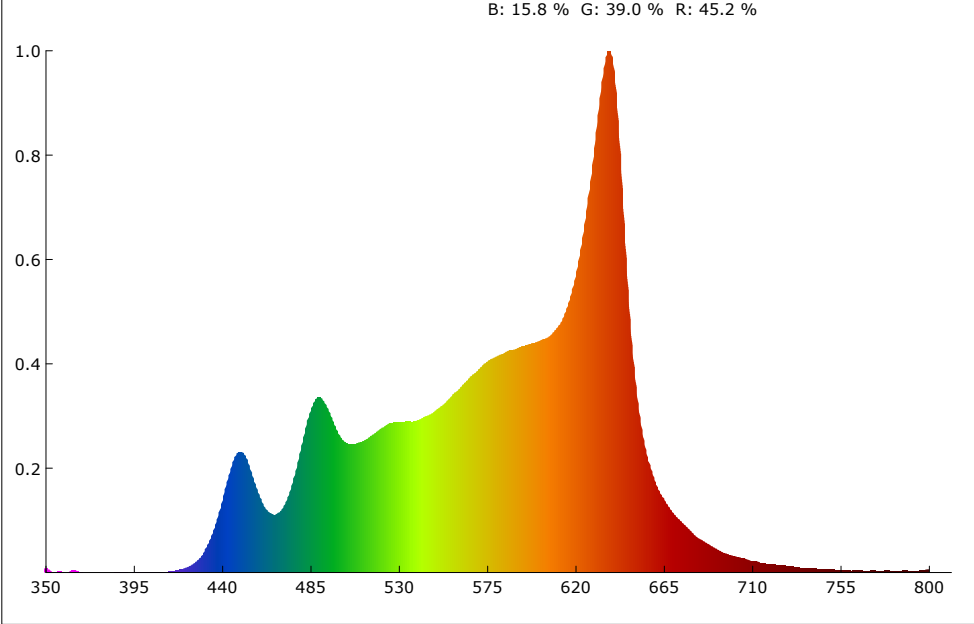
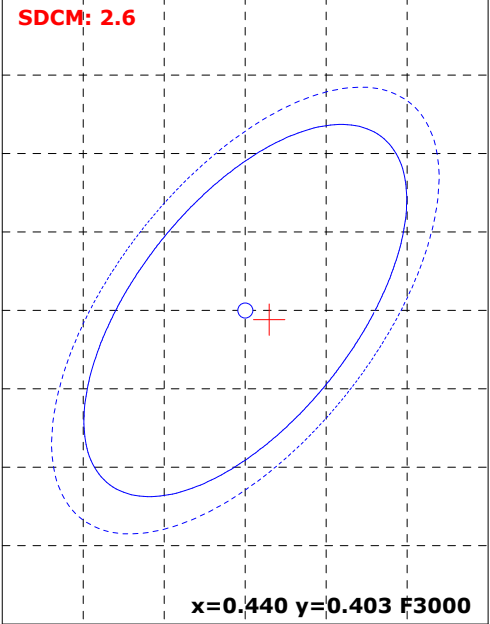


Spectrogram



SDCM



Color Parameter:

x: 0.4415 y: 0.3994 u: 0.2556 v: 0.3468 u': 0.2556 v': 0.5202
R_ratio: 45.2 % G_ratio: 39.0 % B_ratio: 15.8 % RedRatio: 25.6 % GreenRatio: 71.9 % BlueRatio: 2.5 %

Ra: 92.9 AvgR: 91.6
R1: 93.7 R2: 93.1 R3: 94.8 R4: 93.9 R5: 91.1 R6: 85.9 R7: 94.6 R8: 96.8
R9: 90.9 R10: 84.9 R11: 89.5 R12: 78.0 R13: 93.2 R14: 97.8 R15: 95.9

CCT: 2885 K Flux: 2855.909 lm PeakWave: 637.5 nm SDCM: 2.6
S/P: 1.5 CentralWave: 631.5 nm DominantWave: 584.2 nm CentroidWave: 578.8 nm
HalfWidth: 32.3 nm duv: -0.00246 purity: 52.4 % CQS: 91.8
LER(TM-30): 311.3 Ep: 9175.5 mw Rg: 99.2 Rf: 90.4
Red Ep: 4095.6 mw Near red Ep: 98.4 mw Near infrared Ep: 9.0 mw

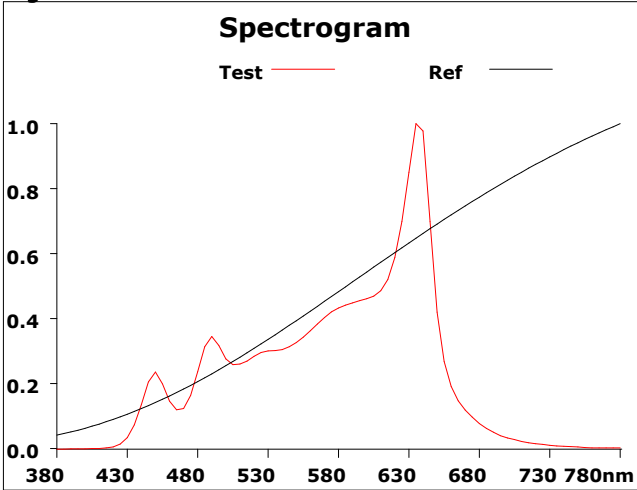
Electrical parameters:

Effic: 18.2 Lm/W Energy: 19.8 Effi: G
U: 222.2 V I: 0.734 A P: 157.300 W Pf: 0.964

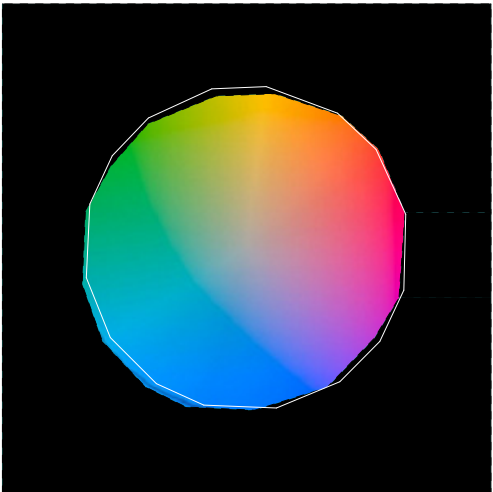
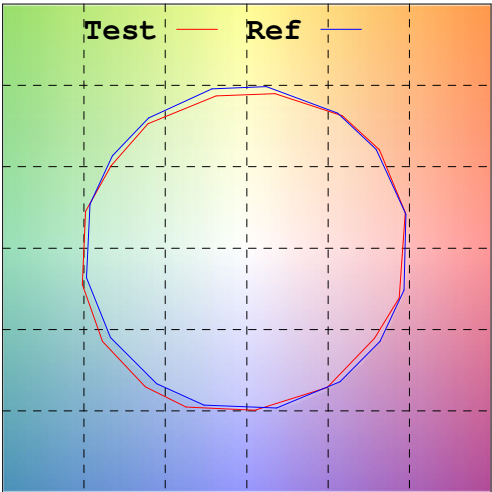
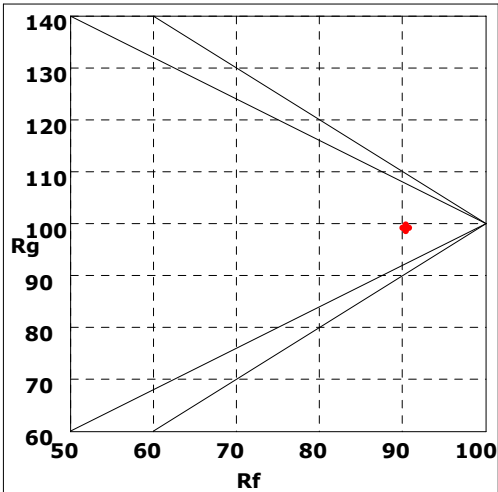
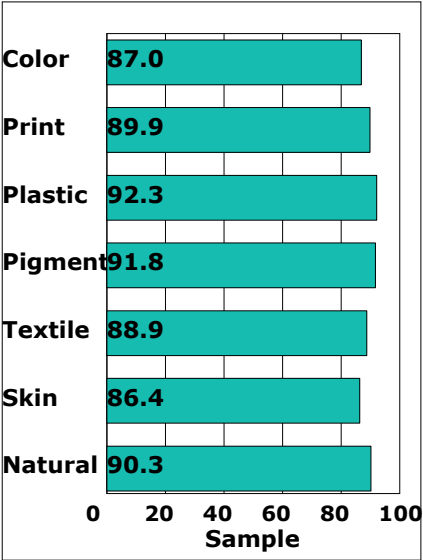
Product model:
Product number:
Tester:
Remarks:

Manufacturer:
Test unit:
Date of observation: 10/12/23

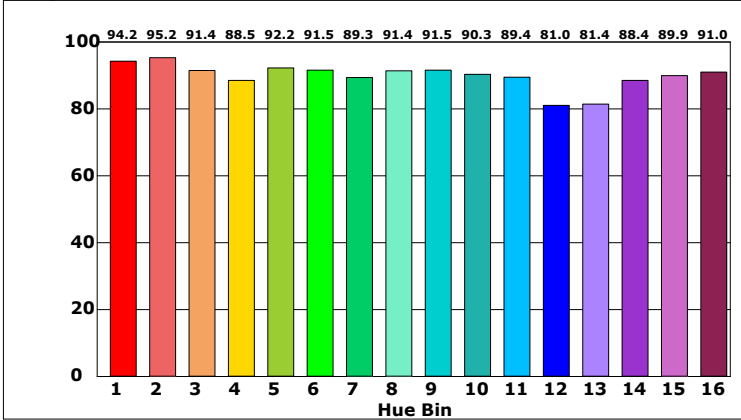
Rf: 90.4 CCT: 2885K u': 0.2556
Rg: 99.2 LER: 311.3 Duv: -0.00246 v': 0.5202



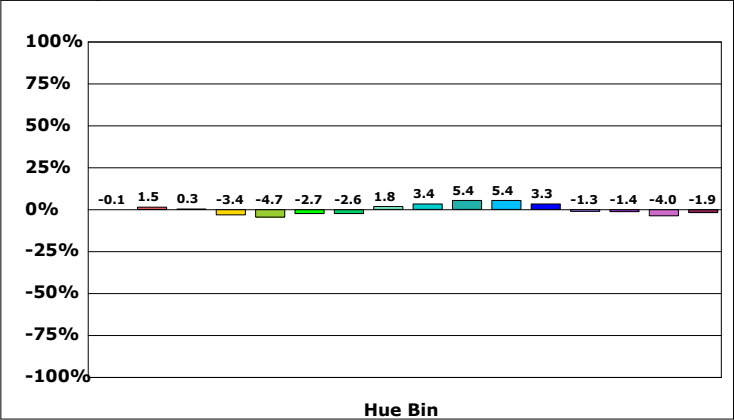
500			
Hue Bin	Rf	Chroma	Hue
1	94.2	-0.1%	1.3%
2	95.2	1.5%	-1.3%
3	91.4	0.3%	-3.2%
4	88.5	-3.4%	-6.1%
5	92.2	-4.7%	-1.6%
6	91.5	-2.7%	2.4%
7	89.3	-2.6%	5.5%
8	91.4	1.8%	4.9%
9	91.5	3.4%	3.4%
10	90.3	5.4%	-0.8%
11	89.4	5.4%	-4.7%
12	81.0	3.3%	-10.6%
13	81.4	-1.3%	-13.4%
14	88.4	-1.4%	-8.4%
15	89.9	-4.0%	-0.2%
16	91.0	-1.9%	-5.1%



