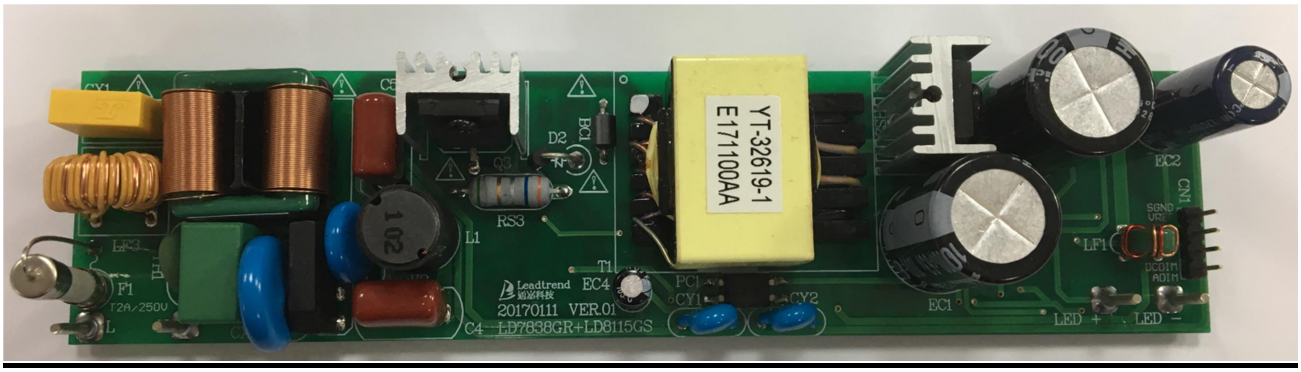
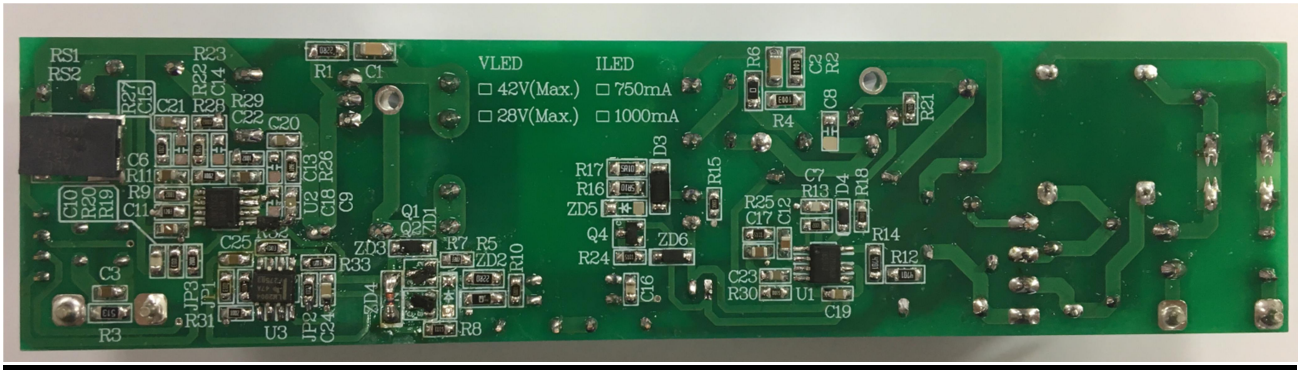
Subject	Model Name
LD7838 Demo Board Manual	*LD7838_40W_R02_TEST (40V/1000mA)*

TOP VIEW



BOTTOM VIEW



Size：160mm(L)X38mm(W)X30mm(H)

Key Features

- ✓ ***SSR Topology***
- ✓ ***Current Accuracy < 3%***
- ✓ ***Excellent CC-CV Capability***
- ✓ ***High Power Factor > 0.9 @ Full Load***
- ✓ ***Efficiency > 85% @ Normal Line***
- ✓ ***Fast Start-up Time < 0.5sec***
- ✓ ***AC On/ Off Test by 0.5sec***
- ✓ ***LED Short/ Open protection***
- ✓ ***LED DC DIMMER***
- ✓ ***LED PWM DIMMER***
- ✓ ***LED VR DIMMER***

Lighting Power Design Check List

MODEL NAME (機種名稱)	LD7838_DB-02.a	TOTAL PAGE: (共)	27 （頁）
P.M. (機種負責人)	Leo_Li	DATE: (日期)	2017（年）/ 4 （月）/ 11（日）

