66.67	44.12	58.82	71.57	-18.63	15.69
141. V2 - V8	78.43	-42.16	79.41	44.12	66.67	82.35	33.33	84.31	64.71	80.39	84.31	85.29	-11.76	10.78
170. V2 - V12	46.08	-46.08	58.82	-19.61	68.63	76.47	63.73	75.49	38.24	76.47	88.24	82.35	-51.96	-22.55
34. V2 - V18	48.04	-55.88	69.61	-16.67	78.43	73.53	64.71	66.67	62.75	58.82	78.43	76.47	-50.00	-26.47
244. V2 - V22	29.41	-58.82	70.59	-25.49	72.55	65.69	57.84	51.96	10.78	71.57	80.39	77.45	-35.29	-26.47
219. V2 - lt2	59.80	-15.69	52.94	39.22	33.33	61.76	18.63	66.67	-20.59	60.78	62.75	67.65	47.06	22.55
147. V2 - lt8	83.33	-24.51	68.63	43.14	37.25	78.43	27.45	71.57	50.98	76.47	76.47	72.55	-13.73	11.76
180. V2 - lt12	51.96	-26.47	30.39	31.37	31.37	47.06	-7.84	49.02	-17.65	52.94	60.78	61.76	-50.98	-41.18
231. V2 - lt18	54.90	-49.02	56.86	35.29	56.86	68.63	-3.92	64.71	35.29	63.73	64.71	70.59	-41.18	-29.41
201. V2 - lt22	63.73	-31.37	67.65	39.22	31.37	49.02	-11.76	59.80	-8.82	62.75	73.53	66.67	-19.61	-38.24
39. V2 - d2	48.04	-37.25	72.55	-19.61	45.10	34.31	29.41	28.43	32.35	48.04	57.84	61.76	-33.33	-54.90
253. V2 - d8	43.14	-37.25	63.73	-32.35	55.88	35.29	44.12	38.24	38.24	54.90	45.10	67.65	-62.75	-37.25
76. V2 - d12	40.20	-48.04	56.86	-20.59	49.02	40.20	45.10	31.37	36.27	57.84	66.67	67.65	-66.67	-38.24
48. V2 - d18	22.55	-52.94	51.96	-35.29	65.69	45.10	61.76	31.37	60.78	50.98	57.84	61.76	-51.96	-34.31
114. V2 - d22	-4.90	-46.08	58.82	-33.33	73.53	24.51	55.88	-14.71	37.25	64.71	63.73	58.82	-41.18	-28.43
103. V2 - dk2	39.22	-42.16	50.00	-28.43	60.78	38.24	45.10	50.00	37.25	43.14	54.90	63.73	39.22	5.88
53. V2 - dk8	34.31	-47.06	56.86	-12.75	61.76	46.08	54.90	25.49	22.55	55.88	68.63	63.73	-68.63	-54.90
133. V2 - dk12	29.41	-36.27	38.24	-33.33	64.71	52.94	53.92	41.18	53.92	58.82	72.55	63.73	-36.27	-11.76
158. V2 - dk18	-12.75	-38.24	49.02	-21.57	73.53	61.76	55.88	9.80	55.88	32.35	58.82	52.94	-32.35	-12.75
16. V2 - dk22	-8.82	-53.92	48.04	-29.41	69.61	52.94	60.78	-4.90	50.98	41.18	65.69	62.75	11.76	-5.88
65. V8 - W	83.33	28.43	37.25	72.55	25.49	73.53	-15.69	79.41	3.92	55.88	55.88	63.73	25.49	36.27
131. V8 - Gy5.5	51.96	23.53	36.27	25.49	26.47	50.98	-5.88	50.00	-8.82	40.20	38.24	47.06	-15.69	-9.80

Table B-1 Visual assessment values of color combination through 7-point method from Thai observers (cont.)

color combination	Visual Assessment Values													
	dark-light	hard-soft	cool-warm	turbid-transparent	pale-deep	vague-distinct	light-heavy	som-bre-vivid	weak-strong	passive-dynamic	plain-gaudy	subdued-striking	disharmony-harmony	dislike-like
60. V8 - Bk	45.10	-36.27	38.24	-26.47	69.61	74.51	61.76	53.92	63.73	54.90	59.80	84.31	-44.12	17.65
176. V8 - V12	72.55	-30.39	21.57	46.08	53.92	78.43	-16.67	82.35	31.37	71.57	76.47	83.33	6.86	17.65
149. V8 - V18	59.80	18.63	2.94	29.41	50.98	76.47	-5.88	80.39	22.55	63.73	76.47	73.53	-17.65	35.29
138. V8 - V22	56.86	-22.55	49.02	18.63	70.59	79.41	50.00	77.45	31.37	66.67	79.41	77.45	4.90	18.63
121. V8 - lt2	75.49	49.02	25.49	56.86	-18.63	37.25	-45.10	73.53	-33.33	54.90	52.94	53.92	-8.82	-1.96
125. V8 - lt8	80.39	49.02	48.04	57.84	-15.69	56.86	-39.22	69.61	-15.69	50.98	34.31	49.02	64.71	22.55
19. V8 - lt12	67.65	37.25	-8.82	60.78	-24.51	51.96	-35.29	64.71	-26.47	50.00	38.24	44.12	13.73	-20.59
166. V8 - lt18	68.63	41.18	-11.76	53.92	-8.82	50.00	-45.10	72.55	-39.22	45.10	35.29	56.86	7.84	43.14
235. V8 - lt22	70.59	37.25	15.69	53.92	-16.67	43.14	-44.12	64.71	-37.25	56.86	45.10	51.96	-33.33	-21.57
14. V8 - d2	69.61	-33.33	41.18	22.55	36.27	48.04	-9.80	50.98	-8.82	45.10	61.76	61.76	-29.41	-13.73
26. V8 - d8	69.61	23.53	32.35	40.20	14.71	39.22	-16.67	57.84	-12.75	41.18	40.20	47.06	56.86	-12.75
157. V8 - d12	38.24	17.65	0.00	39.22	44.12	53.92	-4.90	52.94	-9.80	46.08	48.04	53.92	-15.69	3.92
222. V8 - d18	46.08	-36.27	29.41	12.75	56.86	58.82	41.18	47.06	52.94	29.41	47.06	54.90	15.69	14.71
97. V8 - d22	35.29	-21.57	34.31	-3.92	33.33	37.25	27.45	24.51	25.49	52.94	42.16	54.90	-18.63	-15.69
92. V8 - dk2	47.06	-40.20	51.96	0.00	53.92	67.65	46.08	56.86	49.02	64.71	63.73	63.73	-19.61	-1.96
144. V8 - dk8	40.20	-12.75	41.18	26.47	32.35	27.45	-19.61	33.33	-1.96	38.24	36.27	48.04	19.61	-3.92
112. V8 - dk12	49.02	-16.67	19.61	17.65	54.90	65.69	19.61	64.71	31.37	55.88	59.80	71.57	4.90	6.86
243. V8 - dk18	46.08	-44.12	26.47	-0.98	62.75	74.51	57.84	60.78	54.90	57.84	58.82	66.67	7.84	7.84
104. V8 - dk22	49.02	-18.63	36.27	19.61	63.73	66.67	29.41	55.88	40.20	48.04	48.04	59.80	-35.29	8.82
191. V12 - W	65.69	38.24	-46.08	53.92	44.12	64.71	-41.18	66.67	2.94	9.80	27.45	61.76	0.98	19.61
160. V12 - Gy5.5	2.94	-23.53	-12.75	-30.39	-11.76	-0.98	-11.76	-13.73	-10.78	-15.69	-17.65	24.51	-40.20	-49.02
135. V12 - Bk	-11.76	-48.04	-36.27	-29.41	66.67	69.61	61.76	37.25	50.98	-5.88	28.43	46.08	-11.76	2.94
139. V12 - V18	15.69	-5.88	-28.43	-16.67	50.00	35.29	43.14	53.92	42.16	20.59	46.08	48.04	24.51	16.67
132. V12 - V22	20.59	-44.12	-5.88	-19.61	68.63	58.82	63.73	30.39	43.14	35.29	60.78	63.73	-17.65	3.92