Rf by Bue

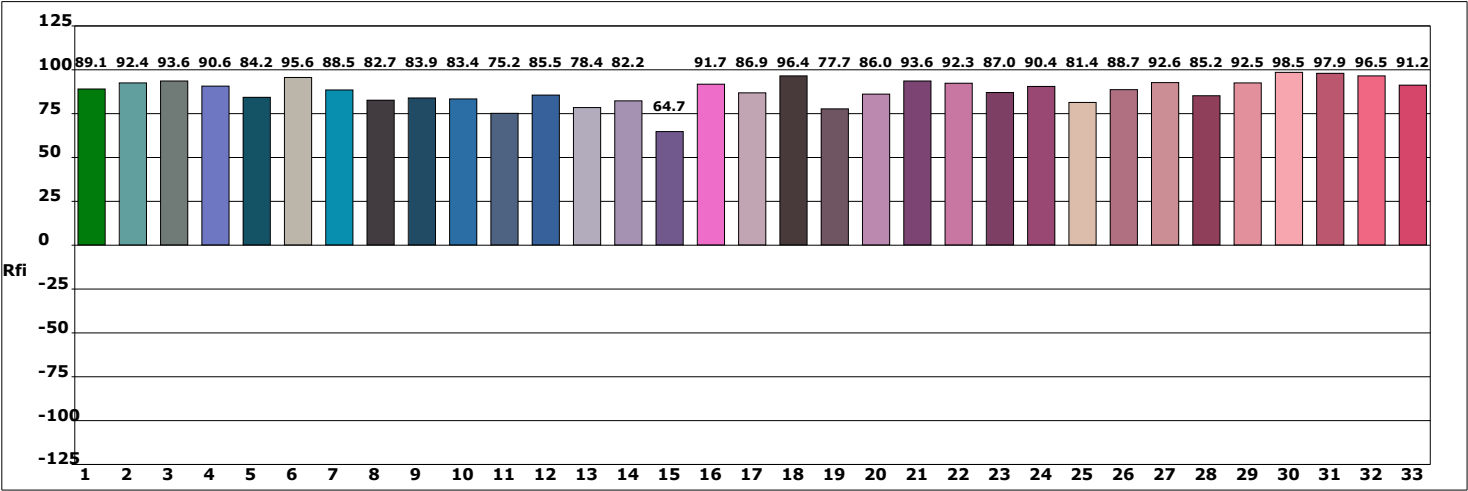
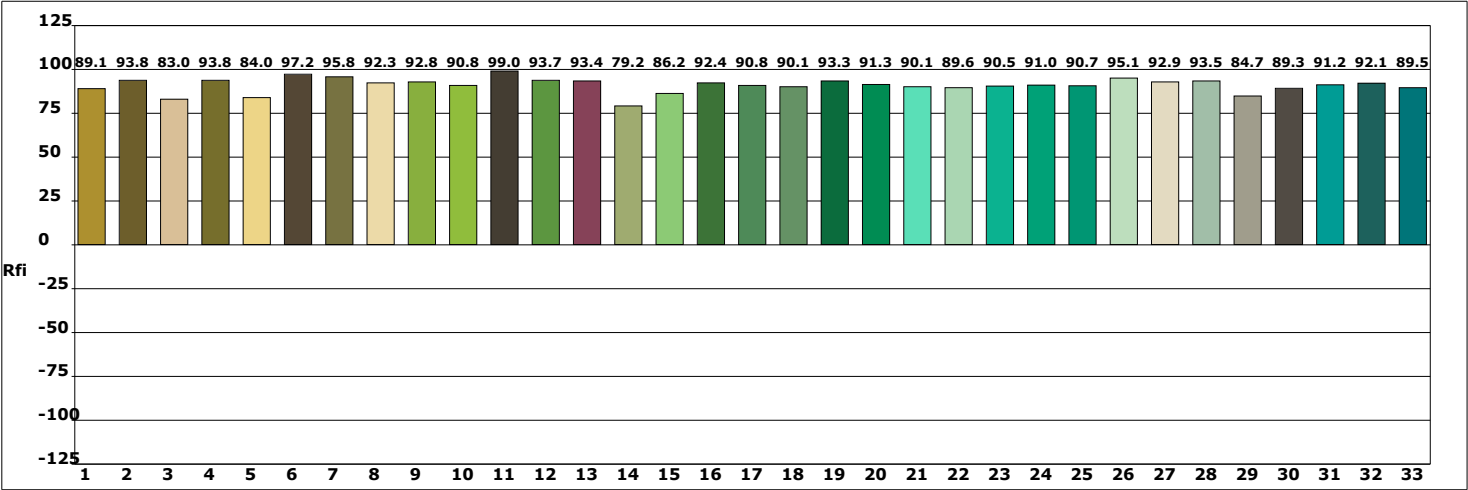
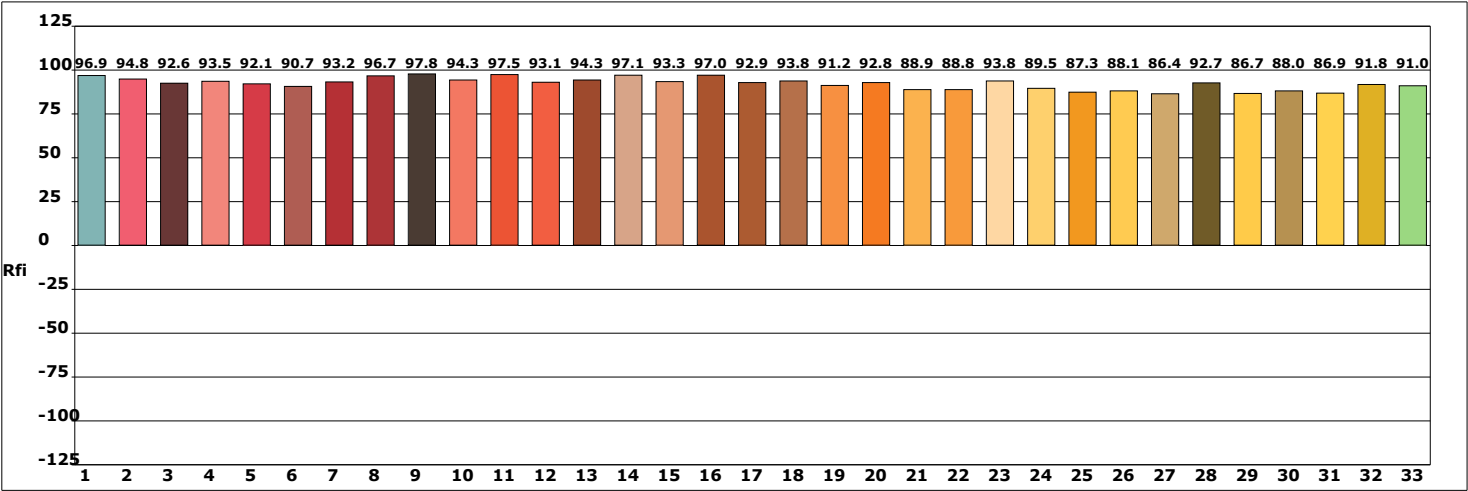


Chroma by Bue



Product model:
Product number:
Tester:
Remarks:

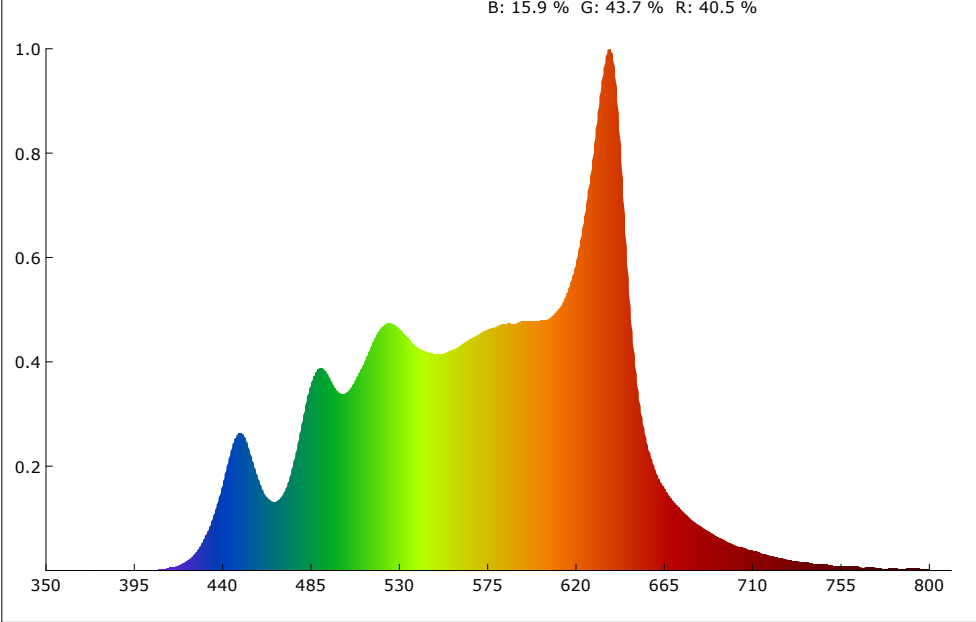
Manufacturer:
Test unit:
Date of observation: 10/12/23



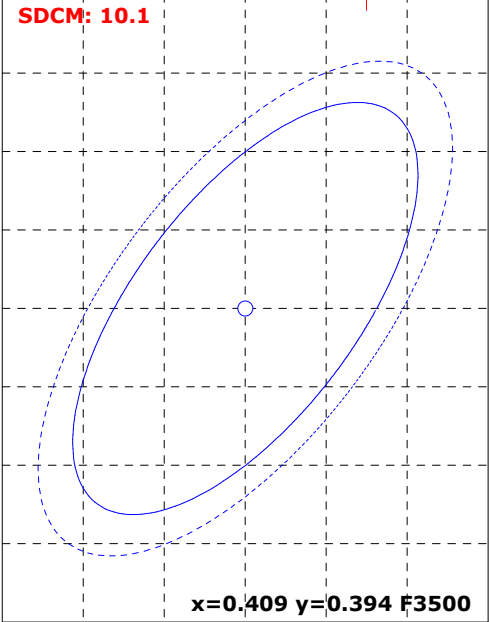
Product model:
Product number:
Tester:
Remarks:

Manufacturer:
Test unit:
Date of observation: 10/12/23

Spectrogram



SDCM



Color Parameter:

x: 0.4175 y: 0.4194 u: 0.2320 v: 0.3496 u': 0.2320 v': 0.5244
R_ratio: 40.5 % G_ratio: 43.7 % B_ratio: 15.9 % RedRatio: 21.6 % GreenRatio: 76.0 % BlueRatio: 2.4 %

Ra: 95.1 AvgR: 94.7
R1: 96.4 R2: 96.9 R3: 94.6 R4: 92.4 R5: 97.0 R6: 96.2 R7: 94.0 R8: 93.5
R9: 92.8 R10: 94.6 R11: 90.0 R12: 92.7 R13: 96.2 R14: 96.6 R15: 96.9

CCT: 3471 K Flux: 3549.488 lm PeakWave: 637.5 nm SDCM: 10.1
S/P: 1.7 CentralWave: 630.1 nm DominantWave: 577.8 nm CentroidWave: 574.4 nm
HalfWidth: 35.7 nm duv: 0.00947 purity: 51.2 % CQS: 88.5
LER(TM-30): 325.2 Ep: 10914.3 mw Rg: 95.9 Rf: 88.8
Red Ep: 4344.6 mw Near red Ep: 163.7 mw Near infrared Ep: 10.0 mw

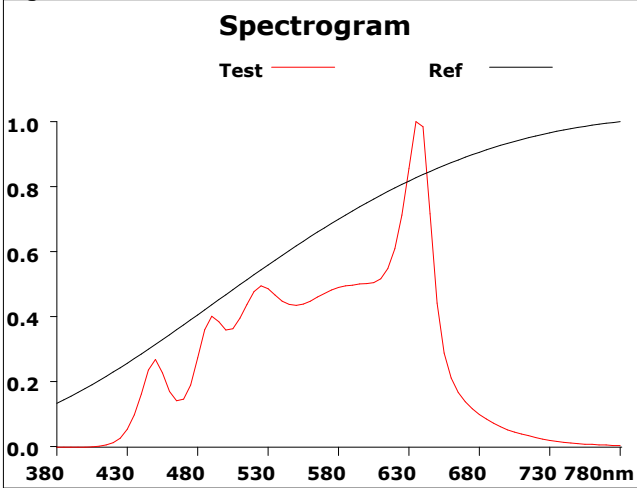
Electrical parameters:

Effic: 19.3 Lm/W Energy: 21.0 Effi: G
U: 222.6 V I: 0.854 A P: 184.000 W Pf: 0.967

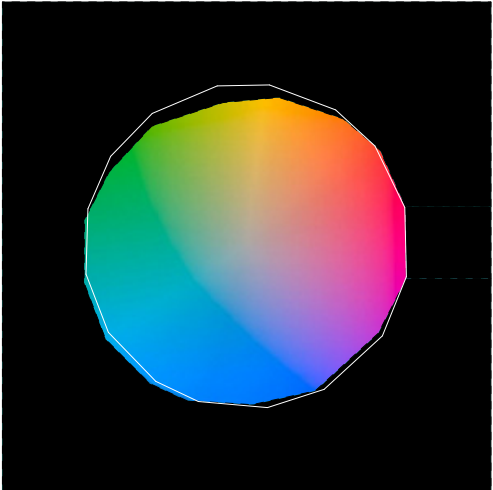
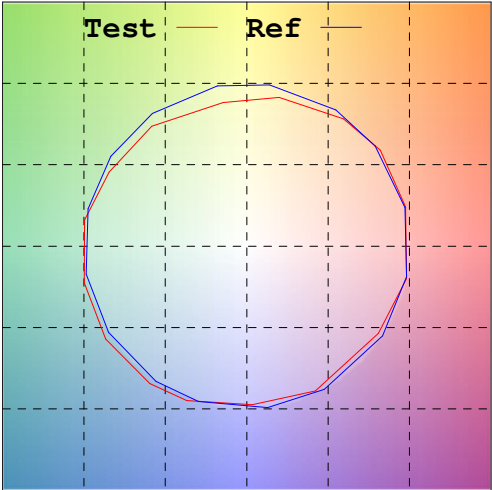
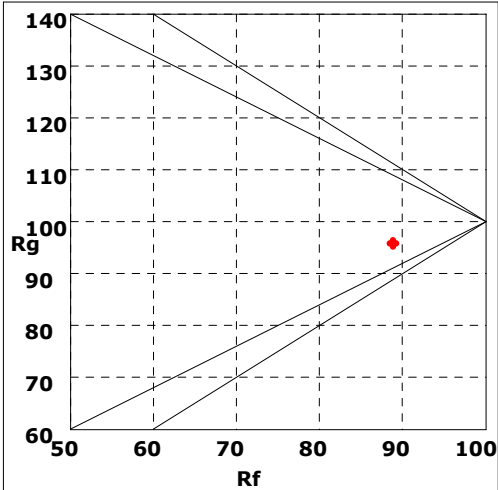
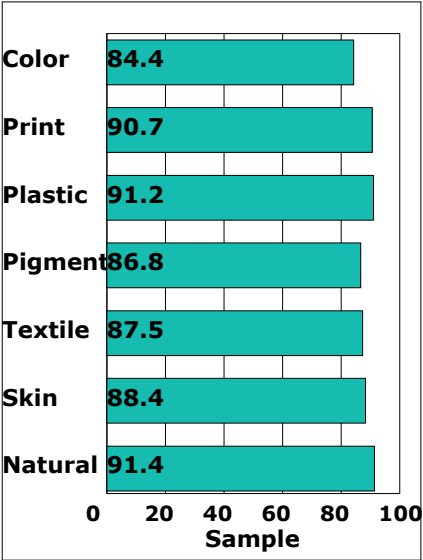
Product model:
Product number:
Tester:
Remarks:

Manufacturer:
Test unit:
Date of observation: 10/12/23

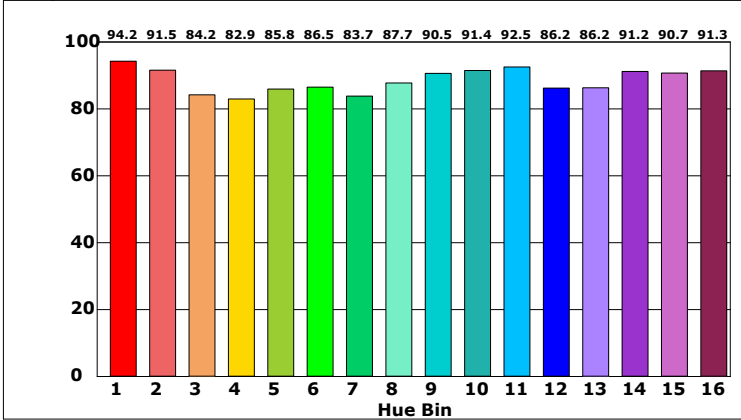
Rf: 88.8 CCT: 3471K u': 0.2320
Rg: 95.9 LER: 325.2 Duv: 0.00947 v': 0.5244