NO. (項目)	TEST ITEM (測試項目)	SPEC.(˘) (規格)	NAME. (擔當者)	PAGE (頁數)	RESULT (結果)
1	Input Characteristics - Efficiency (輸入特性 - 效率)	>85%	Brad_Hsu	10 ~ 10	PASS
2	Input Characteristics - Power Factor (輸入特性 - 功率因素)	>0.9	Brad_Hsu	11 ~ 11	PASS
3	Input Characteristics - THD of Input Current (輸入特性 - 總電流諧波失真度)	<15%	Brad_Hsu	12 ~ 12	PASS
4	Output Characteristics - Current Accuracy (輸入特性 - 電流精確度)	≤3%	Brad_Hsu	13 ~ 13	PASS
5	Output Characteristics - Current Ripple (輸入特性 - 電流漣波)	≤60%	Brad_Hsu	13 ~ 13	PASS
6	Turn On Delay Time (開機延遲時間)	≤0.5 sec	Brad_Hsu	14 ~ 14	PASS
7	LED Open Voltage Test (LED 開路電壓測試)	<50V	Brad_Hsu	14 ~ 14	PASS
8	LED Short Dissipation Test (LED 短路功耗測試)	Function	Brad_Hsu	14 ~ 14	PASS
9	Power Saving Measurement (LED 待機功耗測試)	<1W	Brad_Hsu	14 15	PASS
10	Abnormal Test - CS Pin Short Protection Test (異常測試 - CS Pin 短路測試)	Function	Brad_Hsu	15 ~ 15	PASS
11	Abnormal Test - CS Pin Open Protection Test (異常測試 - CS Pin 開路測試)	Function	Brad_Hsu	16 ~ 16	PASS
12	Over Temp. Protection Test (過溫保護測試)	Function	Brad_Hsu	16 ~ 16	PASS
13	Power Component Stress Voltage (功率元件電壓耐受度)	<Derating	Brad_Hsu	17 ~ 18	PASS
14	AC On/Off Test (快速開關機測試)	<0.5 sec	Brad_Hsu	19 ~ 19	PASS
15	DC Dimmer test (直流調光測試)	Function	Brad_Hsu	20 ~ 21	PASS
16	PWM Dimmer test (直流調光測試)	Function	Brad_Hsu	22 ~ 23	PASS
17	VR Dimmer test (直流調光測試)	Function	Brad_Hsu	24 ~ 25	PASS
18	Thermal Test (溫昇測試)	<Derating	Brad_Hsu	26 ~ 26	PASS
19	Conduction Test (傳導測試)	<6dB	Brad_Hsu	27 ~ 27	PASS

Contents Index

Table Index

Figure Index

1. LED Driver Module Specification

1.1. Input Condition

- ✓ AC Input Voltage : 90VAC ~ 277VAC
- ✓ AC Input Frequency : 47Hz ~ 63Hz

1.2. Output Condition

- ✓ Output Voltage : 42V (14 pcs LED)
- ✓ Output Current : Typical 900 mA

1.3. Protection Condition

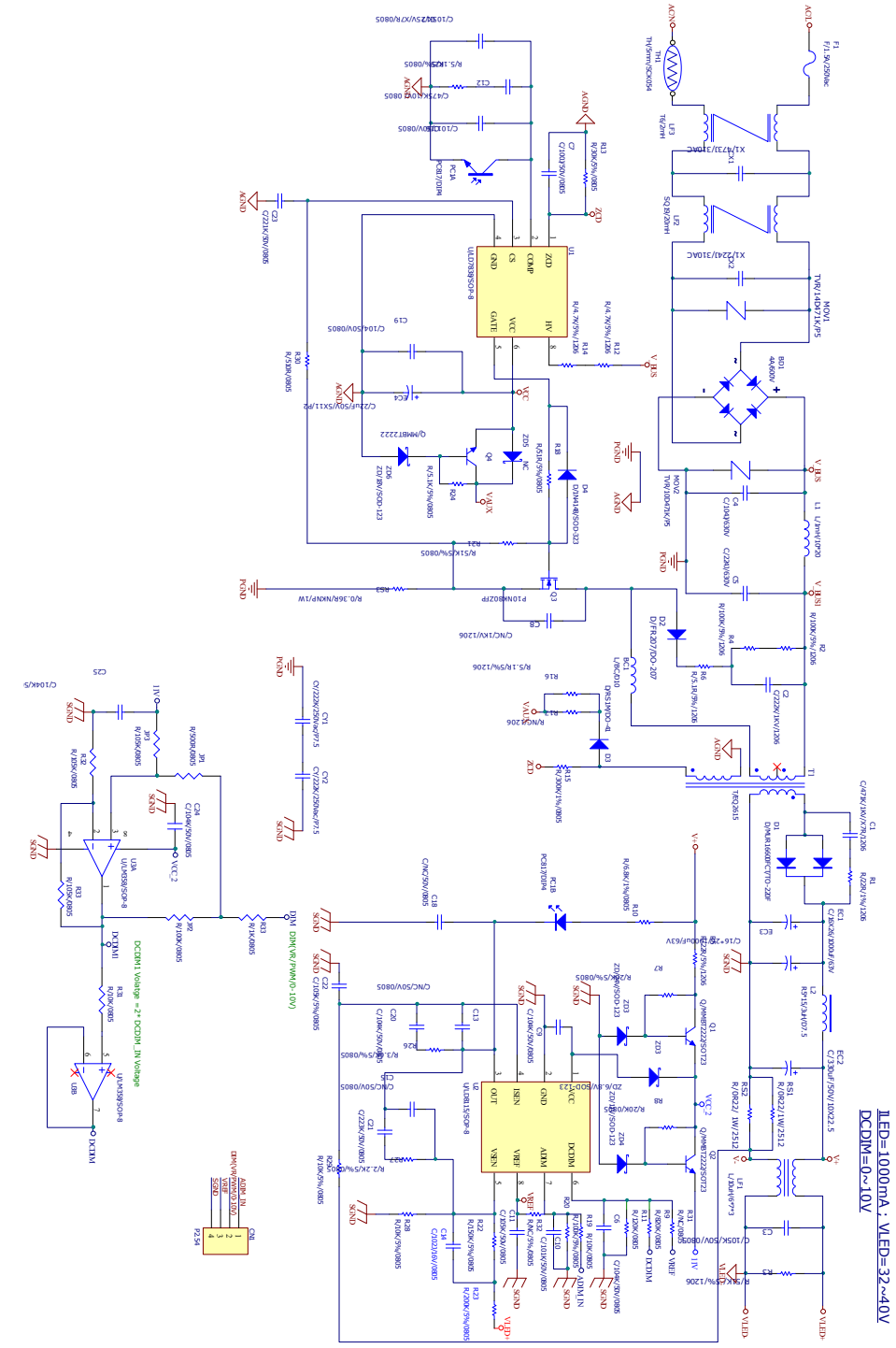
- ✓ LED Open Protection Constant voltage
- ✓ LED short Protection Auto-recovery, Hiccup 4 times
- ✓ Over Temp. Protection Auto-recovery, Hiccup 1 time

