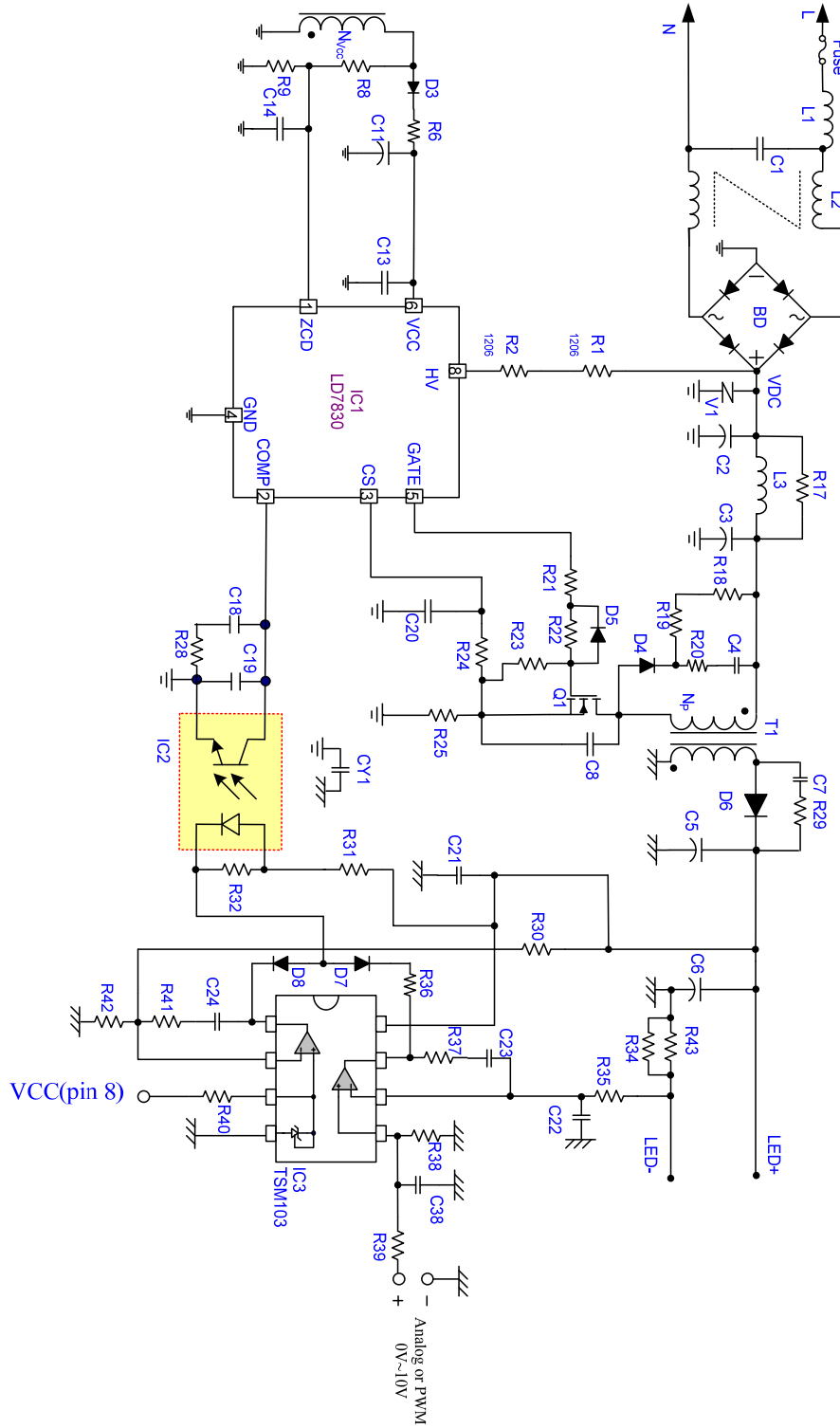


*LD7830+TSM103*  
*Dimming Reference Circuit Test Report*

*--- 16.8W (24V, 0.7A) LED Lighting Power*

Test by SE: Scott.lin

## I. Schematic



**II. BOM**

P/N	Component Value	Note
Fuse	2A/250V	
V1	Varistor	471
R1	4.7k/ 1206	
R2	4.7k/1206	
R6	0/0805	
R8	200k/ 0805	
R9	36k/ 0805	
R17	1k/ 1206	
R18, R19	51k/ 1206	
R20	10/ 1206	
R21	4.7/ 0805	
R22	47/ 0805	
R23	100k/ 0805	
R24	220/ 0805	
R25	0.36/ 1W	
R28	220/ 0805	
R29	51/ 1206	
R30	200k/ 0805	
R31	6.8k/ 0805	
R32	NC	
R34	0.33//0.27/1210	
R35	1k/ 0805	
R36, R37	0/ 0805	
R38	8.2k/ 0805	
R39	820k/ 0805	
R40	13k/0805	
R41	39k/ 0805	
R42	22k/ 0805	
R43	3/1206	