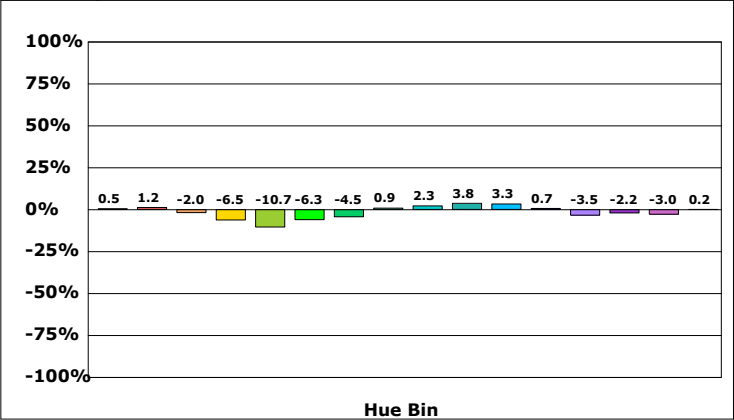
500			
Hue Bin	Rf	Chroma	Hue
1	94.2	0.5%	0.4%
2	91.5	1.2%	-3.9%
3	84.2	-2.0%	-7.0%
4	82.9	-6.5%	-7.3%
5	85.8	-10.7%	-1.6%
6	86.5	-6.3%	4.7%
7	83.7	-4.5%	8.5%
8	87.7	0.9%	7.2%
9	90.5	2.3%	5.0%
10	91.4	3.8%	2.4%
11	92.5	3.3%	-2.4%
12	86.2	0.7%	-7.1%
13	86.2	-3.5%	-9.1%
14	91.2	-2.2%	-5.0%
15	90.7	-3.0%	-0.1%
16	91.3	0.2%	-1.3%



Rf by Bue

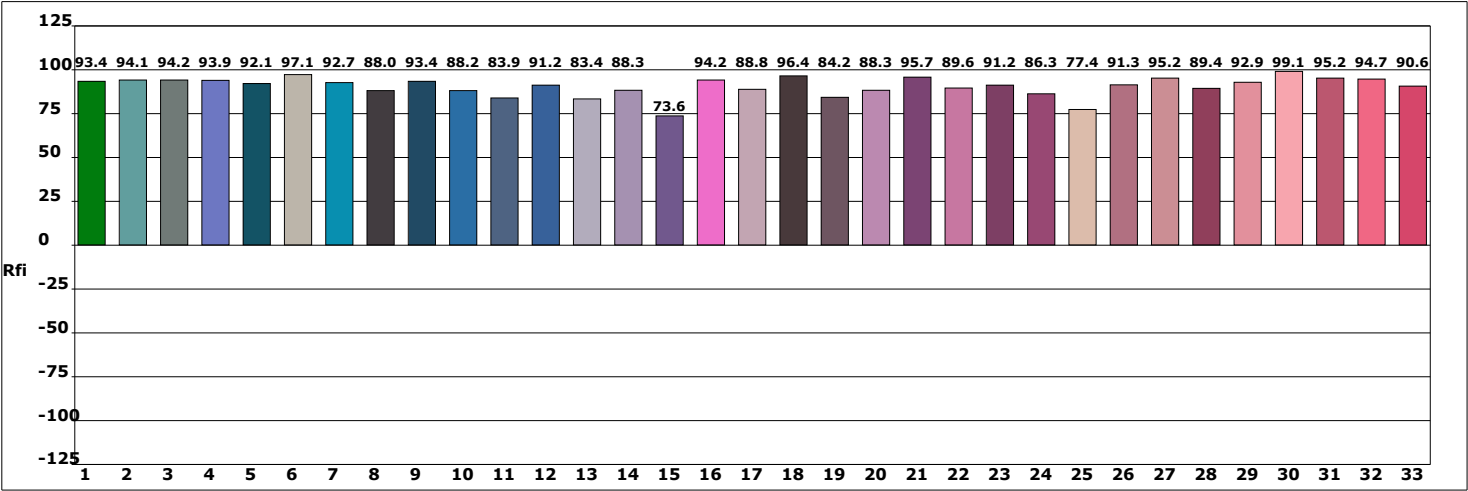
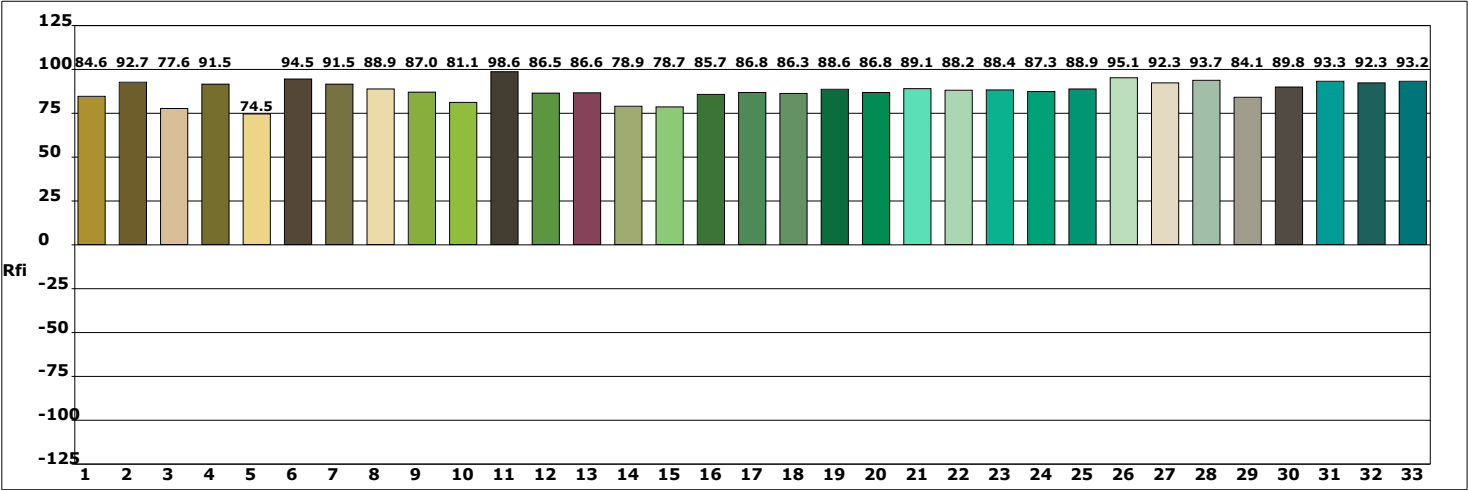
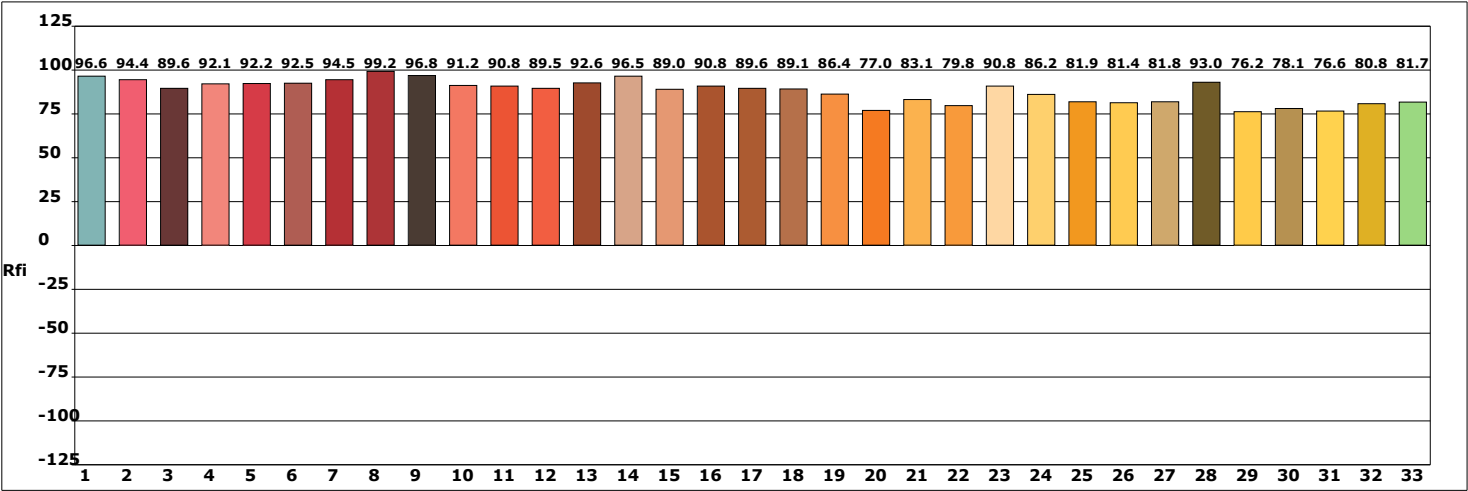


Chroma by Bue



Product model:
Product number:
Tester:
Remarks:

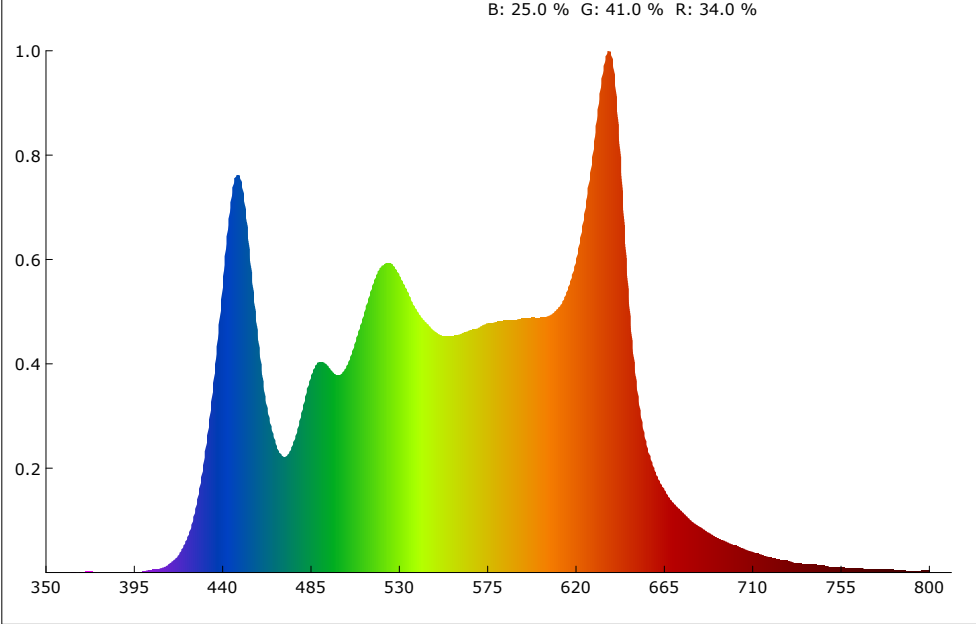
Manufacturer:
Test unit:
Date of observation: 10/12/23



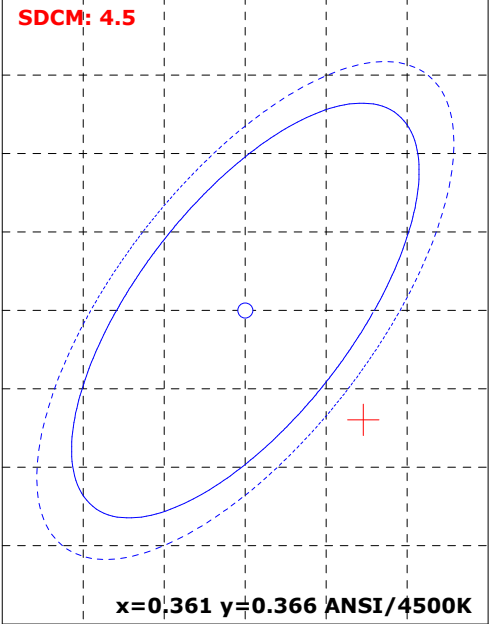
Product model:
Product number:
Tester:
Remarks:

Manufacturer:
Test unit:
Date of observation: 10/12/23

Spectrogram



SDCM



Color Parameter:

x: 0.3623	y: 0.3580	u: 0.2205	v: 0.3269	u': 0.2205	v': 0.4904		
R_ratio: 34.0 %	G_ratio: 41.0 %	B_ratio: 25.0 %	RedRatio: 19.8 %	GreenRatio: 77.0 %	BlueRatio: 3.2 %		
Ra: 91.4		AvgR: 89.4					
R1: 90.2	R2: 97.7	R3: 91.4	R4: 86.2	R5: 91.4	R6: 95.7	R7: 93.9	R8: 85.1
R9: 66.7	R10: 97.1	R11: 80.9	R12: 90.1	R13: 92.1	R14: 93.9	R15: 89.2	
CCT: 4417 K		Flux: 4006.777 lm	PeakWave: 637.5 nm	SDCM: 4.5			
S/P: 2.0		CentralWave: 628.9 nm	DominantWave: 580.1 nm	CentroidWave: 558.3 nm			
HalfWidth: 37.3 nm		duv: -0.00324	purity: 16.2 %	CQS: 93.0			
LER(TM-30): 299.7		Ep: 13367.7 mw	Rg: 106.1	Rf: 92.7			
Red Ep: 4480.8 mw		Near red Ep: 180.9 mw	Near infrared Ep: 10.6 mw				