Table B-1 Visual assessment values of color combination through 7-point method from Thai observers (cont.)

color combination	Visual Assessment Values													
	dark-light	hard-soft	cool-warm	turbid-transparent	pale-deep	vague-distinct	light-heavy	som-bre-vivid	weak-strong	passive-dynamic	plain-gaudy	subdued-striking	disharmony-harmony	dislike-like
15. V12 - lt2	60.78	-15.69	2.94	35.29	31.37	56.86	-15.69	61.76	-12.75	47.06	58.82	57.84	-30.39	-25.49
87. V12 - lt8	72.55	30.39	-7.84	47.06	32.35	69.61	-14.71	71.57	9.80	72.55	69.61	70.59	23.53	24.51
44. V12-lt12	54.90	40.20	-50.98	52.94	-14.71	53.92	-29.41	59.80	-2.94	21.57	25.49	41.18	53.92	26.47
220. V12 - lt18	40.20	27.45	-49.02	25.49	23.53	14.71	-19.61	35.29	-18.63	-20.59	21.57	25.49	-11.76	-12.75
252. V12 - lt22	58.82	22.55	-38.24	34.31	29.41	25.49	-40.20	29.41	-23.53	31.37	22.55	31.37	-61.76	-44.12
35. V12 - d2	5.88	-26.47	-23.53	-25.49	21.57	-21.57	34.31	-21.57	21.57	25.49	-2.94	4.90	-50.98	-61.76
102. V12 - d8	46.08	-28.43	-7.84	-2.94	25.49	-10.78	-17.65	-1.96	23.53	39.22	32.35	34.31	-40.20	-16.67
206. V12 - d12	-17.65	2.94	-62.75	-41.18	51.96	-16.67	27.45	-24.51	17.65	-15.69	-23.53	41.18	50.98	-17.65
151. V12-d18	-18.63	-21.57	-28.43	-47.06	39.22	-17.65	33.33	-21.57	22.55	-12.75	12.75	19.61	-6.86	-42.16
1. V12 - d22	-26.47	-29.41	-33.33	-48.04	30.39	-13.73	40.20	-26.47	18.63	-27.45	10.78	25.49	-57.84	-67.65
122. V12-dk2	-33.33	-50.98	-18.63	-39.22	51.96	29.41	45.10	-20.59	33.33	3.92	28.43	40.20	-42.16	-37.25
18. V12 - dk8	-14.71	-21.57	-30.39	-20.59	42.16	-30.39	35.29	-31.37	-8.82	-8.82	-11.76	18.63	-28.43	-34.31
38. V12 -dk12	29.41	-12.75	-44.12	-28.43	50.98	35.29	29.41	34.31	41.18	-0.98	-19.61	45.10	55.88	22.55
200. V12-dk18	-14.71	-46.08	-27.45	-40.20	58.82	26.47	49.02	-12.75	35.29	-7.84	19.61	36.27	-18.63	-16.67
6. V12 - dk22	-32.35	-46.08	-24.51	-49.02	62.75	47.06	65.69	-4.90	54.90	-9.80	42.16	45.10	-35.29	-35.29
69. V18 - W	70.59	0.00	-43.14	43.14	32.35	67.65	-14.71	63.73	29.41	0.98	17.65	57.84	30.39	48.04
134. V18-Gy5.5	20.59	22.55	-43.14	-21.57	32.35	1.96	-18.63	-8.82	24.51	-19.61	-9.80	-10.78	0.00	15.69
42. V18 - Bk	-42.16	-39.22	-39.22	-53.92	74.51	66.67	66.67	-10.78	71.57	-35.29	-30.39	52.94	17.65	38.24
154. V18 - V22	-16.67	-39.22	-5.88	-25.49	56.86	36.27	50.00	0.00	37.25	22.55	48.04	48.04	19.61	-10.78
178. V18 - lt2	48.04	28.43	8.82	22.55	18.63	50.98	-14.71	48.04	-28.43	59.80	54.90	56.86	-28.43	1.96
17. V18 - lt8	70.59	53.92	-32.35	48.04	30.39	60.78	-21.57	50.00	-2.94	32.35	-13.73	48.04	35.29	48.04
189. V18 - lt12	52.94	27.45	-33.33	16.67	27.45	46.08	-30.39	50.98	-14.71	-12.75	26.47	42.16	12.75	28.43
215. V18 - lt18	45.10	54.90	-53.92	25.49	31.37	58.82	-26.47	36.27	24.51	-15.69	-15.69	50.98	68.63	68.63
225. V18 - lt22	38.24	-7.84	-45.10	15.69	-10.78	12.75	-24.51	-6.86	-23.53	-15.69	-5.88	30.39	-23.53	-24.51

Table B-1 Visual assessment values of color combination through 7-point method from Thai observers (cont.)