C1	0.1uF	X-cap
C2	0.047uF/400V	塑膠電容
C3	0.1uF/400V	塑膠電容
C4	2.2nF/1206/500V	
C5, C6	470uF/ 35V	電解電容
C7	330pF/ 500V	
C8	NC	
C11	22uF/ 50V	
C13	0.1uF/ 0805	
C14	NC	
C18	3.3uF/ 0805	

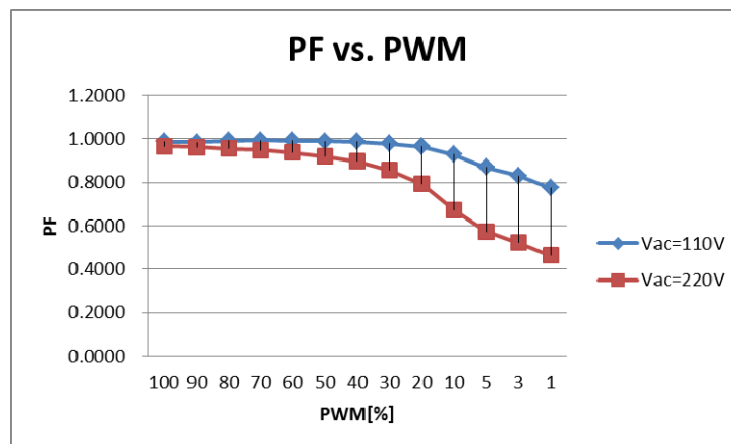
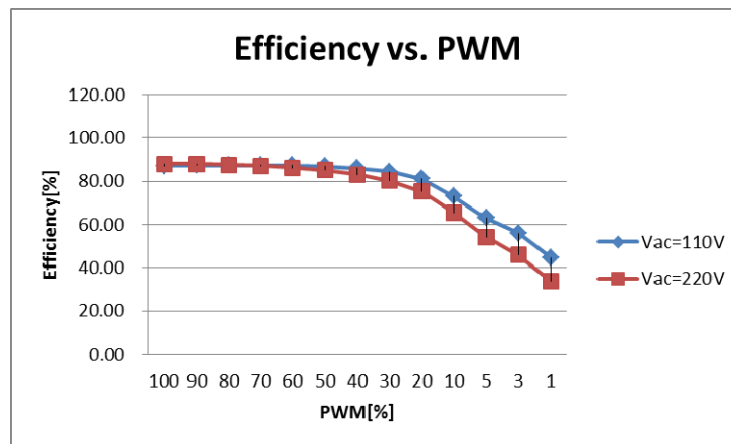
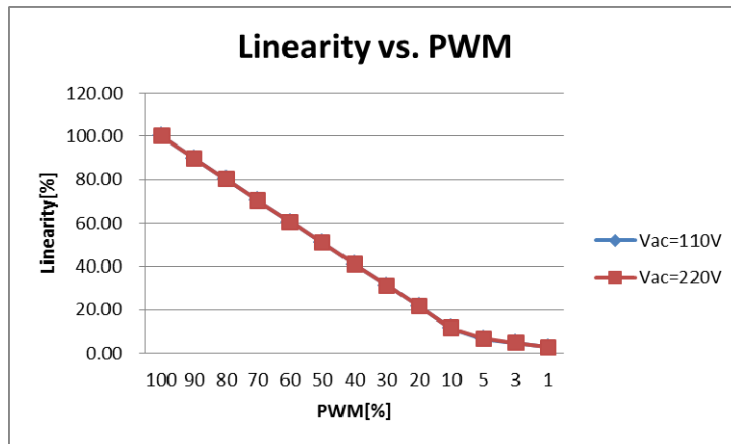
P/N	Component Value	Note
C19	0.33uF/ 0805	
C21	0.1uF/ 50V	
C22	1uF/ 10V	
C23	0.1uF/ 50V	
C24	0.1uF/ 50V	
C38	1uF/0805	
D3	RS1006FL	
D4	PS1010R	
D5, D7, D8	1N4148	
D6	10A/ 100V	
BD	600V/1A	
T1	T2250-01 1030	
L1	220uH/ MCD-0608-221k	美磊
L2	Leadtrend Design	
L3	1mH/ MCD-0912-102k	美磊
Q1	650/ 7A	Nikos
IC1	LD7830	SOP-7
IC2	EL817	
IC3	TSM103	SOP8
CY1	470pF/3kV	Y 電容