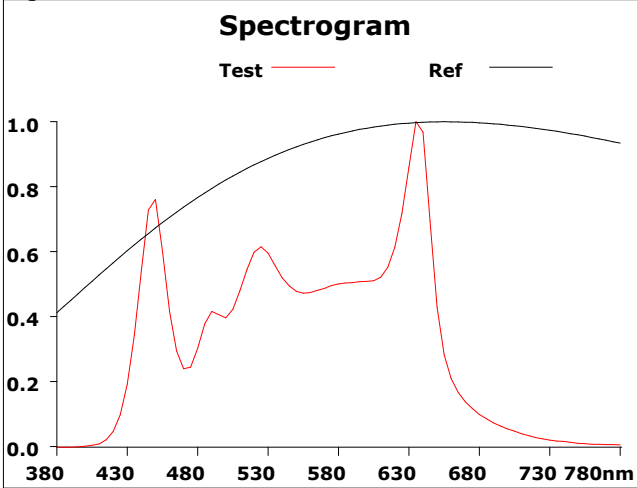
Electrical parameters:

Effic: 18.6 Lm/W	Energy: 20.3	Effi: G	
U: 222.5 V	I: 0.996 A	P: 215.300 W	Pf: 0.971

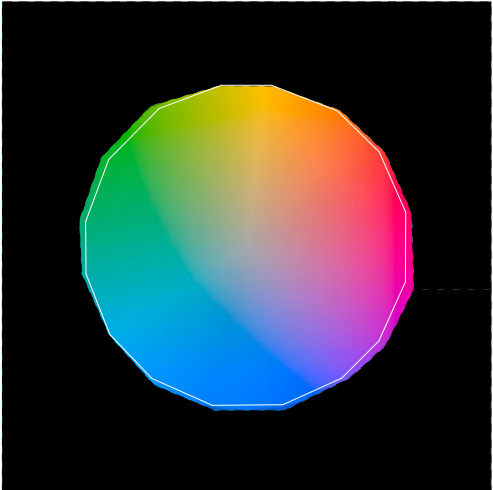
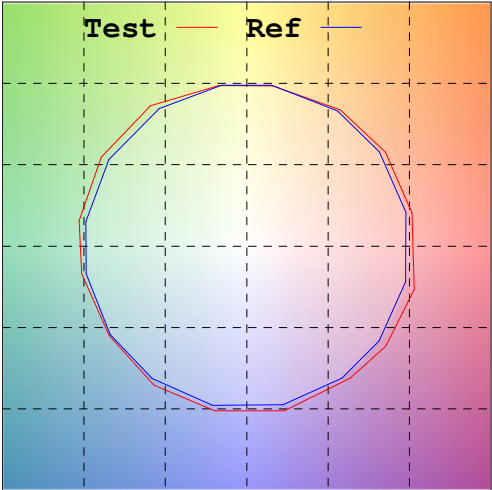
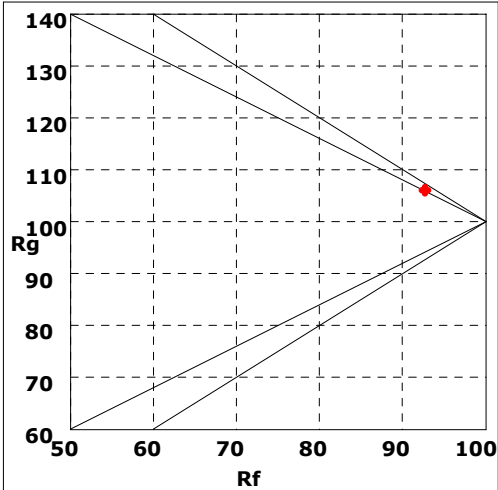
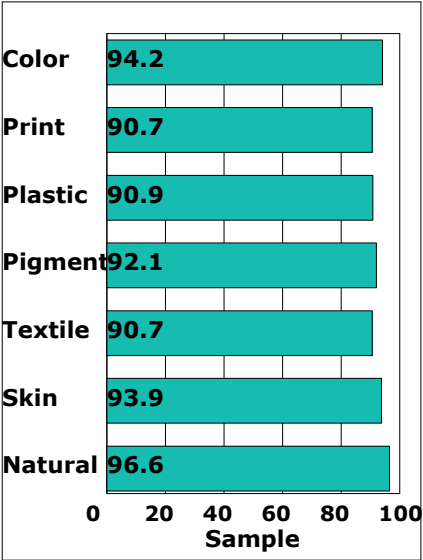
Product model:
Product number:
Tester:
Remarks:

Manufacturer:
Test unit:
Date of observation: 10/12/23

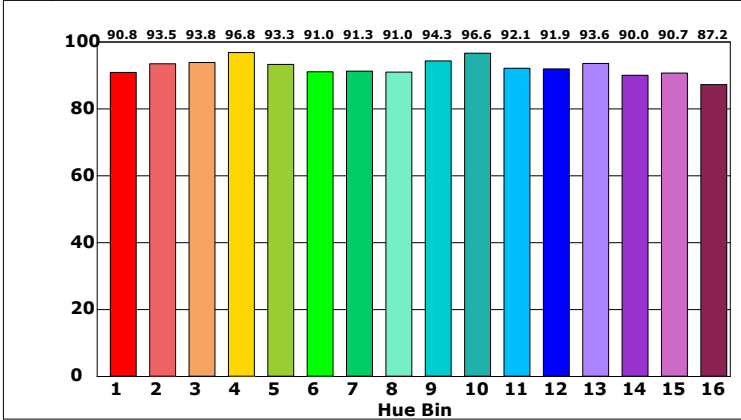
Rf: 92.7 CCT: 4417K u': 0.2205
Rg: 106.1 LER: 299.7 Duv: -0.00324 v': 0.4904



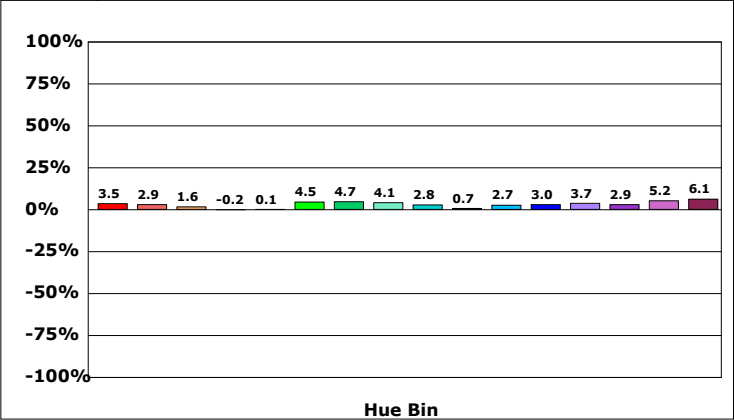
500			
Hue Bin	Rf	Chroma	Hue
1	90.8	3.5%	-1.1%
2	93.5	2.9%	-2.2%
3	93.8	1.6%	-1.1%
4	96.8	-0.2%	-0.6%
5	93.3	0.1%	1.8%
6	91.0	4.5%	3.4%
7	91.3	4.7%	1.5%
8	91.0	4.1%	0.3%
9	94.3	2.8%	-0.6%
10	96.6	0.7%	0.2%
11	92.1	2.7%	3.3%
12	91.9	3.0%	2.1%
13	93.6	3.7%	0.0%
14	90.0	2.9%	4.3%
15	90.7	5.2%	-0.2%
16	87.2	6.1%	-3.6%



Rf by Bue

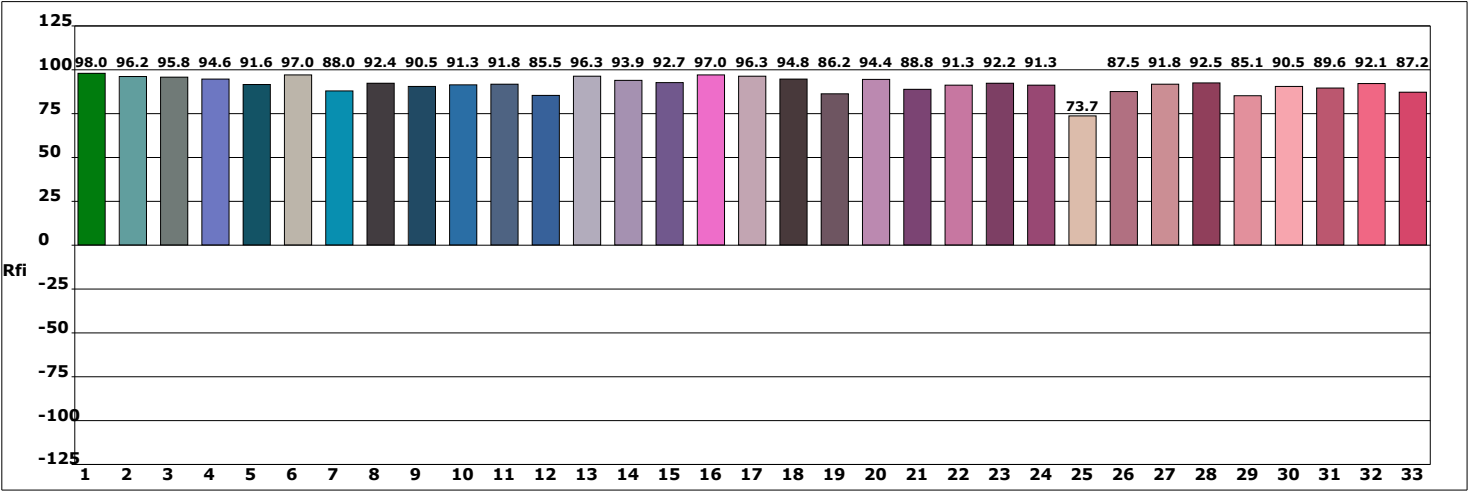
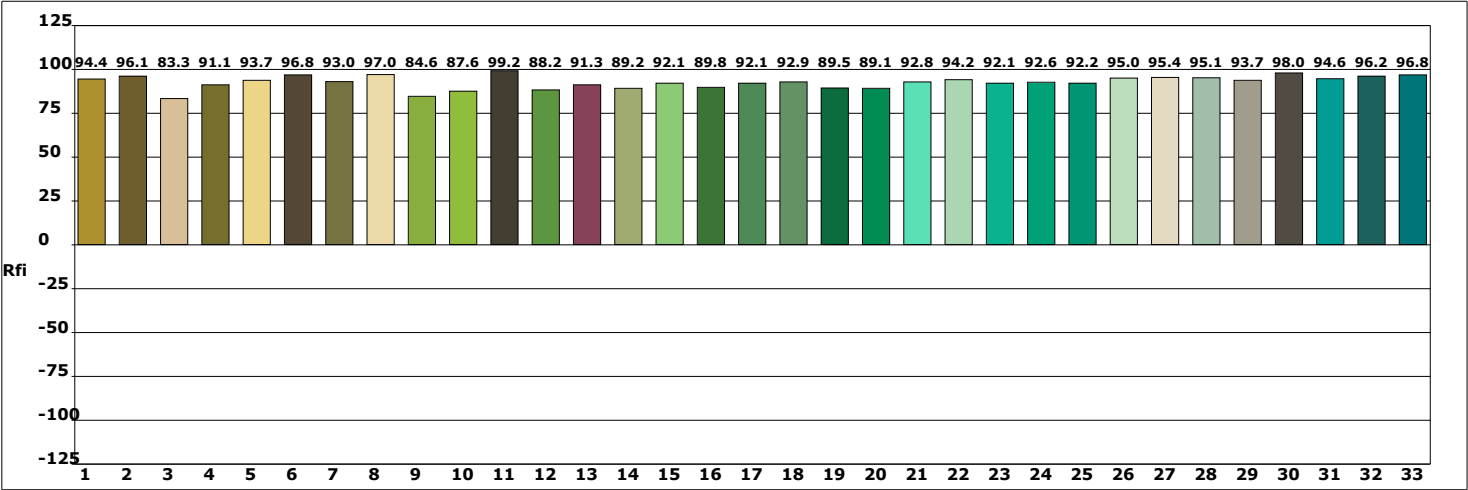
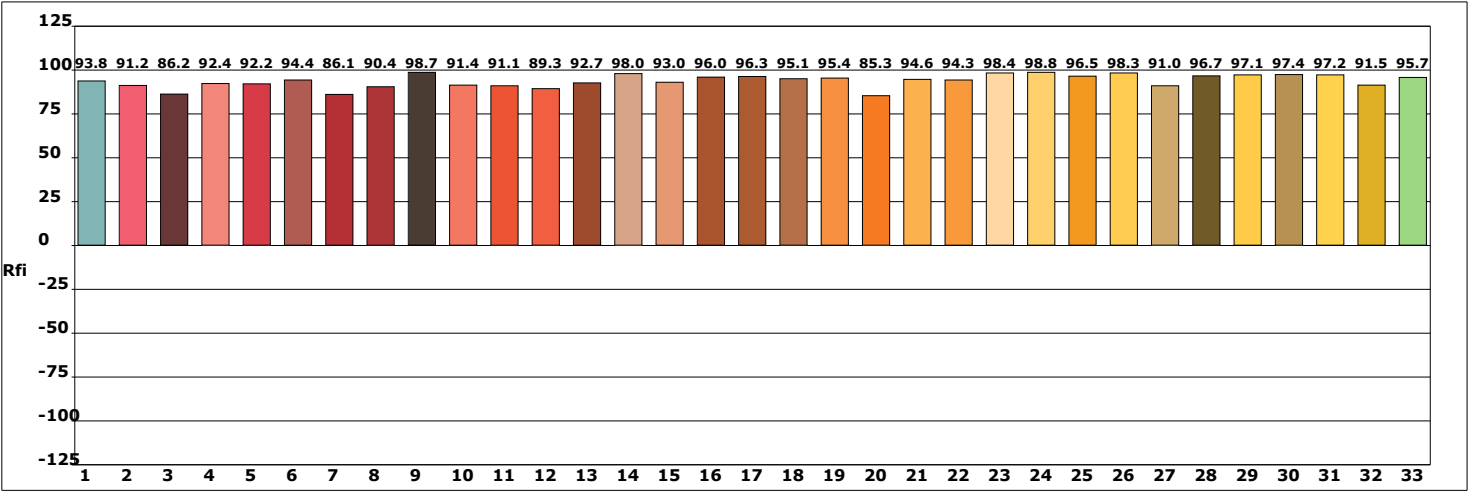


Chroma by Bue



Product model:
Product number:
Tester:
Remarks:

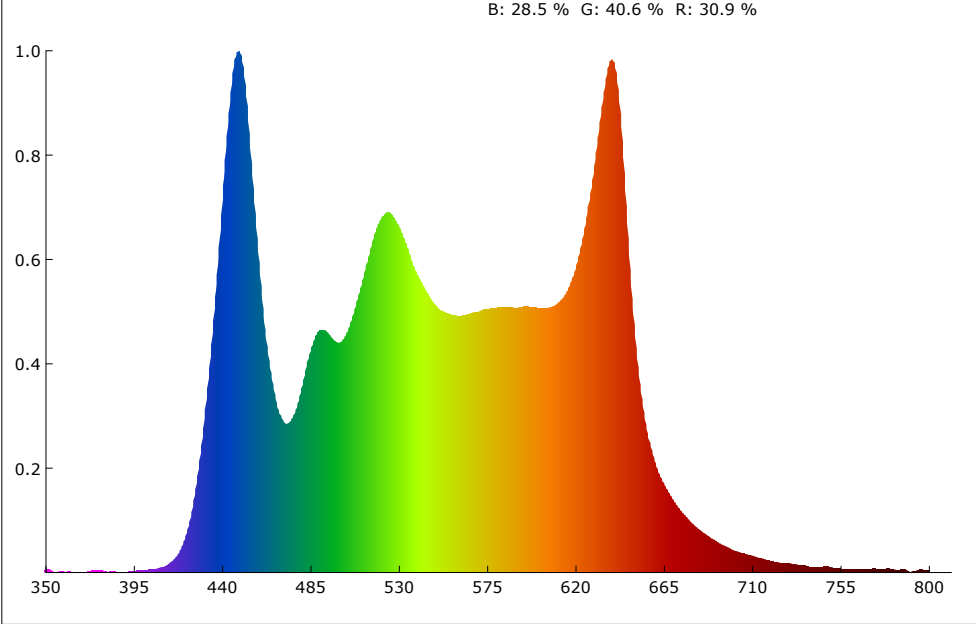
Manufacturer:
Test unit:
Date of observation: 10/12/23



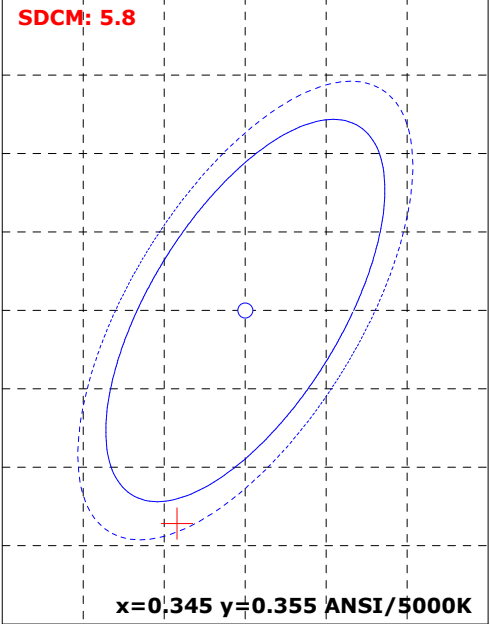
Product model:
Product number:
Tester:
Remarks:

Manufacturer:
Test unit:
Date of observation: 10/12/23

Spectrogram



SDCM



Color Parameter:

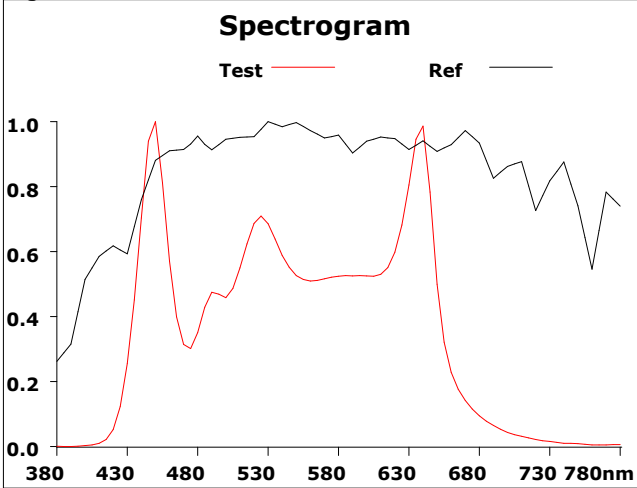
x: 0.3405	y: 0.3417	u: 0.2122	v: 0.3194	u': 0.2122	v': 0.4791
R_ratio: 30.9 %	G_ratio: 40.6 %	B_ratio: 28.5 %	RedRatio: 18.3 %	GreenRatio: 78.0 %	BlueRatio: 3.7 %
Ra: 90.2	AvgR: 88.1				
R1: 89.6	R2: 97.4	R3: 89.1	R4: 83.6	R5: 90.8	R6: 96.1
R7: 91.9	R8: 83.2	R9: 61.7	R10: 96.8	R11: 78.6	R12: 91.1
R13: 91.8	R14: 92.7	R15: 87.5			
CCT: 5152 K	Flux: 3946.475 lm	PeakWave: 448.6 nm	SDCM: 5.8		
S/P: 2.2	CentralWave: 448.8 nm	DominantWave: 576.2 nm	CentroidWave: 551.2 nm		
HalfWidth: 24.5 nm	duv: -0.00319	purity: 4.7 %	CQS: 92.8		
LER(TM-30): 293.0	Ep: 13470.0 mw	Rg: 107.7	Rf: 91.6		
Red Ep: 4113.2 mw	Near red Ep: 132.5 mw	Near infrared Ep: 11.5 mw			

Electrical parameters:

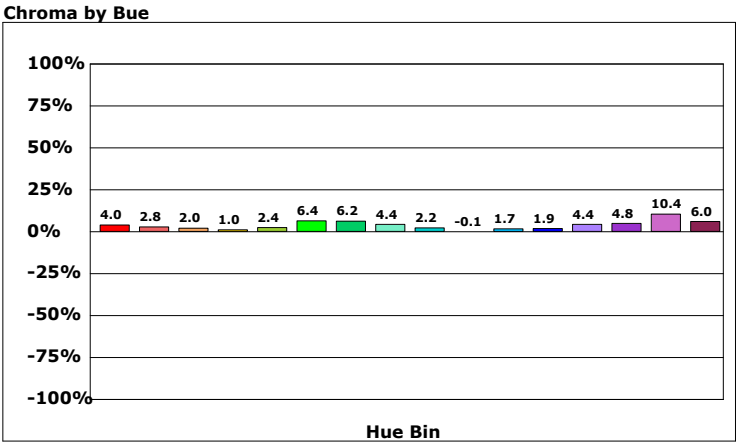
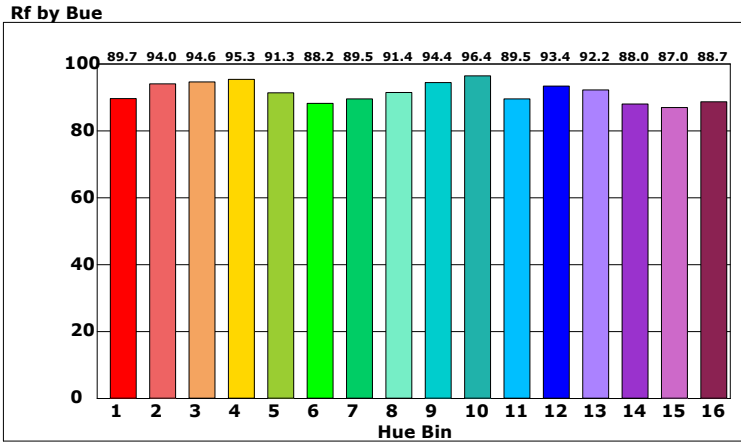
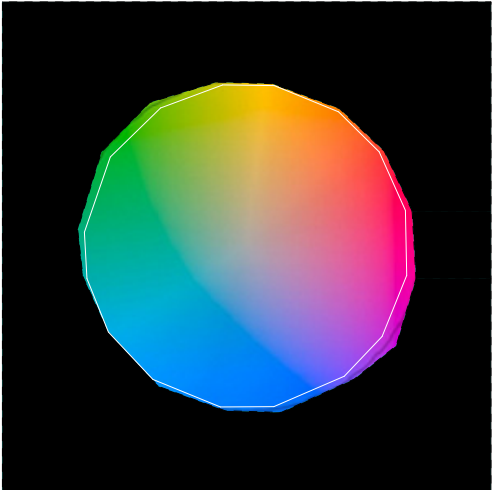
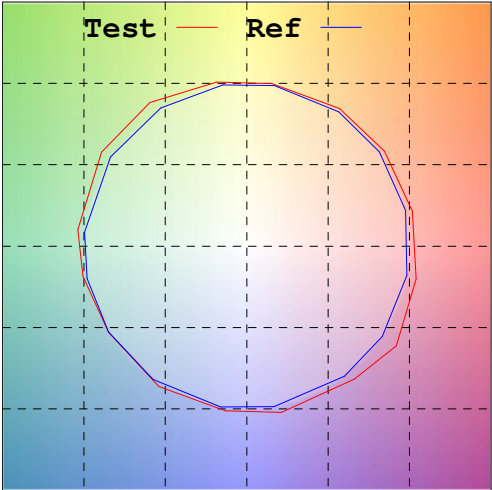
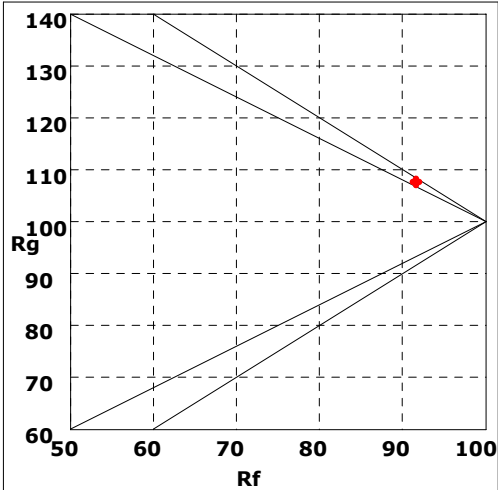
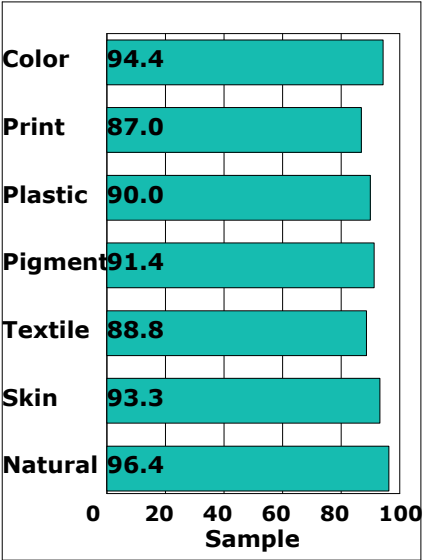
Effic: 17.5 Lm/W	Energy: 19.0	Effi: G	
U: 222.6 V	I: 1.044 A	P: 225.900 W	Pf: 0.971

Product model:	Manufacturer:
Product number:	Test unit:
Tester:	Date of observation: 10/12/23
Remarks:	