color combination	Visual Assessment Values													
	dark-light	hard-soft	cool-warm	turbid-transparent	pale-deep	vague-distinct	light-heavy	sombrivid	weak-strong	passive-dynamic	plain-gaudy	subdued-striking	disharmony-harmony	dislike-like
120. V18 - d2	-18.63	-36.27	14.71	-35.29	40.20	-19.61	31.37	-28.43	24.51	29.41	-7.84	21.57	-48.04	-39.22
174. V18 - d8	-4.90	-9.80	-27.45	-16.67	33.33	19.61	15.69	-22.55	22.55	-6.86	18.63	26.47	-27.45	-5.88
24. V18 - d12	-3.92	-17.65	-39.22	-28.43	29.41	24.51	27.45	19.61	18.63	-18.63	-24.51	22.55	-26.47	-26.47
86. V18 - d18	-48.04	-24.51	-28.43	-44.12	57.84	-14.71	56.86	-27.45	54.90	-28.43	-26.47	-1.96	50.00	7.84
186. V18 - d22	-48.04	-30.39	-19.61	-64.71	61.76	-23.53	53.92	-53.92	27.45	-25.49	-19.61	25.49	-31.37	-33.33
218. V18 - dk2	-52.94	-55.88	27.45	-59.80	67.65	35.29	57.84	-26.47	47.06	-3.92	37.25	39.22	-53.92	-33.33
241. V18 - dk8	-41.18	-50.98	-20.59	-55.88	61.76	-33.33	53.92	-50.98	25.49	7.84	-8.82	47.06	-51.96	-35.29
245. V18 - dk12	-38.24	-26.47	-50.00	-58.82	60.78	-12.75	63.73	-40.20	53.92	-38.24	-23.53	20.59	-4.90	-14.71
93. V18 - dk18	-33.33	1.96	-41.18	-39.22	57.84	-3.92	50.98	-21.57	52.94	-31.37	-25.49	32.35	50.98	31.37
111. V18 - dk22	-39.22	-31.37	-16.67	-63.73	65.69	-13.73	59.80	-35.29	50.98	11.76	4.90	32.35	-25.49	-19.61
98. V22 - W	63.73	40.20	-23.53	39.22	26.47	63.73	-20.59	49.02	12.75	33.33	32.35	48.04	27.45	32.35
242. V22 - Gy5.5	-16.67	-38.24	-0.98	-20.59	31.37	-23.53	16.67	-14.71	-25.49	2.94	11.76	28.43	-21.57	-29.41
234. V22 - Bk	-36.27	-50.98	-13.73	-45.10	69.61	-8.82	66.67	-36.27	69.61	-31.37	5.88	26.47	-58.82	-46.08
33. V22 - lt2	52.94	-32.35	49.02	1.96	42.16	63.73	32.35	50.98	-13.73	50.00	73.53	71.57	-27.45	-34.31
179. V22 - lt8	58.82	0.98	40.20	25.49	37.25	47.06	-9.80	59.80	-8.82	45.10	45.10	50.00	-2.94	14.71
74. V22 - lt12	47.06	-24.51	-17.65	25.49	27.45	45.10	-9.80	41.18	-10.78	34.31	47.06	51.96	-29.41	-19.61
9. V22 - lt18	46.08	37.25	-36.27	32.35	24.51	31.37	-12.75	30.39	-2.94	-3.92	-20.59	33.33	30.39	32.35
182. V22 - lt22	45.10	40.20	4.90	15.69	26.47	32.35	-7.84	39.22	-23.53	-13.73	22.55	40.20	66.67	47.06
130. V22 - d2	-13.73	-18.63	25.49	-26.47	50.98	-20.59	30.39	-26.47	17.65	36.27	30.39	45.10	-28.43	-13.73
68. V22 - d8	38.24	-25.49	33.33	-25.49	50.00	26.47	36.27	-12.75	20.59	35.29	35.29	34.31	-45.10	-39.22
142. V22 - d12	-36.27	-24.51	-21.57	-53.92	35.29	-30.39	21.57	-41.18	22.55	-16.67	-20.59	0.98	-29.41	-35.29
126. V22 - d18	-36.27	-24.51	-10.78	-56.86	69.61	-37.25	58.82	-57.84	31.37	-18.63	-40.20	22.55	-28.43	-31.37
100. V22 - d22	-48.04	18.63	-19.61	-56.86	47.06	-35.29	46.08	-45.10	-12.75	-32.35	-19.61	-8.82	48.04	-21.57
163. V22 - dk2	-26.47	-18.63	38.24	-50.00	70.59	-12.75	59.80	-30.39	7.84	22.55	31.37	39.22	15.69	-15.69

Table B-1 Visual assessment values of color combination through 7-point method from Thai observers (cont.)