**III. EXECUTIVE SUMMARY**
**1. Efficiency, PF, Linearity Test with PWM Dimming**
**Test Condition:**
**PWM: 200Hz/ 1%~100%/ 0V~10V**
**Output: CV mode = 24V**
**Ambient Temperature: 25°C**
**A. Vac = 110V, PWM=1%~100%**

Duty[%]	Vac=110V						
	Pin[W]	Vout[V]	Iout[mA]	Po[W]	Efficiency[%]	PF	Linearity[%]
100	19.43	24.11	703.50	16.96	87.28	0.9883	100.00
90	17.46	24.10	633.10	15.26	87.39	0.9858	89.99
80	15.52	24.09	564.20	13.59	87.59	0.9929	80.20
70	13.62	24.08	495.40	11.93	87.59	0.9943	70.42
60	11.75	24.07	426.70	10.27	87.42	0.9928	60.65
50	9.90	24.05	357.80	8.61	86.93	0.9904	50.86
40	8.07	24.04	289.00	6.95	86.09	0.9865	41.08
30	6.26	24.03	220.10	5.29	84.49	0.9794	31.29
20	4.48	24.02	151.30	3.63	81.20	0.9654	21.51
10	2.71	24.01	82.40	1.98	72.93	0.9299	11.71
5	1.82	24.01	48.00	1.15	63.18	0.8701	6.82
3	1.46	24.00	34.20	0.82	56.13	0.8326	4.86
1	1.09	24.00	20.40	0.49	44.82	0.7753	2.90

**B. Vac =220V, PWM=1%~100%**

Duty[%]	Vac=220V						
	Pin[W]	Vout[V]	Iout[mA]	Po[W]	Efficiency[%]	PF	Linearity[%]
100	19.23	24.11	704.00	16.97	88.24	0.9682	100.00
90	17.33	24.10	633.40	15.26	88.10	0.9630	89.97
80	15.50	24.09	564.50	13.60	87.73	0.9565	80.18
70	13.69	24.08	495.70	11.93	87.19	0.9481	70.41
60	11.89	24.07	426.90	10.27	86.39	0.9369	60.64
50	10.11	24.06	358.10	8.61	85.18	0.9208	50.87
40	8.35	24.04	289.20	6.95	83.28	0.8968	41.08
30	6.60	24.03	220.50	5.30	80.33	0.8573	31.32
20	4.84	24.02	151.60	3.64	75.23	0.7932	21.53
10	3.02	24.01	82.60	1.98	65.67	0.6737	11.73
5	2.13	24.01	48.20	1.16	54.35	0.5755	6.85
3	1.79	24.00	34.40	0.83	46.08	0.5235	4.89
1	1.46	24.00	20.70	0.50	34.06	0.4648	2.94