1.4. Ambient Temperature

- ✓ Ambient Temperature 25°C

2. LED Driver Application Circuit

2.1. Schematic



2.2. BOM List

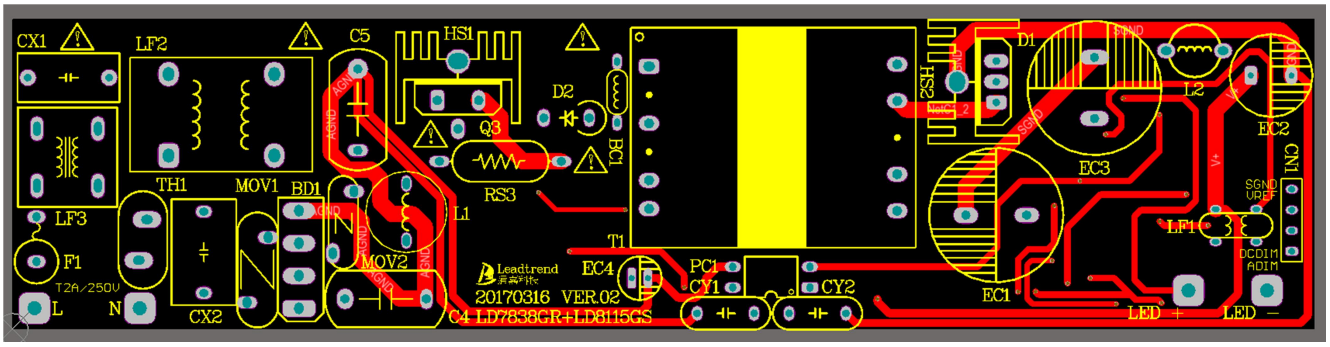
Designator	Value	Quantity
T1	T/EQ2615	1
ZD3	ZD/24V/SOD-123	1
ZD3	ZD/6.8V/SOD-123	1
ZD4	ZD/11V/SOD-123	1
ZD6	ZD/18V/SOD-123	1
R1	R/22R/1%/1206	1
R10	R/6.8K/1%/0805	1
R11	R/120K/0805	1
R12, R14	R/4.7K/1206	2
R13	R/30K/0805	1
R15	R/300K/1%/0805	1
R18	R/51R/0805	1
R19	R/10K/0805	1
R2, R4	R/100K/1206	2
R20	R/100K/0805	1
R21	R/51K/0805	1
R22	R/150K/0805	1
R23	R/200K/0805	1
R24, R25	R/5.1K/0805	2
R26	R/3.6K/0805	1
R27	R/2.2K/0805	1
R28, R29	R/10K/0805	2
R3	R/51K/1206	1
R30	R/510R/0805	1
R5	R/22R/1206	1
R6, R16	R/5.1R/1206	2
R7,R8	R/20K/0805	2
R9	R/820K/0805	1
RS1	R/0R4/1W/2512	1
RS2	R/0R4/1W/2512	1
RS3	R/0.36R/NKNP/1W	1
JP1	R/500R/0805	1
JP2	R/100K/0805	1
JP3, R32, R33	R/105K/0805	3
R31	R/10K/0805	1
R33	R/1K/0805	1
EC1	C/16X26/1000uF/63V	1
EC2	C/10X22.5/330uF/50V	1
EC3	C/16*26/1000uF/63V	1
EC4	C/5X11/22uF/50V	1

Designator	Value	Quantity
Q4	MMBT2222	1
Q1, Q2	MMBT2222	2
Q3	P10NK80ZFP	1
U3	U/LM358/SOP-8	1
L1	L/1mH/10*20	1
BC1	L/BC/D10	1
CN1	HDR1X4	1
F1	1.5A/250Vac	1
D4	1N4148/SOT-323	1
D2	FR207/DO-207	1
D3	RS1M/SMA	1
C1	C/471K/1KV/X7R/1206	1
C10,C16	C/101K/50V/0805	2
C3,C11,C17,C22	C/105K/50V/0805	4
C12	C/475K/10V/ 0805	1
C14	C/102J/16V/0805	1
C2	C/222K/1KV/1206	1
C21	C/223K/50V/0805	1
C23	C/221K/50V/0805	1
C4	C/104J/630V/12X7-10MM	1
C5	C/224J/630V/12X7-10MM	1
C6, C9 ,C19 ,C20, C25	C/104K/50V/0805	5
C7	C/100J/50V/0805	1
CX1	X1/473J/310AC	1
CX2	X1/224J/310AC	1
CY1, CY2	CY/222K/250Vac/P7.5	2
U1	U/LD7838/SOP-7	1
BD1	2A/600V/KBP	1
C24	C/104K/50V/0805	1
D1	MUR16600FCT/TO-220	1
LF1	L/10uH/6*7*3	1
U2	U/LD8115/SOP-8	1
LF2	SQ19/20mH	1
PC1	PC817/DIP4	1
TH1	TH/5mm/SCK054	1
L2	R5*15/3uH/D7.5	1
LF3	T6/5mH	1
MOV2	10D471	1
MOV1	14D471	1