color combination	Visual Assessment Values													
	dark-light	hard-soft	cool-warm	turbid-transparent	pale-deep	vague-distinct	light-heavy	sombre-vivid	weak-strong	passive-dynamic	plain-gaudy	subdued-striking	disharmony-harmony	dislike-like
211. V22 - dk8	-36.27	-50.98	21.57	-59.80	69.61	-8.82	54.90	-36.27	14.71	19.61	25.49	26.47	-58.82	-46.08
198.V22-dk12	-31.37	-54.90	-8.82	-62.75	65.69	-5.88	58.82	-34.31	44.12	22.55	49.02	45.10	-28.43	-42.16
190.V22-dk18	-56.86	-35.29	-11.76	-63.73	68.63	-15.69	57.84	-52.94	56.86	-34.31	-18.63	31.37	16.67	-3.92
58.V22-dk22	-37.25	-28.43	20.59	-53.92	64.71	30.39	62.75	-20.59	44.12	11.76	5.88	57.84	41.18	9.80
213. lt2 - W	73.53	70.59	4.90	56.86	-32.35	45.10	-62.75	46.08	-58.82	-7.84	-30.39	33.33	50.00	42.16
84.lt2-Gy5.5	24.51	24.51	12.75	9.80	-31.37	-22.55	-27.45	-28.43	-42.16	-18.63	-23.53	1.96	-21.57	-8.82
25. lt2 - Bk	17.65	-36.27	27.45	-16.67	39.22	50.00	26.47	25.49	39.22	33.33	34.31	51.96	-32.35	13.73
46. lt2 - lt8	82.35	60.78	33.33	53.92	-28.43	39.22	-50.98	53.92	-36.27	50.98	44.12	35.29	20.59	17.65
30. lt2 - lt12	53.92	50.98	-13.73	44.12	-25.49	28.43	-47.06	53.92	-50.98	33.33	29.41	27.45	-15.69	1.96
207. lt2 - lt18	54.90	69.61	-30.39	44.12	-49.02	36.27	-60.78	53.92	-53.92	17.65	-18.63	1.96	17.65	47.06
41. lt2 - lt22	63.73	56.86	-1.96	54.90	-45.10	-13.73	-52.94	43.14	-48.04	28.43	14.71	17.65	43.14	21.57
202. lt2 - d2	27.45	59.80	13.73	-3.92	-27.45	-23.53	-35.29	-12.75	-49.02	-20.59	-26.47	-26.47	66.67	24.51
192. lt2 - d8	32.35	46.08	13.73	22.55	-43.14	-20.59	-20.59	-5.88	-37.25	13.73	-9.80	12.75	-21.57	3.92
185. lt2 - d12	18.63	32.35	-28.43	-15.69	-17.65	-13.73	-21.57	9.80	-27.45	19.61	21.57	23.53	-23.53	3.92
54. lt2 - d18	28.43	34.31	-28.43	-16.67	-10.78	-14.71	-2.94	-20.59	-16.67	-9.80	-13.73	-6.86	-27.45	-10.78
105. lt2 - d22	31.37	48.04	-15.69	21.57	-33.33	-28.43	-50.98	-14.71	-49.02	-14.71	-20.59	-18.63	28.43	17.65
171. lt2 - dk2	30.39	37.25	22.55	-3.92	21.57	-8.82	-15.69	-20.59	-20.59	24.51	21.57	16.67	26.47	20.59
5. lt2 - dk8	37.25	-27.45	41.18	-19.61	39.22	29.41	26.47	3.92	-6.86	27.45	37.25	42.16	-50.98	-50.00
49. lt2 - dk12	20.59	-14.71	-17.65	-23.53	31.37	-10.78	32.35	-5.88	-6.86	17.65	25.49	27.45	-49.02	-32.35
250.lt2-dk18	22.55	37.25	7.84	-32.35	29.41	30.39	23.53	0.98	0.98	8.82	2.94	37.25	-29.41	13.73
224. lt2 - dk22	32.35	-13.73	25.49	-17.65	33.33	44.12	23.53	13.73	6.86	38.24	37.25	53.92	11.76	15.69
75. lt8 - W	80.39	58.82	-32.35	66.67	-53.92	-3.92	-64.71	45.10	-47.06	-17.65	-35.29	-20.59	38.24	26.47
79. lt8 - Gy5.5	39.22	40.20	-30.39	23.53	-41.18	-18.63	-39.22	-20.59	-40.20	-14.71	-22.55	-11.76	-11.76	11.76
90. lt8 - Bk	43.14	-17.65	20.59	-18.63	33.33	46.08	18.63	41.18	25.49	35.29	33.33	55.88	-12.75	16.67

Table B-1 Visual assessment values of color combination through 7-point method from Thai observers (cont.)

color combination	Visual Assessment Values													
	dark-light	hard-soft	cool-warm	turbid-transparent	pale-deep	vague-distinct	light-heavy	sombre-vivid	weak-strong	passive-dynamic	plain-gaudy	subdued-striking	disharmony-harmony	dislike-like
106. lt8 - lt12	74.51	78.43	-53.92	63.73	-64.71	-1.96	-70.59	45.10	-52.94	8.82	-34.31	-30.39	32.35	34.31
40. lt8 - lt18	82.35	68.63	-45.10	64.71	-39.22	37.25	-61.76	56.86	-45.10	33.33	-9.80	18.63	33.33	51.96
246. lt8 - lt22	73.53	76.47	-41.18	61.76	-57.84	-8.82	-66.67	27.45	-57.84	29.41	-8.82	-7.84	31.37	52.94
109. lt8 - d2	45.10	30.39	26.47	11.76	-27.45	16.67	-30.39	18.63	-25.49	25.49	12.75	-8.82	16.67	-3.92
152. lt8 - d8	54.90	66.67	-0.98	29.41	-39.22	1.96	-40.20	20.59	-48.04	-5.88	-25.49	-0.98	52.94	41.18
119. lt8 - d12	63.73	42.16	-46.08	29.41	-28.43	-23.53	-33.33	26.47	-34.31	-19.61	-23.53	-16.67	27.45	10.78
217. lt8 - d18	28.43	-9.80	-28.43	15.69	10.78	49.02	-16.67	12.75	6.86	21.57	12.75	16.67	9.80	18.63
169. lt8 - d22	42.16	37.25	19.61	19.61	-8.82	25.49	-14.71	11.76	-21.57	26.47	-13.73	19.61	-7.84	-0.98
61. lt8 - dk2	46.08	32.35	15.69	28.43	24.51	42.16	19.61	44.12	25.49	28.43	24.51	33.33	-2.94	27.45
82. lt8 - dk8	37.25	1.96	30.39	17.65	15.69	30.39	-24.51	25.49	-17.65	22.55	-12.75	18.63	36.27	24.51
238. lt8 - dk12	50.00	28.43	-27.45	9.80	47.06	55.88	13.73	39.22	-1.96	-15.69	16.67	49.02	19.61	39.22
70. lt8 - dk18	19.61	-8.82	-19.61	-10.78	46.08	47.06	-0.98	33.33	25.49	26.47	26.47	34.31	-22.55	15.69
229. lt8 - dk22	48.04	-22.55	27.45	13.73	44.12	57.84	41.18	27.45	30.39	31.37	36.27	44.12	-11.76	1.96
230. lt12 - W	67.65	72.55	-66.67	71.57	-60.78	18.63	-70.59	23.53	-58.82	-46.08	-50.00	-43.14	53.92	44.12
124. lt12 - Gys.5	48.04	55.88	-44.12	15.69	-32.35	-36.27	-49.02	-32.35	-56.86	-26.47	-46.08	-56.86	7.84	11.76
66. lt12 - Bk	36.27	5.88	-32.35	26.47	19.61	42.16	-7.84	18.63	31.37	-18.63	-13.73	37.25	-12.75	16.67
184. lt12 - lt18	65.69	73.53	-69.61	65.69	-61.76	17.65	-59.80	51.96	-49.02	-20.59	-39.22	-44.12	55.88	56.86
159. lt12 - lt22	69.61	75.49	-50.00	50.98	-66.67	-51.96	-62.75	-24.51	-64.71	-28.43	-36.27	-57.84	39.22	22.55
52. lt12 - d2	39.22	31.37	-17.65	-3.92	-19.61	10.78	-19.61	-15.69	-41.18	-19.61	-17.65	-12.75	-48.04	-34.31
72. lt12 - d8	52.94	44.12	-28.43	34.31	-28.43	-20.59	-35.29	-22.55	-34.31	-10.78	-26.47	-22.55	-25.49	-27.45
203. lt12 - d12	50.00	67.65	-65.69	31.37	-19.61	-8.82	-55.88	21.57	-30.39	-48.04	-47.06	-12.75	75.49	60.78
172. lt12 - d18	30.39	36.27	-49.02	3.92	-20.59	-16.67	-30.39	-28.43	-37.25	-33.33	-48.04	-36.27	18.63	16.67
237. lt12 - d22	21.57	22.55	-32.35	-15.69	-22.55	-17.65	-29.41	-27.45	-19.61	-18.63	-17.65	-14.71	-8.82	-11.76
226. lt12 - dk2	19.61	-36.27	-19.61	13.73	38.24	46.08	-7.84	14.71	-12.75	17.65	17.65	37.25	-34.31	-24.51