Rf: 91.6 CCT: 5152K u': 0.2122
Rg: 107.7 LER: 293.0 Duv: -0.00319 v': 0.4791

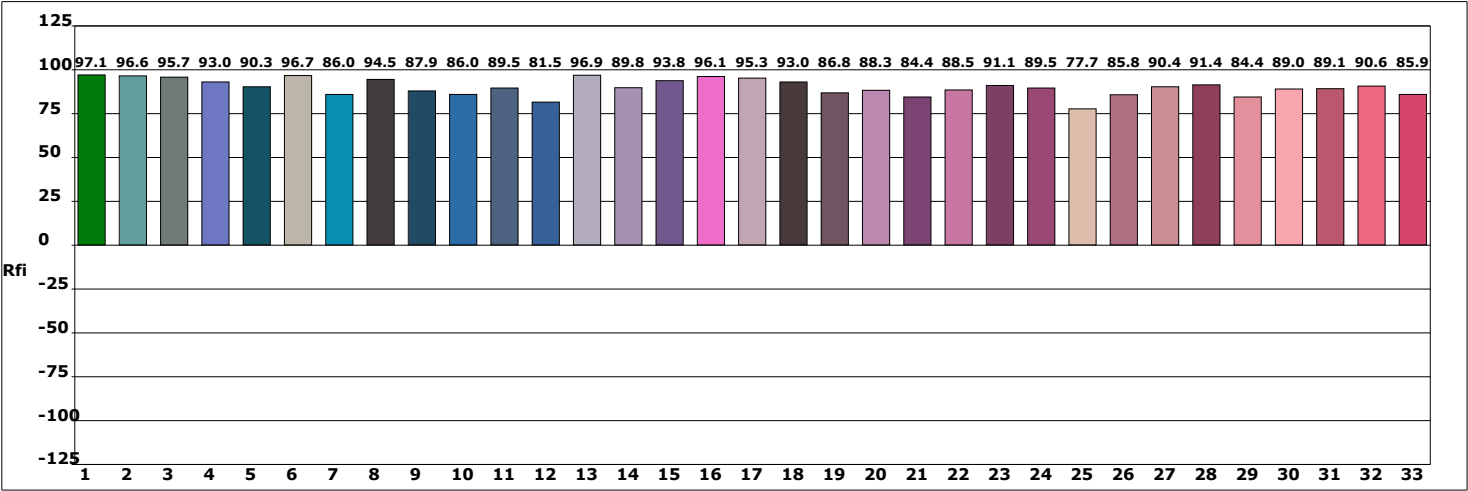
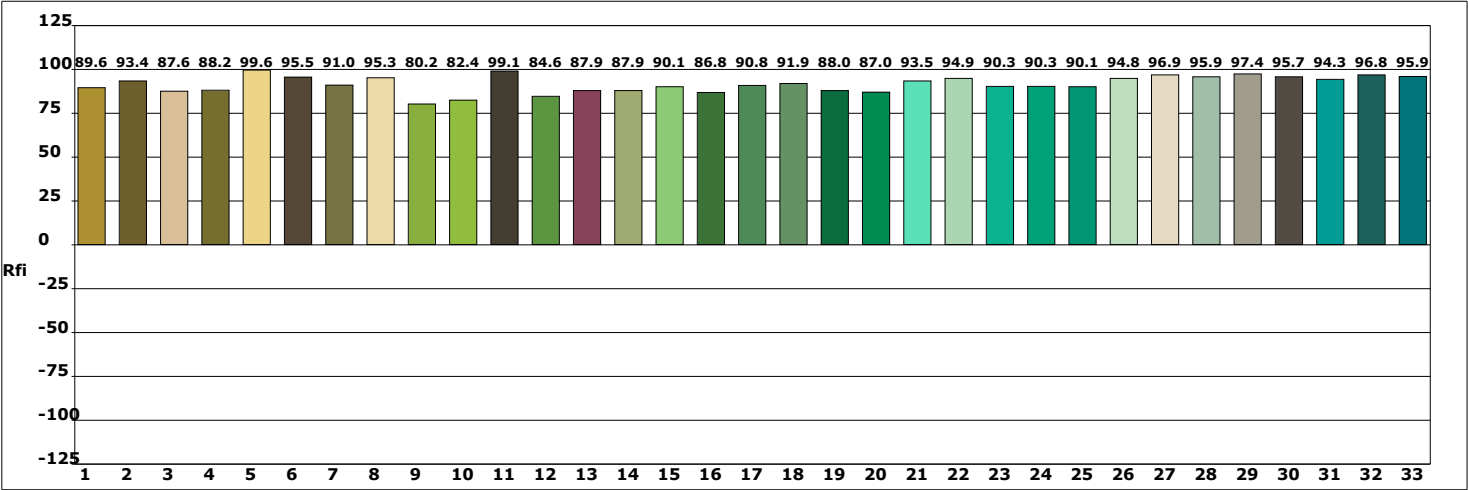
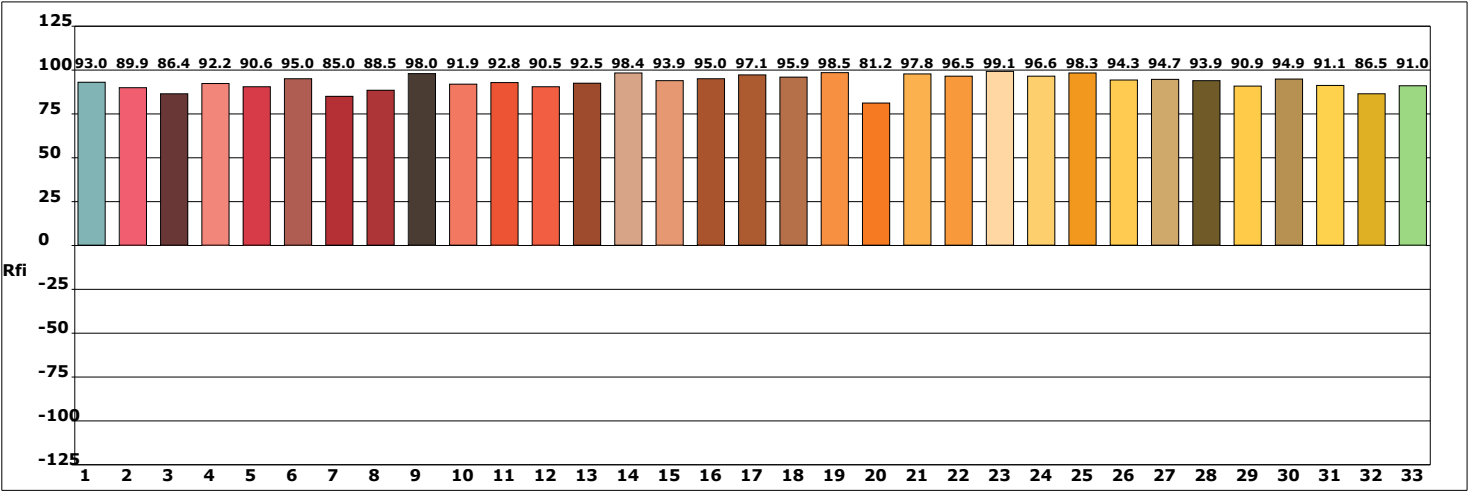


500			
Hue Bin	Rf	Chroma	Hue
1	89.7	4.0%	-1.2%
2	94.0	2.8%	-1.4%
3	94.6	2.0%	0.6%
4	95.3	1.0%	1.6%
5	91.3	2.4%	3.2%
6	88.2	6.4%	3.7%
7	89.5	6.2%	0.7%
8	91.4	4.4%	-0.7%
9	94.4	2.2%	-1.9%
10	96.4	-0.1%	0.2%
11	89.5	1.7%	5.3%
12	93.4	1.9%	3.6%
13	92.2	4.4%	3.7%
14	88.0	4.8%	4.2%
15	87.0	10.4%	0.0%
16	88.7	6.0%	-1.0%



Product model:
Product number:
Tester:
Remarks:

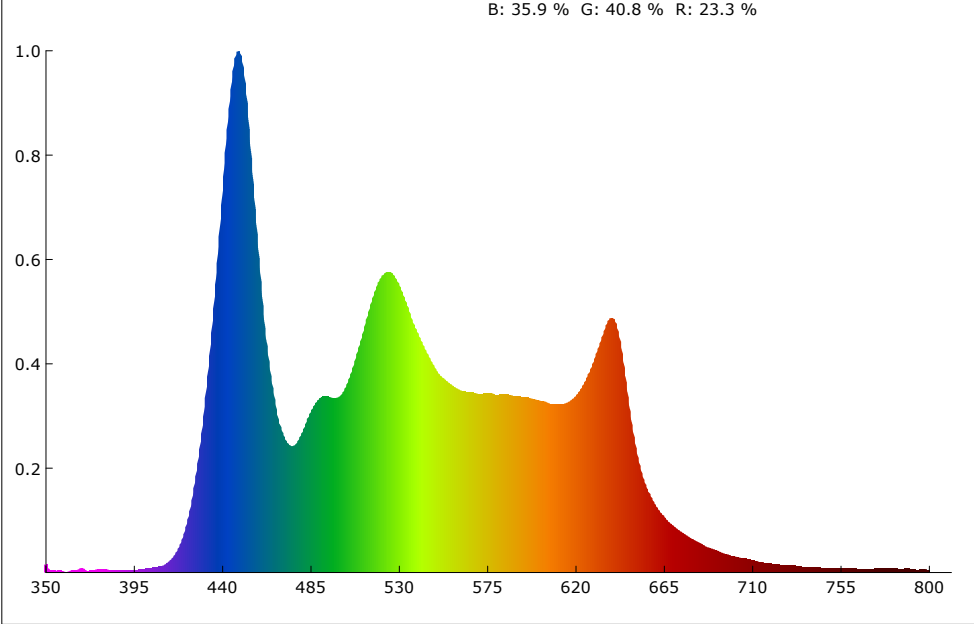
Manufacturer:
Test unit:
Date of observation: 10/12/23



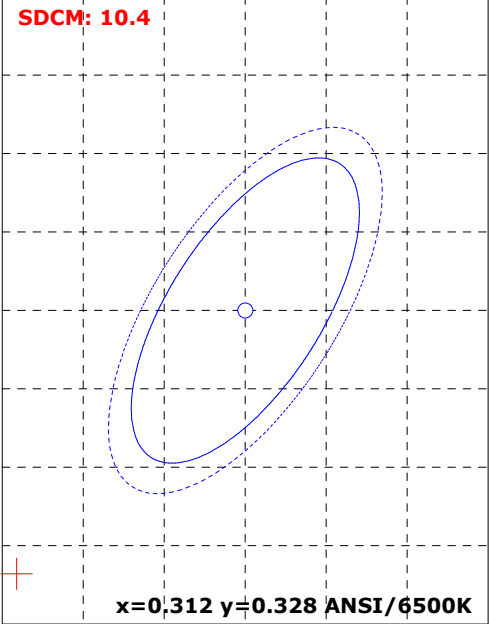
Product model:
Product number:
Tester:
Remarks:

Manufacturer:
Test unit:
Date of observation: 10/12/23

Spectrogram



SDCM



Color Parameter:

x: 0.2982 y: 0.3114 u: 0.1943 v: 0.3043 u': 0.1943 v': 0.4565
R_ratio: 23.3 % G_ratio: 40.8 % B_ratio: 35.9 % RedRatio: 14.6 % GreenRatio: 81.0 % BlueRatio: 4.4 %

Ra: 91.6 AvgR: 89.7
R1: 97.0 R2: 94.2 R3: 84.3 R4: 86.4 R5: 97.4 R6: 92.3 R7: 91.3 R8: 90.5
R9: 84.9 R10: 84.8 R11: 81.9 R12: 75.3 R13: 99.2 R14: 90.7 R15: 95.9

CCT: 7625 K Flux: 4279.818 lm PeakWave: 448.6 nm SDCM: 10.4
S/P: 2.5 CentralWave: 448.6 nm DominantWave: 483.2 nm CentroidWave: 536.5 nm
HalfWidth: 25.3 nm duv: 0.00173 purity: 13.7 % CQS: 92.3
LER(TM-30): 281.5 Ep: 15205.2 mw Rg: 105.5 Rf: 90.2
Red Ep: 3493.9 mw Near red Ep: 164.9 mw Near infrared Ep: 23.5 mw

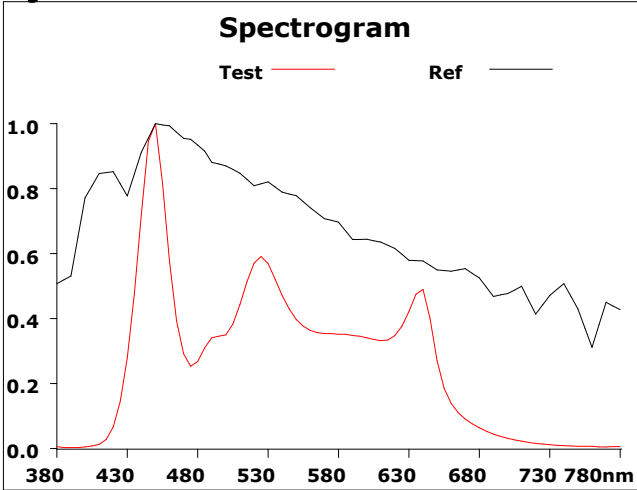
Electrical parameters:

Effic: 16.9 Lm/W Energy: 18.4 Effi: G
U: 222.5 V I: 1.170 A P: 253.800 W Pf: 0.975

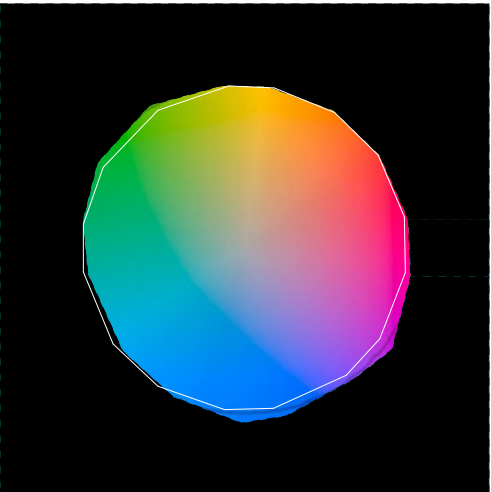
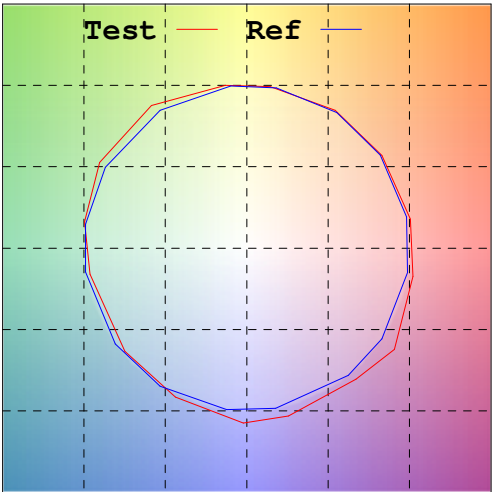
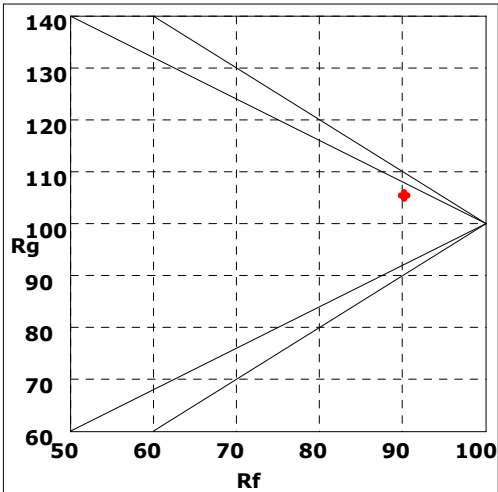
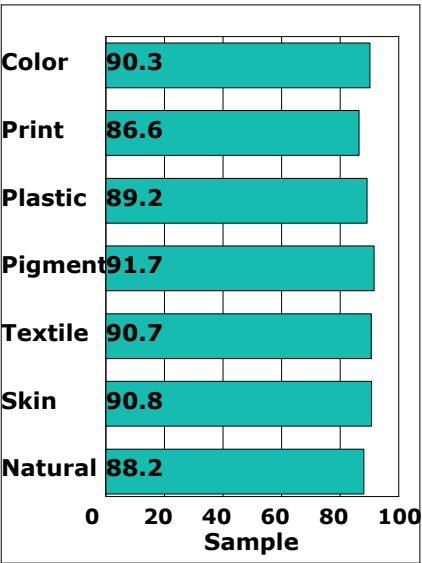
Product model:
Product number:
Tester:
Remarks:

Manufacturer:
Test unit:
Date of observation: 10/12/23

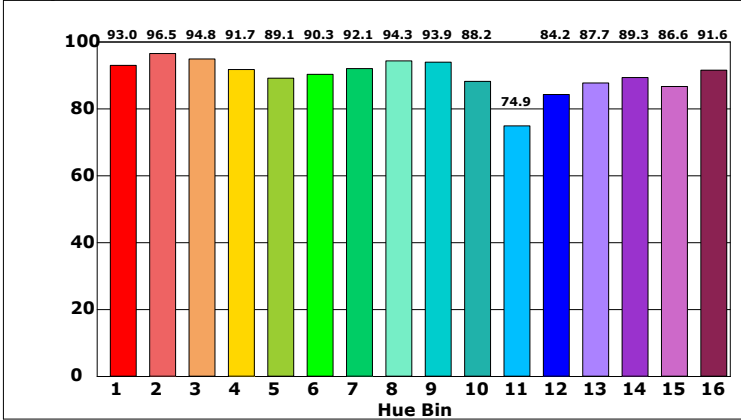
Rf: 90.2 CCT: 7625K u': 0.1943
Rg: 105.5 LER: 281.5 Duv: 0.00173 v': 0.4565