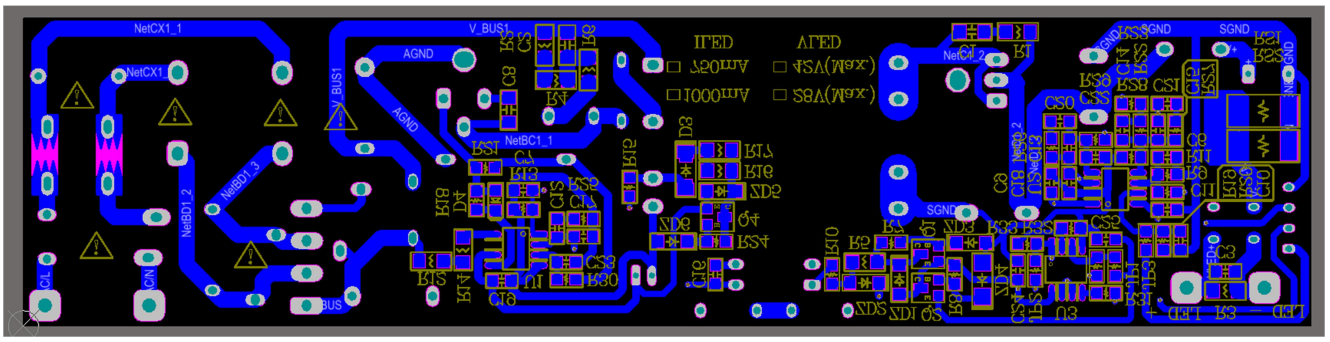
Table 1 BOM List

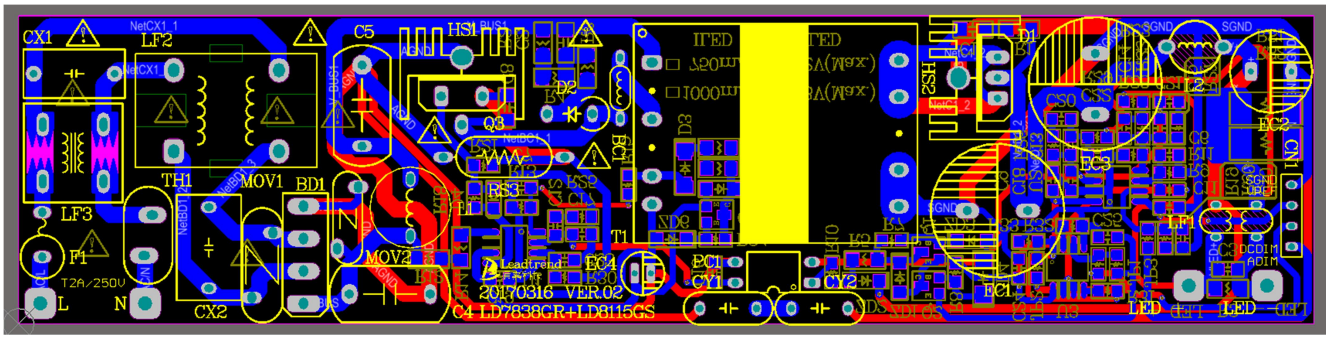
2.3. PCB Gerber File

TOP VIEW



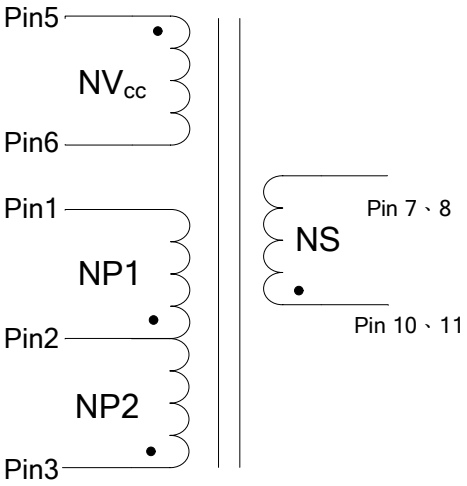
BOTTOM VIEW

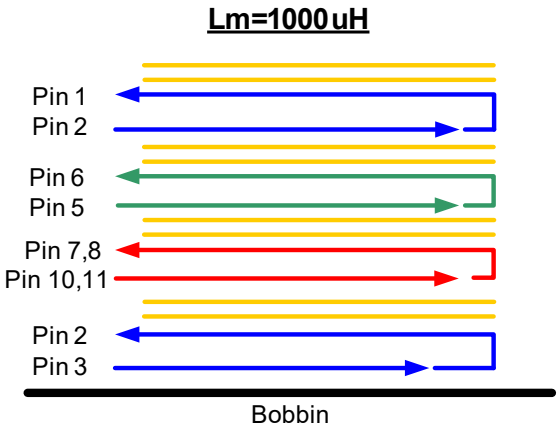




2.4. Transformer Specification

- Bobbin : EQ2615, 11PIN
- Core : EQ2615, PC40
- Inductance(PIN 1 - 3) : 0.92uH ±10%@1KHz/1V
- NP/NS/Naux : 60/15/10





Winding Order	Pin #		Winding types	Turns		Note
	Start	Finish		Winding	Mylar Tape	
1	3	2	0.45mm*1	30	2	Primary-1
2	10,11	7,8	0.55mm*1(TIW)	15	2	Secondary
3	5	6	0.25mm*1	10	2	Aux winding
4	2	1	0.45mm*1	30	2	Primary-2
Pin 1~Pin3 = 1000uH						