Table B-1 Visual assessment values of color combination through 7-point method from Thai observers (cont.)

color combination	Visual Assessment Values													
	dark-light	hard-soft	cool-warm	turbid-transparent	pale-deep	vague-distinct	light-heavy	sombre-vivid	weak-strong	passive-dynamic	plain-gaudy	subdued-striking	disharmony-harmony	dislike-like
193. lt12 - dk8	19.61	20.59	-26.47	3.92	-20.59	-19.61	-28.43	-20.59	-50.00	-29.41	-37.25	-32.35	-36.27	-43.14
115.lt12-dk12	42.16	37.25	-62.75	25.49	-5.88	38.24	-34.31	33.33	-13.73	-21.57	-33.33	21.57	46.08	38.24
164.lt12-dk18	39.22	21.57	-40.20	23.53	20.59	26.47	-4.90	21.57	-16.67	-20.59	-24.51	14.71	1.96	2.94
153.lt12-dk22	25.49	-14.71	-26.47	-29.41	38.24	30.39	18.63	-5.88	-9.80	10.78	-12.75	19.61	-49.02	-29.41
197. lt18 - W	75.49	79.41	-68.63	67.65	-61.76	21.57	-71.57	66.67	-48.04	-19.61	-50.98	-24.51	69.61	77.45
212.lt18-Gy5.5	28.43	35.29	-50.98	25.49	-48.04	-28.43	-49.02	-28.43	-52.94	-34.31	-50.98	-24.51	29.41	34.31
249. lt18 - Bk	14.71	-0.98	-31.37	-27.45	20.59	46.08	7.84	-6.86	8.82	-31.37	-32.35	-3.92	8.82	40.20
56. lt18 - lt22	50.00	66.67	-56.86	47.06	-53.92	-26.47	-54.90	-14.71	-49.02	-28.43	-42.16	-32.35	37.25	32.35
83. lt18 - d2	16.67	-14.71	13.73	-24.51	-19.61	-23.53	-20.59	-30.39	-27.45	-11.76	-22.55	-23.53	-28.43	-33.33
2.lt18 - d8	32.35	47.06	-33.33	-19.61	-50.98	-34.31	-53.92	-35.29	-39.22	-49.02	-63.73	-45.10	25.49	12.75
59. lt18 - d12	40.20	38.24	-53.92	31.37	-45.10	20.59	-36.27	-9.80	-36.27	-31.37	-40.20	-10.78	-14.71	15.69
45.lt18-d18	-16.67	43.14	-50.00	-28.43	-8.82	-26.47	-20.59	-30.39	12.75	-47.06	-55.88	-17.65	59.80	52.94
23. lt18 - d22	39.22	40.20	-32.35	23.53	-18.63	-11.76	-26.47	-15.69	-33.33	-5.88	-21.57	-19.61	8.82	13.73
146. lt18 - dk2	24.51	-16.67	-11.76	-19.61	31.37	30.39	25.49	-21.57	17.65	-5.88	-13.73	30.39	-45.10	-18.63
129. lt18 - dk8	24.51	-3.92	-29.41	-1.96	-20.59	-19.61	-22.55	-17.65	-27.45	-8.82	-20.59	-26.47	-43.14	-34.31
210.lt18-dk12	15.69	0.00	-52.94	-18.63	18.63	26.47	-7.84	-16.67	-11.76	-19.61	-19.61	28.43	-13.73	-34.31
116.lt18-dk18	18.63	41.18	-44.12	-24.51	-13.73	-20.59	-18.63	-23.53	24.51	-36.27	-48.04	-28.43	64.71	50.00
175.lt18-dk22	27.45	21.57	-27.45	-16.67	38.24	27.45	21.57	-23.53	-17.65	-13.73	-13.73	21.57	12.75	14.71
194. lt22 - W	77.45	79.41	-59.80	40.20	-69.61	-8.82	-73.53	-1.96	-58.82	-16.67	-44.12	-46.08	39.22	59.80
4. lt22 - Gy5.5	-23.53	47.06	-32.35	-24.51	-40.20	-51.96	-23.53	-51.96	-43.14	-36.27	-50.98	-51.96	24.51	-11.76
173. lt22 - Bk	6.86	-5.88	-22.55	-20.59	30.39	15.69	-11.76	-30.39	-22.55	-23.53	-39.22	7.84	-21.57	-8.82
71. lt22 - d2	24.51	36.27	14.71	-13.73	-29.41	-35.29	-26.47	-32.35	-48.04	-20.59	-25.49	-31.37	25.49	18.63
204. lt22 - d8	31.37	36.27	-22.55	-1.96	-49.02	-34.31	-37.25	-30.39	-49.02	-7.84	-31.37	-32.35	-27.45	7.84
228.lt22 - d12	29.41	35.29	-35.29	-10.78	-36.27	-22.55	-39.22	-35.29	-44.12	-35.29	-28.43	-33.33	-20.59	-19.61

Table B-1 Visual assessment values of color combination through 7-point method from Thai observers (cont.)