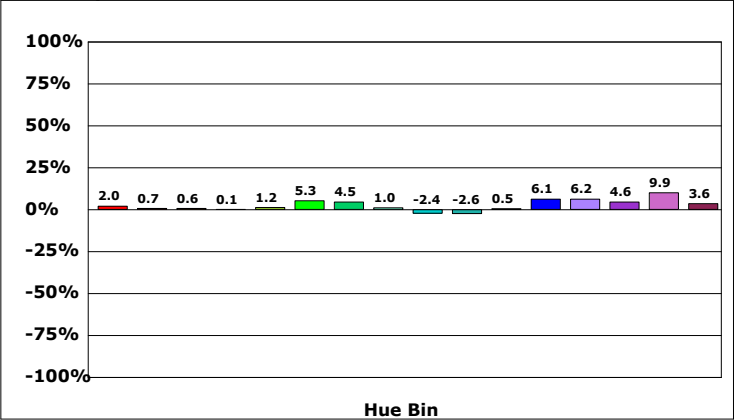
500			
Hue Bin	Rf	Chroma	Hue
1	93.0	2.0%	-1.8%
2	96.5	0.7%	-0.7%
3	94.8	0.6%	1.6%
4	91.7	0.1%	3.8%
5	89.1	1.2%	3.3%
6	90.3	5.3%	2.7%
7	92.1	4.5%	-0.5%
8	94.3	1.0%	-1.4%
9	93.9	-2.4%	1.9%
10	88.2	-2.6%	7.1%
11	74.9	0.5%	11.5%
12	84.2	6.1%	11.6%
13	87.7	6.2%	6.8%
14	89.3	4.6%	2.7%
15	86.6	9.9%	-1.2%
16	91.6	3.6%	-1.6%



Rf by Bue

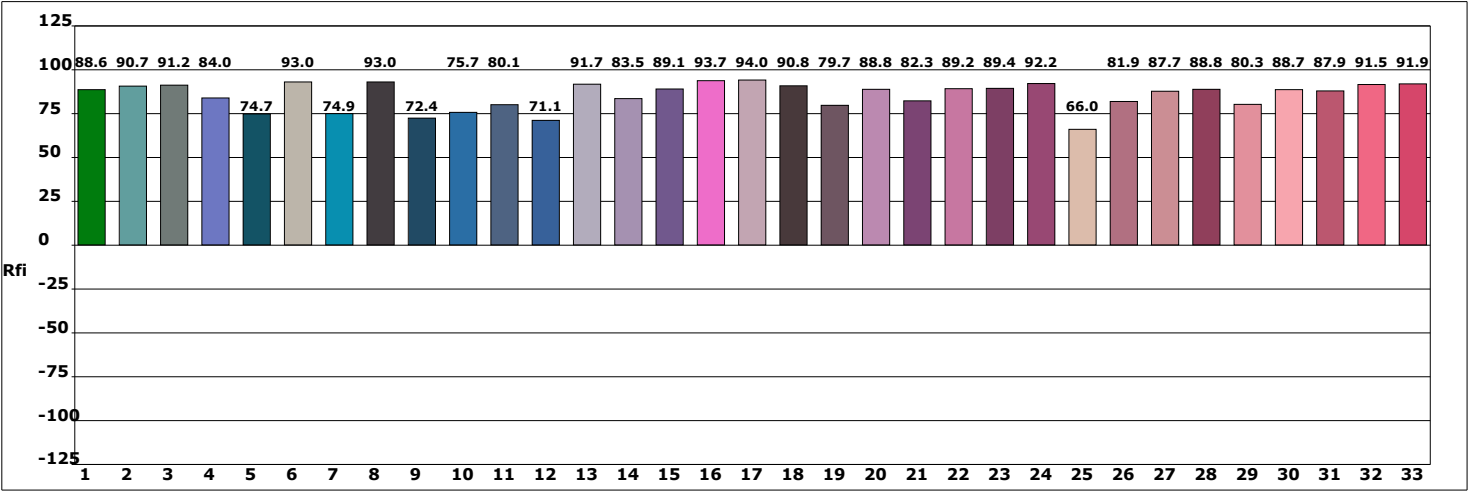
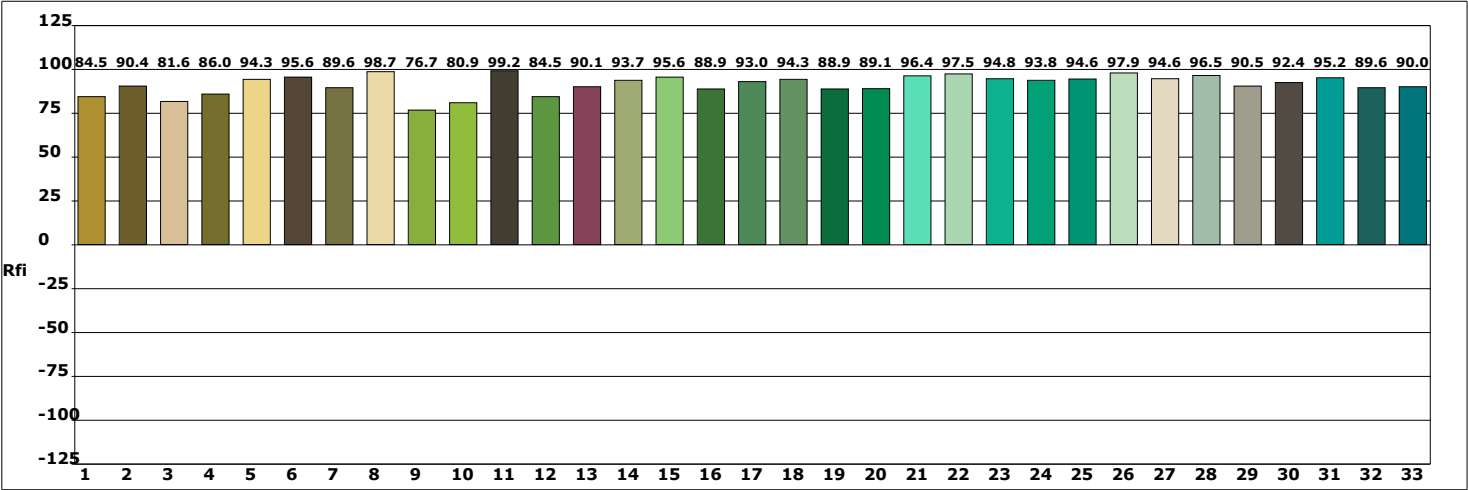
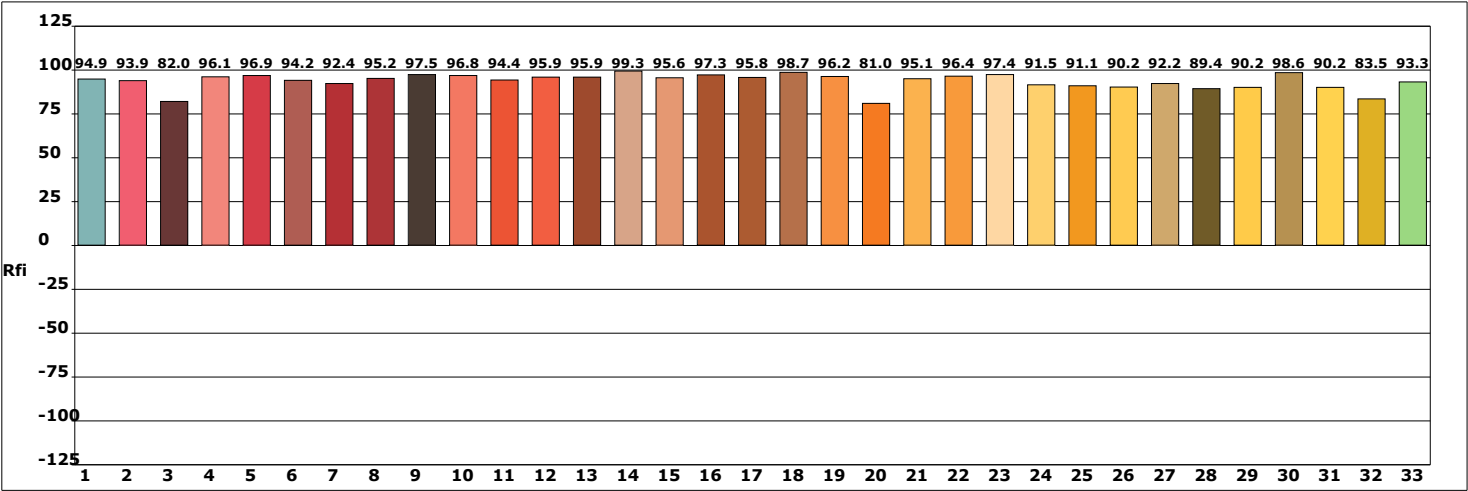


Chroma by Bue



Product model:
Product number:
Tester:
Remarks:

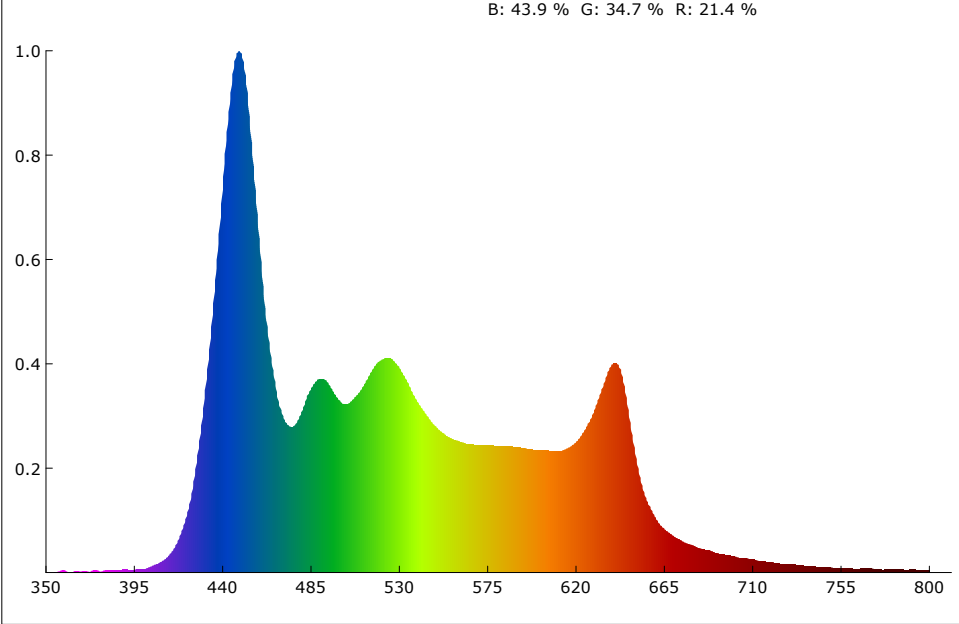
Manufacturer:
Test unit:
Date of observation: 10/12/23



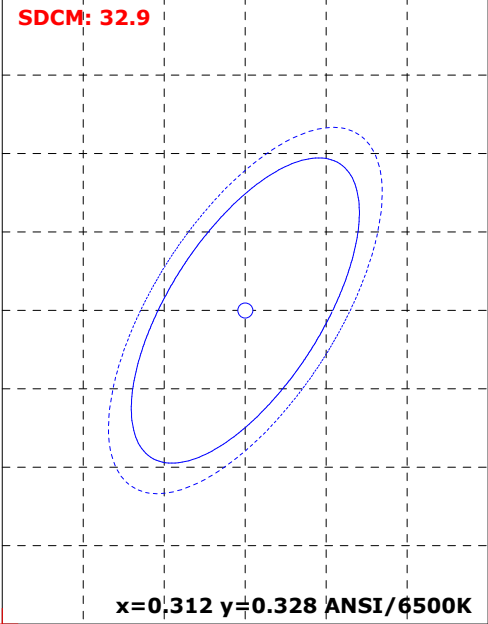
Product model:
Product number:
Tester:
Remarks:

Manufacturer:
Test unit:
Date of observation: 10/12/23

Spectrogram



SDCM



Color Parameter:

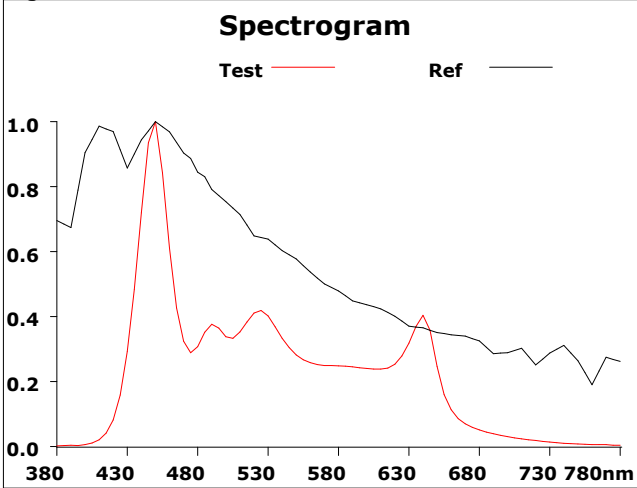
x: 0.2732	y: 0.2671	u: 0.1931	v: 0.2832	u': 0.1931	v': 0.4248
R_ratio: 21.4 %	G_ratio: 34.7 %	B_ratio: 43.9 %	RedRatio: 14.7 %	GreenRatio: 78.9 %	BlueRatio: 6.4 %
Ra: 86.9	AvgR: 81.7				
R1: 83.4	R2: 94.3	R3: 86.3	R4: 81.7	R5: 88.2	R6: 93.3
R7: 91.7	R8: 76.6	R9: 26.7	R10: 92.3	R11: 75.7	R12: 80.1
R13: 86.0	R14: 91.1	R15: 78.3			
CCT: 13032 K	Flux: 4708.125 lm	PeakWave: 448.6 nm	SDCM: 32.9		
S/P: 2.9	CentralWave: 448.8 nm	DominantWave: 475.0 nm	CentroidWave: 528.5 nm		
HalfWidth: 26.3 nm	duv: -0.00662	purity: 26.9 %	CQS: 93.9		
LER(TM-30): 244.8	Ep: 19233.9 mw	Rg: 106.7	Rf: 87.7		
Red Ep: 4045.2 mw	Near red Ep: 255.0 mw	Near infrared Ep: 28.2 mw			