3. Executive Summary

Test Equipment

Equipment	Equipment Model No.
Electrical Load	Chrome - 63113A
Power Meter	WT310
AC power source	Chroma 61602
Scope	TDS3014
Multi-function Meter	Fluke 187
Thermal Hunter	PT-3S
THD measurement	PM-100

3.1. Input Characteristics

3.1.1. Efficiency

Specification	Judgment
>85%	PASS

Eff.(%)	*P_{in} (W)*	*I_o (mA)*	*V_o (V)*	*Efficiency (%)*
90Vac/60Hz	44.952	0.9115	42.18	85.52%
115Vac/60Hz	43.717	0.9099	41.97	87.35%
230Vac/50Hz	42.96	0.9097	41.9663	88.87%
264Vac/50Hz	42.941	0.9093	41.8357	88.59%
277Vac/50Hz	43.075	0.9091	41.8962	88.42%

Table 2 Efficiency

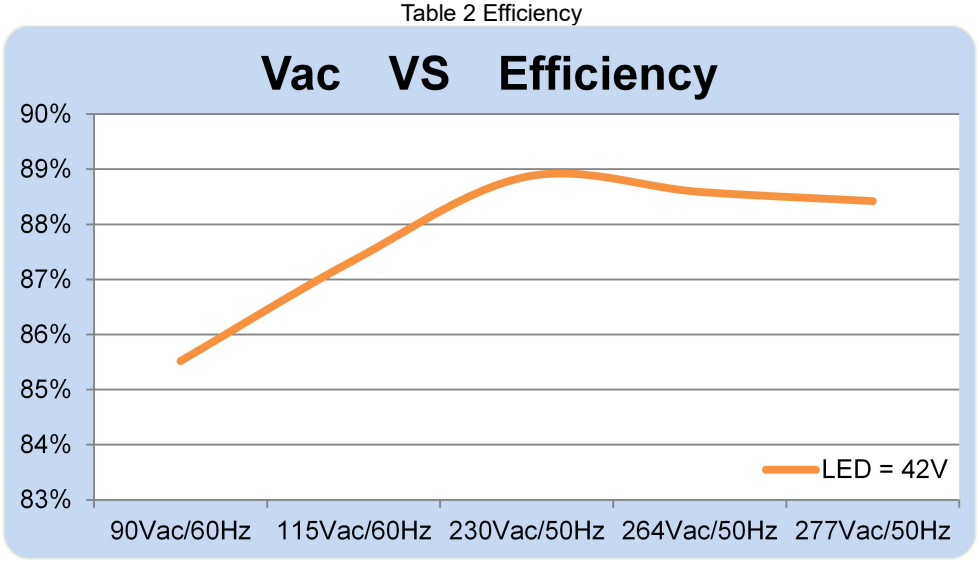


Fig. 1 Vac vs. Efficiency

3.1.2. Power Factor

Specification	Judgment
≥0.9	PASS

Vo / Vac	CV:42V	CV:36V	CV:32V
90Vac/60Hz	0.9966	0.9963	0.9951
115Vac/60Hz	0.9965	0.9941	0.9914
230Vac/50Hz	0.96	0.94	0.92
264Vac/50Hz	0.94	0.91	0.91
277Vac/50Hz	0.93	0.91	0.89

Table 3 Power Factor

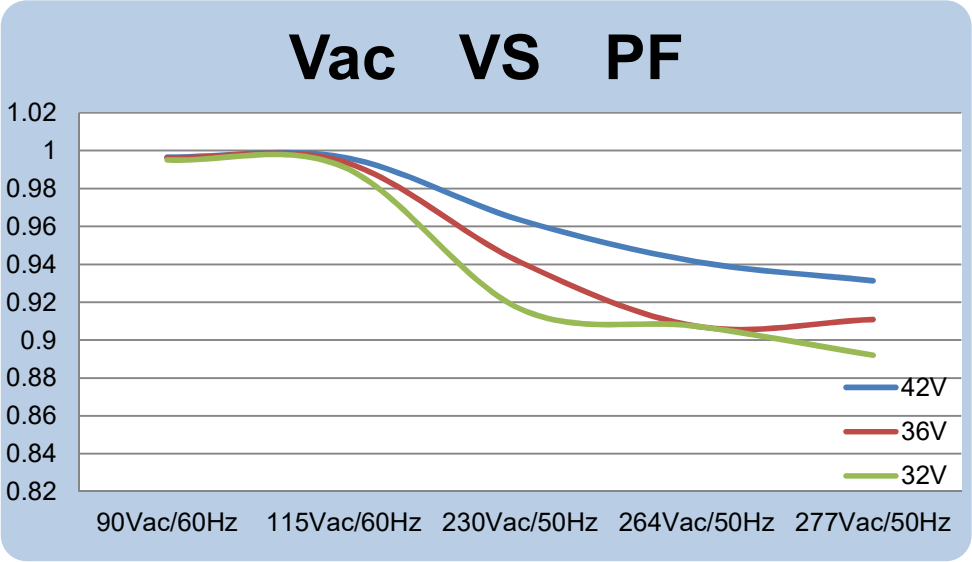


Fig. 2 Vac vs. PF

3.1.3. THD of Input Current

Specification	Judgment
≤ 15%	Pass

Vo / Vac	CV:42V	CV:36V	CV:32V
90Vac/60Hz	3.821	3.959	4.442
115Vac/60Hz	4.493	5.219	5.742
230Vac/50Hz	9.534	10.773	11.675
264Vac/50Hz	10.818	12.05	12.903
277Vac/50Hz	11.108	12.431	13.434