color combination	Visual Assessment Values													
	dark-light	hard-soft	cool-warm	turbid-transparent	pale-deep	vague-distinct	light-heavy	sombre-vivid	weak-strong	passive-dynamic	plain-gaudy	subdued-striking	disharmony-harmony	dislike-like
145.lt22-d18	-7.84	32.35	-35.29	-18.63	-11.76	-18.63	-21.57	-43.14	-35.29	-48.04	-51.96	-37.25	9.80	20.59
11.lt22-d22	14.71	42.16	-35.29	-13.73	-15.69	-26.47	-22.55	-41.18	-39.22	-19.61	-41.18	-13.73	64.71	21.57
81.lt22-dk2	23.53	26.47	27.45	-20.59	24.51	11.76	22.55	-15.69	19.61	11.76	-18.63	18.63	38.24	0.98
150.lt22-dk8	15.69	28.43	-20.59	-13.73	-24.51	-43.14	-30.39	-43.14	-44.12	-20.59	-21.57	-25.49	-51.96	-39.22
188.lt22-dk12	27.45	24.51	-20.59	-29.41	-12.75	7.84	6.86	-23.53	-29.41	-10.78	-14.71	22.55	-46.08	-37.25
128.lt22-dk18	23.53	-11.76	-31.37	-1.96	24.51	-20.59	21.57	-27.45	-11.76	-23.53	-28.43	-18.63	-28.43	-15.69
7.lt22-dk22	-5.88	39.22	-39.22	-23.53	-4.90	30.39	14.71	-5.88	-7.84	-25.49	-36.27	32.35	67.65	44.12
32.d2-W	51.96	-0.98	-11.76	-5.88	-16.67	37.25	-15.69	-2.94	-4.90	-16.67	-24.51	8.82	-11.76	-10.78
101.d2-Gy5.5	-18.63	35.29	-18.63	-29.41	-34.31	-49.02	-33.33	-55.88	-37.25	-38.24	-44.12	-52.94	-14.71	-21.57
127.d2-Bk	-29.41	-32.35	22.55	-56.86	44.12	-10.78	40.20	-39.22	37.25	-39.22	-41.18	-4.90	-0.98	-16.67
209.d2-d8	-25.49	35.29	9.80	-21.57	-15.69	-44.12	-13.73	-52.94	-14.71	12.75	-26.47	-28.43	9.80	-24.51
10.d2-d12	-31.37	28.43	-29.41	-50.00	-12.75	-57.84	19.61	-51.96	-26.47	-28.43	-29.41	-25.49	-7.84	-24.51
143.d2-d18	-42.16	-12.75	-14.71	-55.88	-6.86	-42.16	-6.86	-55.88	-9.80	-24.51	-25.49	-36.27	15.69	-21.57
136.d2-d22	-32.35	34.31	9.80	-46.08	-18.63	-57.84	-16.67	-58.82	-29.41	-24.51	-27.45	-34.31	22.55	-9.80
64.d2-dk2	-18.63	27.45	28.43	-19.61	24.51	-23.53	35.29	-21.57	22.55	10.78	-16.67	-6.86	57.84	33.33
57.d2-dk8	-35.29	-25.49	11.76	-47.06	25.49	-41.18	25.49	-52.94	-19.61	-20.59	-15.69	-20.59	-22.55	-39.22
91.d2-dk12	-25.49	-10.78	-14.71	-40.20	2.94	-43.14	26.47	-47.06	-28.43	-12.75	-12.75	-1.96	-32.35	-38.24
239.d2-dk18	-58.82	-26.47	-15.69	-60.78	50.98	-31.37	50.00	-43.14	32.35	-29.41	-26.47	-17.65	-7.84	1.96
187.d2-dk22	-48.04	-24.51	-8.82	-62.75	49.02	-23.53	48.04	-53.92	23.53	13.73	-7.84	4.90	22.55	-15.69
29.d8-W	66.67	30.39	-20.59	31.37	-15.69	33.33	-41.18	12.75	-27.45	-8.82	-24.51	19.61	-10.78	24.51
37.d8-Gy5.5	-0.98	42.16	-24.51	-37.25	-20.59	-50.00	-30.39	-53.92	-31.37	-31.37	-55.88	-41.18	36.27	14.71
240.d8-Bk	-54.90	-34.31	11.76	-59.80	60.78	21.57	51.96	-39.22	35.29	-29.41	-27.45	-5.88	14.71	18.63
50.d8-d12	-27.45	26.47	-35.29	-40.20	-26.47	-54.90	-22.55	-66.67	-37.25	-43.14	-51.96	-50.98	34.31	0.98
156.d8-d18	-17.65	30.39	-29.41	-27.45	-27.45	-49.02	-4.90	-49.02	-28.43	-24.51	-28.43	-31.37	11.76	7.84

Table B-1 Visual assessment values of color combination through 7-point method from Thai observers (cont.)

color combination	Visual Assessment Values													
	dark-light	hard-soft	cool-warm	turbid-transparent	pale-deep	vague-distinct	light-heavy	sombre-vivid	weak-strong	passive-dynamic	plain-gaudy	subdued-striking	disharmony-harmony	dislike-like
196. d8 - dk2	-15.69	14.71	-12.75	-45.10	-7.84	-33.33	17.65	-54.90	-25.49	-31.37	-26.47	-17.65	-26.47	-12.75
232. d8 - dk2	-49.02	-31.37	11.76	-53.92	41.18	-10.78	39.22	-45.10	35.29	-21.57	-19.61	-11.76	16.67	17.65
183. d8 - dk8	19.61	34.31	0.98	-38.24	-8.82	-32.35	-19.61	-42.16	-2.94	-40.20	-30.39	-17.65	66.67	20.59
63. d8 - dk12	19.61	5.88	-18.63	-19.61	23.53	-5.88	22.55	-26.47	22.55	-19.61	-19.61	-10.78	11.76	4.90
227. d8 - dk18	-55.88	-25.49	-27.45	-48.04	41.18	-29.41	44.12	-51.96	36.27	-28.43	-28.43	10.78	-1.96	-19.61
43. d8 - dk22	-41.18	-22.55	-15.69	-39.22	50.00	-24.51	52.94	-44.12	29.41	-8.82	-15.69	12.75	-29.41	4.90
85. d12 - W	46.08	21.57	-48.04	19.61	-20.59	18.63	-33.33	-1.96	-26.47	16.67	-33.33	-18.63	31.37	31.37
223. d12 - Gy5.5	-47.06	-3.92	-45.10	-55.88	-31.37	-66.67	-14.71	-64.71	-41.18	-52.94	-45.10	-52.94	20.59	-27.45
155. d12 - Bk	-56.86	-36.27	-46.08	-54.90	52.94	-38.24	44.12	-37.25	40.20	-29.41	-33.33	-17.65	0.00	7.84
247. d12 - d18	-56.86	-39.22	-56.86	-63.73	30.39	-41.18	23.53	-50.98	26.47	-48.04	-48.04	-32.35	16.67	-5.88
221. d12 - dk2	-49.02	-18.63	-38.24	-52.94	22.55	-42.16	44.12	-50.98	-9.80	-36.27	-39.22	-29.41	-11.76	-27.45
55. d12 - dk2	-46.08	-14.71	-33.33	-57.84	40.20	-24.51	45.10	-46.08	25.49	-20.59	-18.63	-2.94	-29.41	-1.96
214. d12 - dk8	-53.92	-36.27	-30.39	-50.98	18.63	-42.16	25.49	-53.92	-10.78	-14.71	-30.39	-15.69	-41.18	-31.37
233. d12 - dk12	-38.24	43.14	-60.78	-50.98	44.12	-37.25	38.24	-34.31	13.73	-54.90	-56.86	-14.71	76.47	37.25
107. d12 - dk18	-50.00	-17.65	-46.08	-56.86	44.12	-40.20	46.08	-45.10	32.35	-34.31	-43.14	-15.69	4.90	-0.98
110. d12 - dk22	-52.94	-26.47	-34.31	-67.65	69.61	-33.33	62.75	-44.12	45.10	-43.14	-35.29	16.67	-30.39	-22.55
113. d18 - W	23.53	31.37	-45.10	-17.65	-18.63	-25.49	-20.59	-28.43	-19.61	-38.24	-49.02	-33.33	39.22	32.35
13. d18 - Bk	-57.84	-25.49	-39.22	-72.55	61.76	-5.88	66.67	-53.92	59.80	-44.12	-51.96	-2.94	43.14	34.31
77. d18 - Gy5.5	-40.20	29.41	-44.12	-54.90	-8.82	-53.92	13.73	-59.80	-15.69	-43.14	-63.73	-50.00	50.98	20.59
62. d18 - dk2	-60.78	-3.92	-32.35	-67.65	28.43	-60.78	44.12	-58.82	13.73	-45.10	-44.12	-44.12	33.33	8.82
95. d18 - dk2	-53.92	-13.73	-6.86	-58.82	48.04	-27.45	45.10	-49.02	42.16	-19.61	-23.53	12.75	14.71	-4.90
117. d18 - dk8	-51.96	-17.65	-20.59	-66.67	48.04	-42.16	42.16	-57.84	25.49	-40.20	-48.04	-29.41	-27.45	-41.18
88. d18 - dk12	-73.53	-23.53	-47.06	-78.43	59.80	-60.78	52.94	-67.65	31.37	-42.16	-54.90	-31.37	32.35	-8.82
31. d18 - dk18	-64.71	0.98	-54.90	-71.57	65.69	-43.14	48.04	-56.86	64.71	-55.88	-57.84	-16.67	81.37	50.00