Electrical parameters:

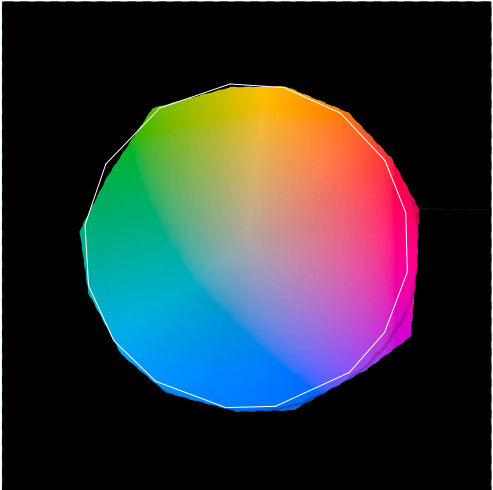
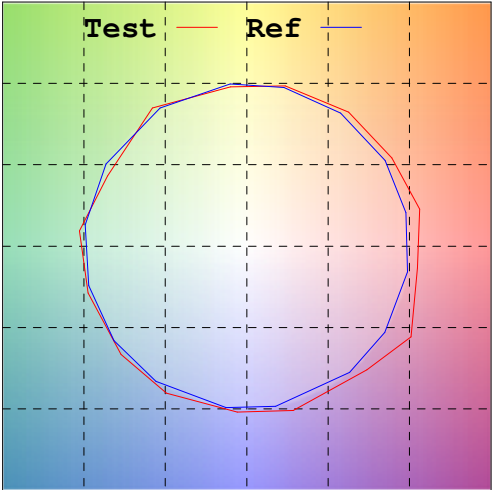
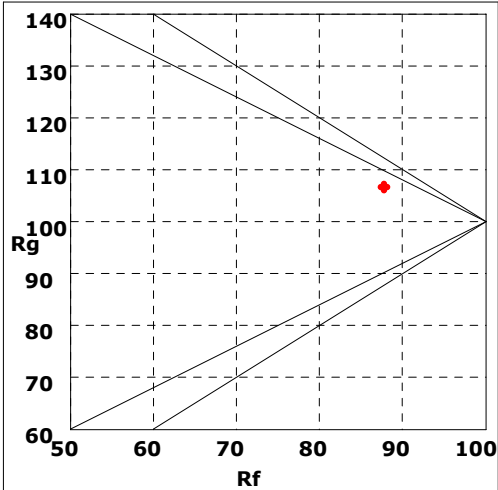
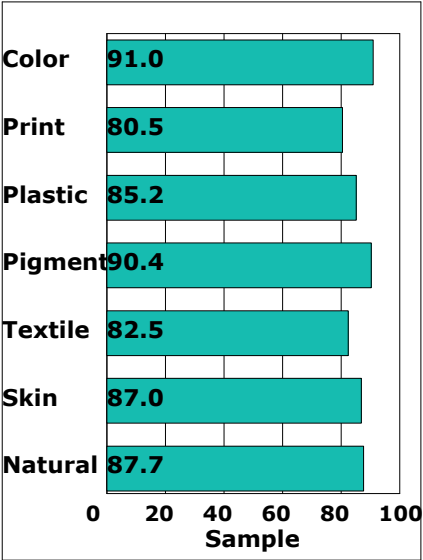
Effic: 14.6 Lm/W	Energy: 15.9	Effi: G	
U: 222.3 V	I: 1.480 A	P: 321.700 W	Pf: 0.978

Product model:	Manufacturer:
Product number:	Test unit:
Tester:	Date of observation: 10/12/23
Remarks:	

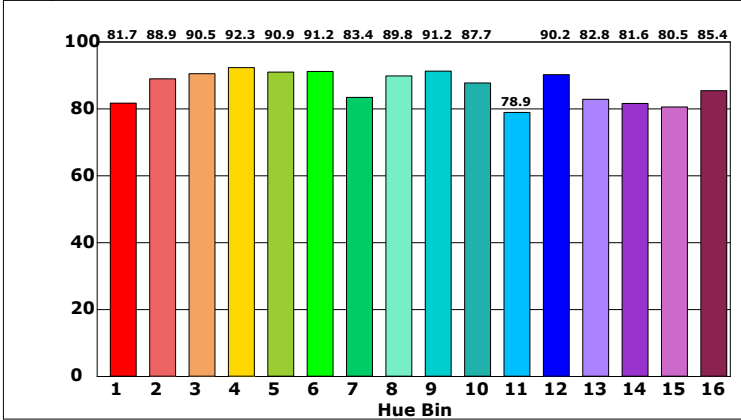
Rf: 87.7 CCT: 13032K u': 0.1931
Rg: 106.7 LER: 244.8 Duv: -0.00662 v': 0.4248



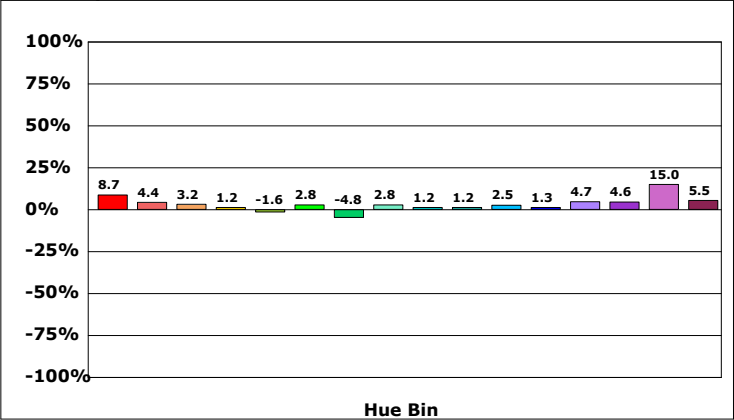
500			
Hue Bin	Rf	Chroma	Hue
1	81.7	8.7%	0.4%
2	88.9	4.4%	-1.0%
3	90.5	3.2%	-3.7%
4	92.3	1.2%	-0.6%
5	90.9	-1.6%	0.1%
6	91.2	2.8%	3.9%
7	83.4	-4.8%	5.4%
8	89.8	2.8%	4.5%
9	91.2	1.2%	4.5%
10	87.7	1.2%	9.4%
11	78.9	2.5%	9.4%
12	90.2	1.3%	7.3%
13	82.8	4.7%	10.1%
14	81.6	4.6%	9.7%
15	80.5	15.0%	6.7%
16	85.4	5.5%	3.6%



Rf by Bue

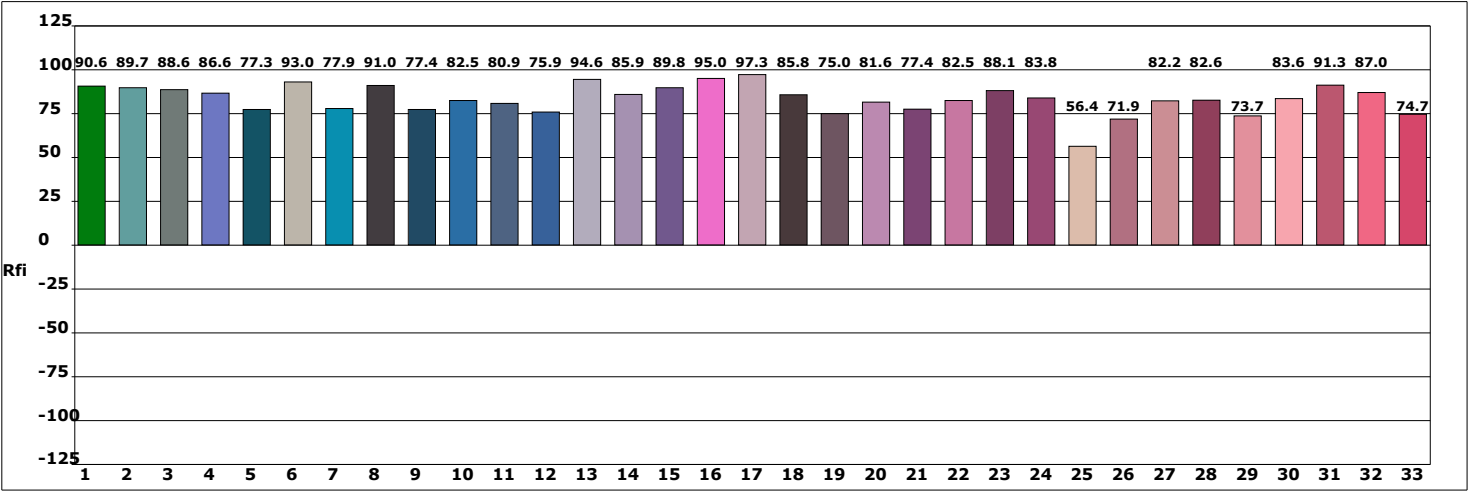
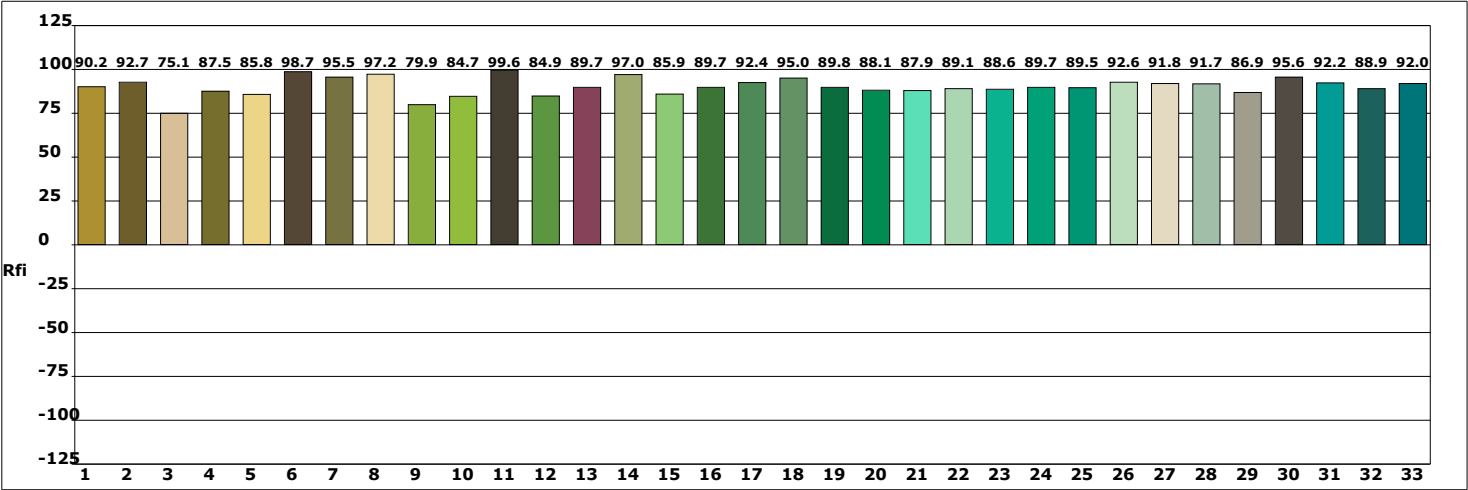
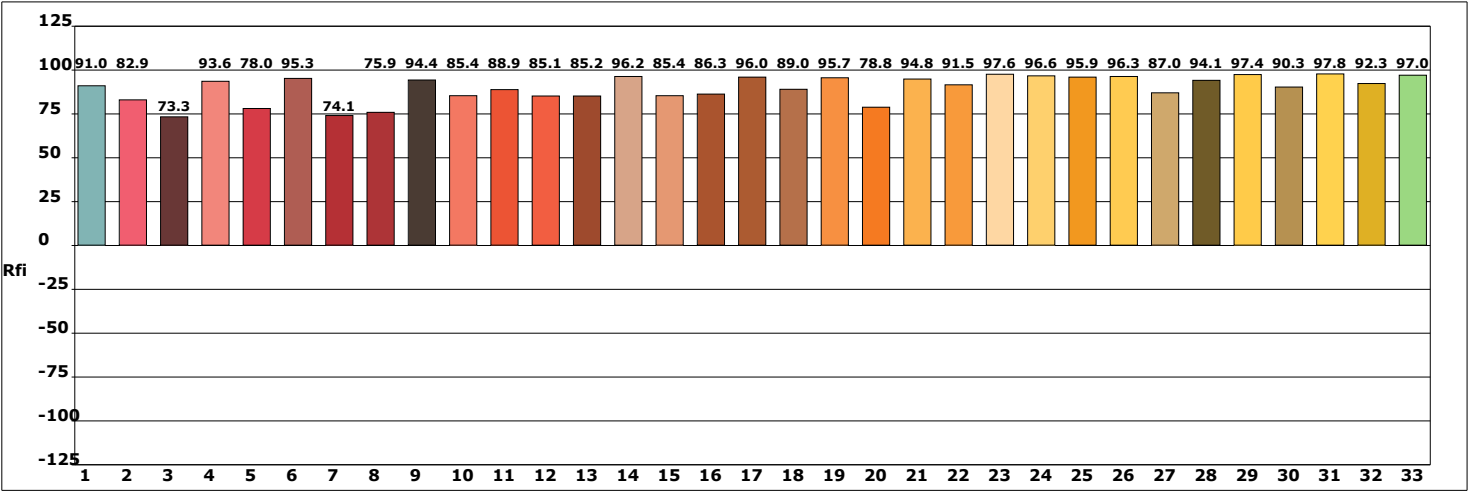


Chroma by Bue



Product model:
Product number:
Tester:
Remarks:

Manufacturer:
Test unit:
Date of observation: 10/12/23



Product model:
Product number:
Tester:
Remarks:

Manufacturer:
Test unit:
Date of observation: 10/12/23