Table 4 THD of Input Current

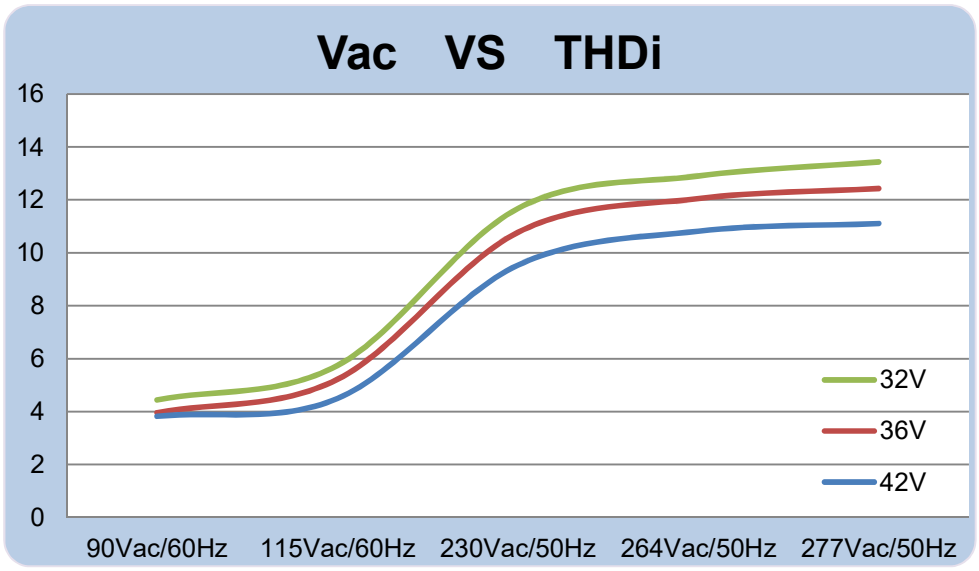


Fig. 3 Vac vs. THDi

3.2. Output Characteristics

3.2.1 Current Accuracy

Specification	Judgment
≤3%	PASS

Vac / Vo	90 V /60Hz	115 V /60Hz	230V /50Hz	264V /50Hz	277 V /50Hz	Line Regulation
42 V	0.9115	0.9099	0.9097	0.9093	0.9091	0.13%
36 V	0.9092	0.9074	0.9073	0.9071	0.9066	0.14%
32 V	0.9066	0.9042	0.9044	0.9034	0.9032	0.19%
26 V	0.9034	0.9021	0.9014	0.8994	0.8992	0.23%
Load Regulation	0.45%	0.43%	0.55%	0.46%	0.55%	

Table 5 Output Current(mA)

3.2.2 Current Ripple

Specification	Judgment
≤60%	Pass

Definition of Current Ripple (%): I_{PK-PK} / I_{LED} * 100

Vac / Vo	90 V /60Hz	115 V /60Hz	230 V /50Hz	264 V /50Hz
42 V	35.670%	34.814%	33.917%	33.910%
36 V	23.186%	23.207%	21.421%	21.419%
32 V	19.619%	19.638%	18.742%	17.849%

Table 6 Current Ripple (%)

3.3. Turn On Delay Time

Input	$T_{turn\ on\ delay}$	Specification	Judgment
90Vac	**196.8ms**	≤0.5 sec	PASS

Table 7 Turn On Delay Time

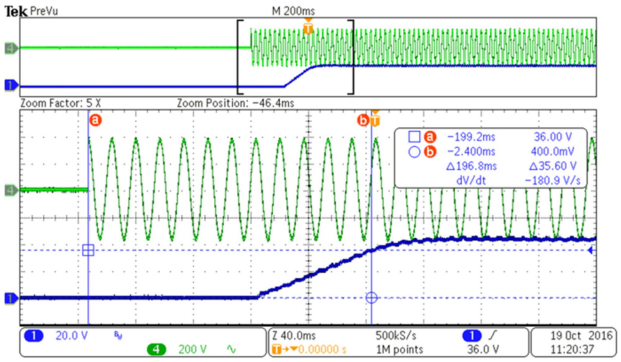


Fig. 4 Start-up Waveforms @ $90V_{ac}$/60Hz
CH1:V_{out}, CH4:V_{ac}

3.4. Power Saving Measurement

3.4.1. Output open circuit as Constant Voltage mode

Input Voltage	90VAC/60Hz	115VAC/60Hz	230VAC/50Hz	264VAC/50Hz	277VAC/50Hz
Output Voltage	45.3731V	45.1527V	45.0869V	45.1061V	45.1161V
Input Power	**250mW**	**300mW**	**432mW**	**534mW**	**550mW**

Table 8 Power Saving(mW) With Output open

3.4.2. Output Constant Voltage mode at 100mW (Stand by mode < 1W)

Input Voltage	90VAC/60Hz	115VAC/60Hz	230VAC/50Hz	264VAC/50Hz	277VAC/50Hz
Output Voltage	45.3731V	45.1527V	45.0869V	45.1061V	45.1161V
Input Power	**621mW**	**637mW**	**729mW**	**756mW**	**764mW**

Table 9 Power Saving(mW) Output @ 100mW

3.4.3. Output connect LED lamp and DIM pin is pull low(Off Mode <0.5W)

Input Voltage	90VAC/60Hz	115VAC/60Hz	230VAC/50Hz	264VAC/50Hz	277VAC/50Hz
Output Voltage	11.3	11.6	11.2	11.4	11.7
Input Power	**133mW**	**175mW**	**367mW**	**407mW**	**431mW**