Table B-1 Visual assessment values of color combination through 7-point method from Thai observers (cont.)

color combination	Visual Assessment Values													
	dark-light	hard-soft	cool-warm	turbid-transparent	pale-deep	vague-distinct	light-heavy	som bre-vivid	weak-strong	passive-dynamic	plain-gaudy	subdued-striking	dis-harmony-harmony	dislike-like
199.d18-dk22	-64.71	-22.55	-30.39	-61.76	73.53	-34.31	62.75	-57.84	45.10	-50.00	-54.90	38.24	26.47	13.73
167.d22-W	35.29	15.69	-31.37	18.63	-7.84	28.43	-20.59	-6.86	-21.57	-16.67	-24.51	-17.65	11.76	20.59
177.d22-Gy5.5	-44.12	32.35	-34.31	-52.94	-26.47	-48.04	-21.57	-71.57	-35.29	-51.96	-55.88	-47.06	23.53	0.00
148.d22-Bk	-56.86	-28.43	-33.33	-76.47	65.69	-19.61	59.80	-54.90	39.22	-44.12	-49.02	21.57	32.35	14.71
216.d22-dk2	-56.86	-39.22	34.31	-60.78	64.71	-39.22	62.75	-57.84	31.37	-27.45	10.78	31.37	21.57	-15.69
161.d22-dk8	-51.96	-19.61	-9.80	-60.78	41.18	-50.00	29.41	-58.82	-12.75	-26.47	-17.65	-20.59	-4.90	-25.49
36.d22-dk12	-70.59	-36.27	-35.29	-74.51	69.61	-55.88	64.71	-67.65	34.31	-47.06	-41.18	-20.59	14.71	-23.53
73.d22-dk18	-70.59	-22.55	-35.29	-67.65	34.31	-48.04	45.10	-57.84	28.43	-55.88	-50.98	-24.51	41.18	17.65
20.d22-dk22	-66.67	-10.78	-35.29	-59.80	74.51	-30.39	7.84	-61.76	-13.73	-43.14	-47.06	31.37	82.35	47.06
3.dk2-W	35.29	-18.63	-14.71	-22.55	52.94	69.61	29.41	18.63	50.00	-28.43	-36.27	50.00	21.57	33.33
27.dk2-Gy5.5	-43.14	-12.75	12.75	-55.88	41.18	-17.65	38.24	-51.96	31.37	-33.33	-40.20	-14.71	16.67	-11.76
208.dk2-Bk	-77.45	-50.00	16.67	-79.41	75.49	33.33	67.65	-49.02	73.53	-53.92	-46.08	33.33	50.98	22.55
21.dk2-dk8	-27.45	-29.41	27.45	-48.04	57.84	-31.37	48.04	-48.04	19.61	27.45	-18.63	-11.76	3.92	11.76
168.dk2-dk12	-54.90	-37.25	-16.67	-59.80	70.59	-14.71	61.76	-52.94	34.31	-25.49	-2.94	24.51	14.71	4.90
12.dk2-dk18	-67.65	-40.20	-16.67	-72.55	78.43	-9.80	72.55	-54.90	57.84	-34.31	-25.49	32.35	18.63	12.75
195.dk2-dk22	-80.39	-55.88	32.35	-75.49	73.53	-13.73	70.59	-54.90	53.92	-28.43	-1.96	28.43	39.22	3.92
236.dk8-W	39.22	9.80	-22.55	14.71	-3.92	34.31	-20.59	-12.75	-19.61	-13.73	-10.78	18.63	-10.78	3.92
108.dk8-Gy5.5	-17.65	25.49	-19.61	-40.20	-17.65	-50.00	-17.65	-50.98	-20.59	-28.43	-27.45	-26.47	12.75	-16.67
123.dk8-Bk	-68.63	-43.14	-21.57	-57.84	61.76	-27.45	70.59	-63.73	53.92	-49.02	-33.33	30.39	10.78	-11.76
99.dk8-dk12	-63.73	18.63	-21.57	-60.78	56.86	-50.98	50.98	-58.82	14.71	-36.27	-37.25	-29.41	20.59	-4.90
137.dk8-dk18	-45.10	-21.57	-29.41	-48.04	56.86	-27.45	49.02	-52.94	27.45	-37.25	-23.53	6.86	-17.65	-24.51
251.dk8-dk22	-63.73	-29.41	12.75	-68.63	63.73	-30.39	69.61	-63.73	35.29	-34.31	-43.14	35.29	-29.41	-38.24
118.dk12-W	35.29	21.57	-38.24	-18.63	34.31	52.94	-12.75	24.51	38.24	-13.73	-24.51	34.31	-0.98	1.96
181.dk12-Gy5.5	-58.82	-4.90	-55.88	-56.86	5.88	-41.18	39.22	-49.02	-22.55	-50.98	-55.88	-26.47	25.49	12.75

Table B-1 Visual assessment values of color combination through 7-point method from Thai observers (cont.)