**Conclusion:**

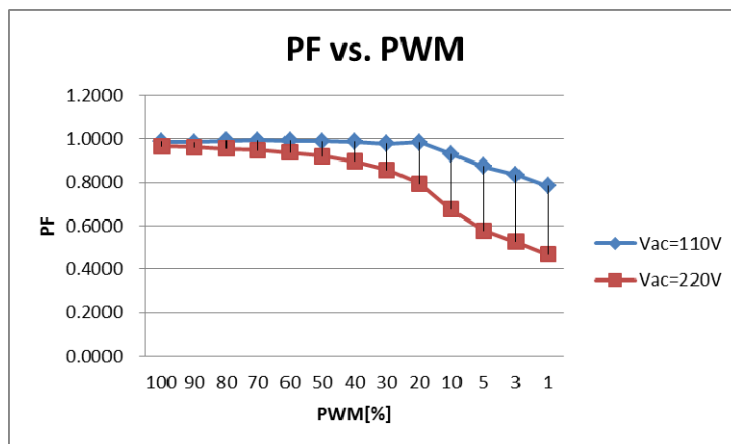
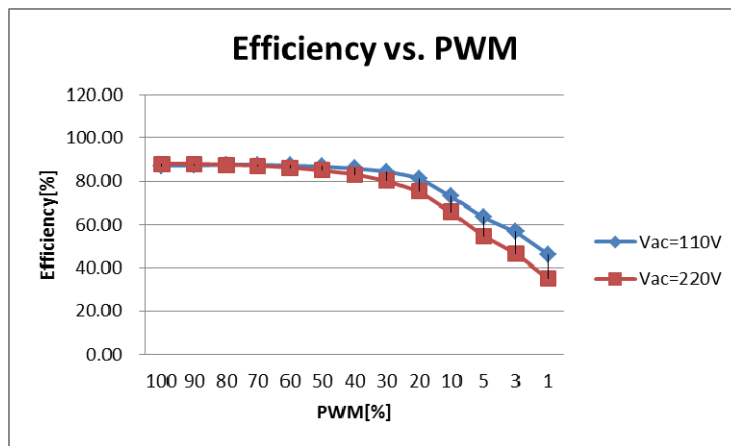
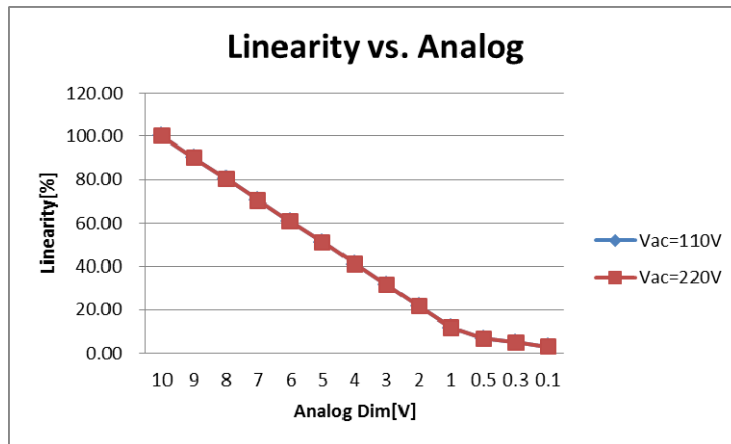
1. 當 Duty 越小時，分壓電阻(R38 跟 R39) 和輸入 Dim 信號的誤差就易造成線性度不佳

**2. Efficiency, PF, Linearity Test with Analog Dimming**
**Test Condition:**
**Analog: DC=0~10V**
**Output: CV mode = 24V**
**Ambient Temperature: 25°C**
**A. Vac = 110V, Analog= 0 ~10V**

DC[V]	Vac=110V						
	Pin[W]	Vout[V]	Iout[mA]	Po[W]	Efficiency[%]	PF	Linearity[%]
10	19.43	24.11	703.50	16.96	87.28	0.9883	100.00
9	17.50	24.09	634.70	15.29	87.41	0.9857	90.22
8	15.56	24.08	566.00	13.63	87.61	0.9928	80.45
7	13.66	24.07	497.10	11.97	87.60	0.9943	70.66
6	11.79	24.06	428.30	10.31	87.41	0.9929	60.88
5	9.94	24.05	359.50	8.65	86.96	0.9904	51.10
4	8.11	24.04	290.50	6.98	86.10	0.9866	41.29
3	6.30	24.03	221.70	5.33	84.55	0.9796	31.51
2	4.51	24.02	152.70	3.67	81.28	0.9858	21.71
1	2.75	24.01	83.70	2.01	73.13	0.9309	11.90
0.5	1.86	24.01	49.20	1.18	63.54	0.8748	6.99
0.3	1.50	24.00	35.40	0.85	56.81	0.8369	5.03
0.1	1.13	24.00	21.70	0.52	46.25	0.7836	3.08

**B. Vac =220V, Analog=0~10V**

DC[V]	Vac=220V						
	Pin[W]	Vout[V]	Iout[mA]	Po[W]	Efficiency[%]	PF	Linearity[%]
10	19.23	24.11	704.00	16.97	88.24	0.9682	100.00
9	17.38	24.09	635.00	15.30	88.05	0.9631	90.22
8	15.55	24.08	566.30	13.64	87.70	0.9566	80.45
7	13.74	24.07	497.40	11.97	87.16	0.9483	70.66
6	11.94	24.06	428.50	10.31	86.35	0.9371	60.88
5	10.16	24.05	359.70	8.65	85.15	0.9211	51.10
4	8.39	24.04	290.70	6.99	83.28	0.8973	41.29
3	6.64	24.03	221.70	5.33	80.29	0.8582	31.51
2	4.88	24.02	152.80	3.67	75.26	0.7947	21.71
1	3.05	24.01	83.80	2.01	65.88	0.6766	11.90
0.5	2.16	24.01	49.20	1.18	54.78	0.5791	6.99
0.3	1.82	24.00	35.40	0.85	46.71	0.528	5.03
0.1	1.48	24.00	21.70	0.52	35.07	0.4695	3.08



**Conclusion:**

- 當 Analog Dim(DC)越小時, 分壓電阻(R38 跟 R39)和輸入 Dim 信號的誤差就易造成線性度不佳