Table 10 Power Saving(mW) With DIM pin is pull low

3.5. Abnormal Test

3.5.1. LED Open Voltage Test

Specification	Judgment
<50V	PASS

Input Voltage	90VAC/60Hz	115VAC/60Hz	230VAC/50Hz	264VAC/50Hz
Output Voltage	45.3731V	45.1527V	45.0869V	45.1061V

Table 11 Over Voltage Level at output open

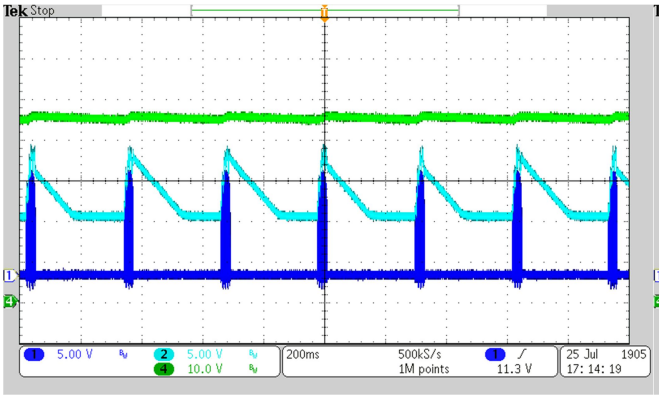


Fig. 5 LED Open Test @ 90Vac/60Hz
CH1: Gate, CH2:V_{cc}, CH3:Vout

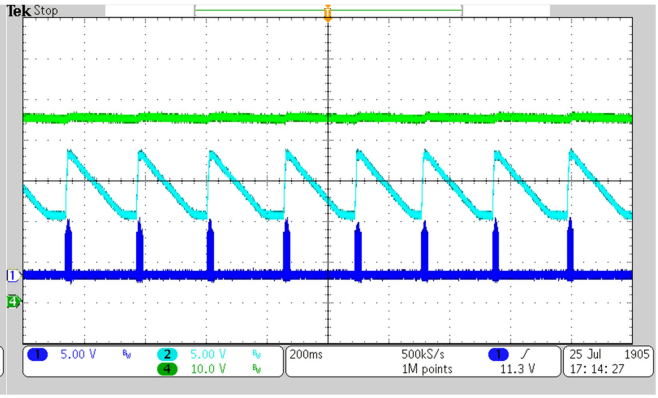


Fig. 6 LED Open Test @264Vac/50Hz
CH1: Gate, CH2:V_{cc}, CH3:Vout

3.5.2. LED Short Dissipation Test

Specification	Judgment
N/A	Auto mode

Table 12 Input Power during LED short

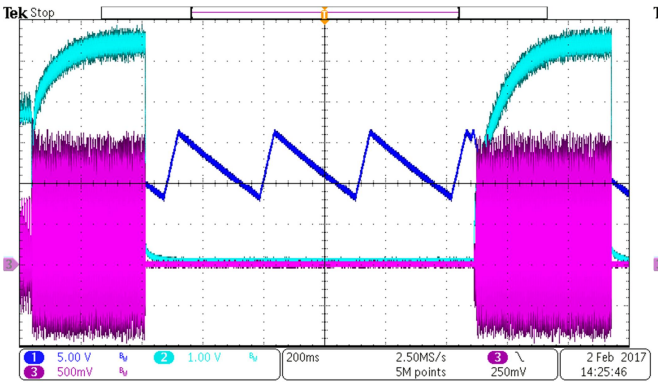


Fig. 7 LED Short Test @ 90Vac/60Hz
CH1: V_{cc}, CH2:V_{comp}, CH3:V_{cs}

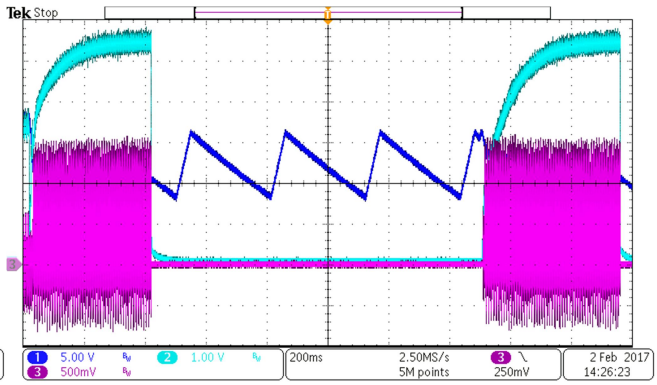


Fig. 8 LED Short Test @ 264Vac/50Hz
CH1: V_{cc}, CH2:V_{comp}, CH3:V_{cs}

3.5.3. CS Short Test

Specification	Judgment
No damage component	PASS

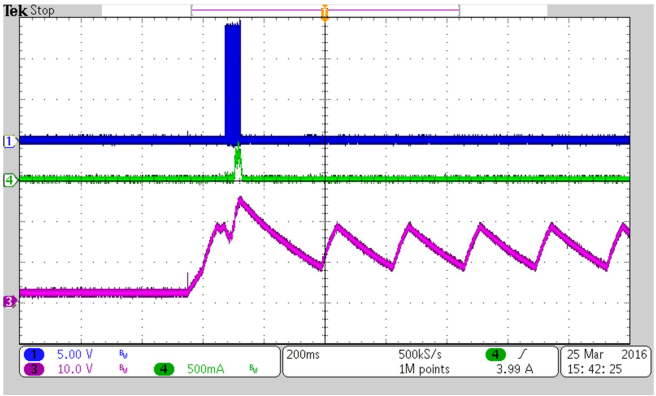


Fig. 9 CS Short Test @ 90Vac/60Hz
CH1: Gate, CH3:V_{cc}, CH4: I_L

3.5.4. CS Open Test

Specification	Judgment