color combination	Visual Assessment Values													
	dark-light	hard-soft	cool-warm	turbid-transparent	pale-deep	vague-distinct	light-heavy	sombre-vivid	weak-strong	passive-dynamic	plain-gaudy	subdued-striking	disharmony-harmony	dislike-like
22. dk12 - Bk	-76.47	-36.27	-47.06	-68.63	70.59	-16.67	71.57	-58.82	57.84	-56.86	-54.90	-2.94	43.14	21.57
28. dk12 - dk18	-68.63	-30.39	-46.08	-68.63	70.59	-39.22	57.84	-61.76	53.92	-45.10	-45.10	-10.78	19.61	6.86
78. dk12 - dk22	-67.65	-40.20	-30.39	-68.63	59.80	-34.31	50.98	-50.98	44.12	-29.41	-28.43	25.49	-0.98	-18.63
80. dk18 - W	35.29	-8.82	-38.24	-17.65	37.25	48.04	21.57	-5.88	40.20	-36.27	-38.24	35.29	22.55	47.06
67. dk18 - Gy5.5	-43.14	-10.78	-42.16	-46.08	41.18	-34.31	-4.90	-50.00	-4.90	-54.90	-55.88	-24.51	18.63	22.55
51. dk18 - Bk	-84.31	-31.37	-34.31	-80.39	82.35	-25.49	75.49	-63.73	73.53	-69.61	-64.71	24.51	52.94	12.75
162. dk18 - dk22	-78.43	-30.39	-38.24	-79.41	76.47	-19.61	75.49	-62.75	46.08	-50.00	-48.04	10.78	37.25	0.98
47. dk22 - W	33.33	-21.57	-13.73	-1.96	45.10	48.04	42.16	-10.78	45.10	-11.76	-15.69	30.39	20.59	29.41
94. dk22 - Gy5.5	-46.08	-20.59	-16.67	-39.22	23.53	-28.43	36.27	-50.98	-15.69	-28.43	-31.37	-15.69	13.73	-8.82
89. dk22 - Bk	-85.29	-44.12	9.80	-83.33	71.57	-48.04	71.57	-73.53	53.92	-50.98	-47.06	-11.76	50.98	-15.69
248. W - Gy5.5	51.96	36.27	-53.92	30.39	-58.82	-33.33	-42.16	-49.02	-45.10	-57.84	-67.65	-49.02	36.27	30.39
96. W - Bk	28.43	-27.45	-20.59	-12.75	34.31	75.49	51.96	-19.61	45.10	-39.22	-40.20	61.76	-20.59	40.20
140. Gy5.5 - Bk	-62.75	-26.47	-25.49	-62.75	42.16	-30.39	42.16	-64.71	39.22	-58.82	-66.67	-21.57	60.78	21.57



APPENDIX C

**VISUAL ASSESSMENT VALUES OF SINGLE COLOR
FROM THAI OBSERVERS**

ศูนย์วิจัยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Table C-1 Visual assessment values of single through 7-point method from Thai observers

single color	Visual Assessment Values													
	dark-light	hard-soft	cool-warm	turbid-transparent	pale-deep	vague-distinct	light-heavy	sombre-vivid	weak-strong	passive-dynamic	plain-gaudy	subdued-striking		
1. V2	76.67	-14.44	75.00	25.56	55.56	78.33	30.56	78.33	40.00	75.00	81.11	82.78		
2. V8	80.00	5.56	41.67	50.56	57.78	73.33	17.22	77.22	17.78	56.67	70.00	75.00		
3. V12	40.56	2.78	-13.33	-4.44	57.78	66.67	33.89	56.11	45.00	41.67	43.33	65.56		
4. V18	60.00	18.89	-37.78	27.22	50.00	67.22	16.67	63.89	33.89	50.56	55.00	65.00		
5. V22	61.11	6.11	8.89	25.00	42.22	72.22	23.89	69.44	35.00	53.89	73.33	74.44		
6. lt2	70.56	33.33	47.78	46.67	43.89	61.67	1.67	70.56	4.44	56.67	59.44	63.89		
7. lt8	74.44	65.56	-21.67	58.33	-53.33	23.89	-63.89	52.22	-42.78	6.11	-21.67	-12.22		
8. lt12	70.00	57.22	-45.56	50.00	-23.33	31.11	-51.67	46.67	-25.56	15.00	-10.56	17.22		
9. lt18	55.56	41.67	-38.33	35.00	17.78	41.11	-15.56	50.56	0.00	36.11	15.56	39.44		
10. lt22	63.89	57.78	-37.78	37.22	-52.78	-12.78	-58.89	5.56	-40.00	-26.11	-51.11	-45.00		
11. d2	-19.44	-5.56	10.56	-45.56	52.78	-3.89	-1.11	-13.89	-10.56	-12.78	-35.56	-12.78		
12. d8	16.67	-17.78	20.00	-23.89	47.78	-14.44	-8.33	-12.78	-10.56	-12.78	-36.11	-14.44		
13. d12	37.78	19.44	-34.44	8.89	40.56	-18.89	-1.67	-37.78	-8.33	-36.67	-59.44	-24.44		
14. d18	35.00	24.44	-42.22	2.22	27.22	-27.22	31.11	-56.11	37.22	-41.67	-58.89	-1.67		
15. d22	-17.78	-16.67	-16.67	-45.56	61.67	-22.78	-13.33	-10.00	-13.89	-10.56	-25.00	-5.00		
16. dk2	-25.00	-34.44	21.67	-51.11	54.44	15.56	53.89	-38.89	51.11	-11.67	-10.00	33.33		
17. dk8	-10.56	-28.89	12.78	-41.11	52.22	8.33	52.22	-38.33	42.22	-8.89	-14.44	26.67		
18. dk12	-21.11	-8.89	-21.67	-37.78	71.67	37.78	60.56	5.00	57.78	8.33	5.00	51.67		
19. dk18	-54.44	-33.89	-48.89	-61.11	66.11	5.56	66.67	-46.67	62.22	-45.00	-48.89	35.56		
20. dk22	-71.11	-43.89	-23.89	-78.89	81.67	12.78	78.33	-51.67	66.67	-40.00	-23.33	46.67		
21. W	92.22	72.78	-55.56	76.11	-86.67	26.67	-88.33	35.00	-42.22	-50.56	-82.78	-33.33		
22. Gy	16.11	18.89	-56.11	-7.78	-10.56	-9.44	-15.56	-41.67	1.11	-40.00	-62.78	-22.22		
23. Bk	-89.44	-71.67	-28.89	-88.33	88.89	46.11	94.44	-55.56	92.22	-82.78	-61.11	70.56		

VITA

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