No damage component	PASS

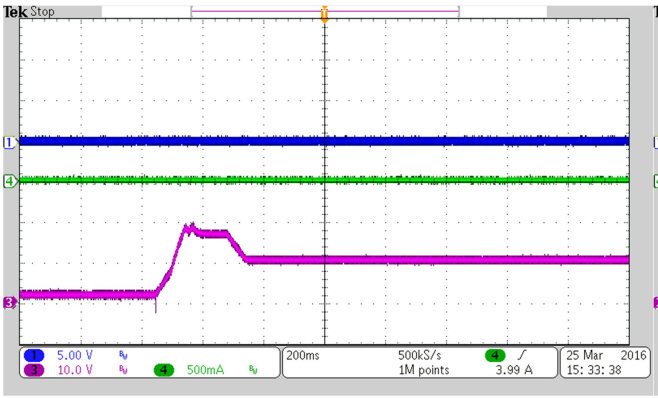


Fig. 10 CS Open Test @ 90Vac/60Hz
CH1: Gate, CH3:V_{cc}, CH4:I_L

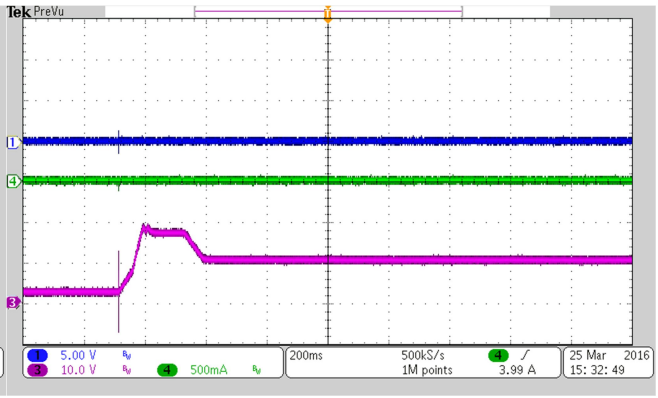


Fig. 11 CS Open Test @ 264Vac/50Hz
CH1: Gate, CH3:V_{cc}, CH4:I_L

3.5.5. Over Temp. Protection Test

Specification	Judgment
Auto recovery Function	PASS

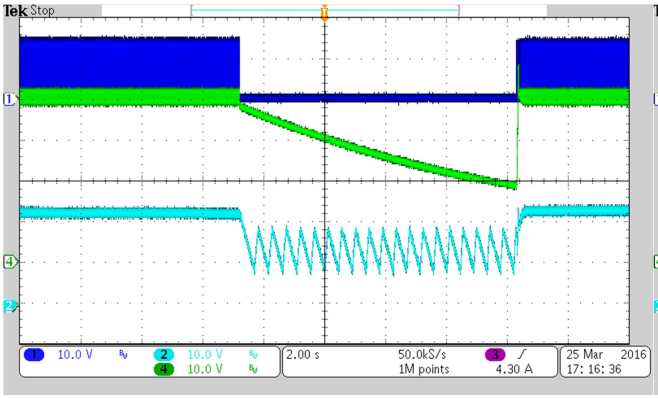


Fig. 12 Over Temp. Protection @ 90Vac/60Hz
CH1: Gate, CH2:V_{cc}, CH4:V_{out}

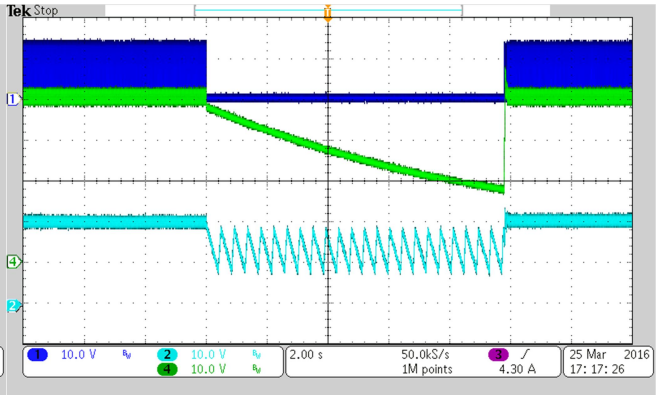


Fig. 13 Over Temp. Protection @ 264Vac/50Hz
CH1: Gate, CH2:V_{cc}, CH4:V_{out}

3.6. Power Component Stress Voltage

Specification	Judgment
< Derating	PASS

NO.	Location	Max Rating(V)	Steady State (264V / 50Hz)	
			Measurement	Derating(%)
			V	V
1	Q2	700	628	89.71%
2	D1	600	151	25.1%

Table 13 MOS and Diode Stress Voltage @ Steady State (264V/ 50Hz)

NO.	Location	Max Rating(V)	Transient State (264V / 50Hz)	
			Measurement	Derating(%)
			V	V
1	Q2	700	620	88.57%
2	D1	600	149	24.8%

Table 14 MOS and Diode Stress Voltage @ Transient State (264V/ 50Hz)

3.7. MOSFET Voltage and Current Sense Waveforms

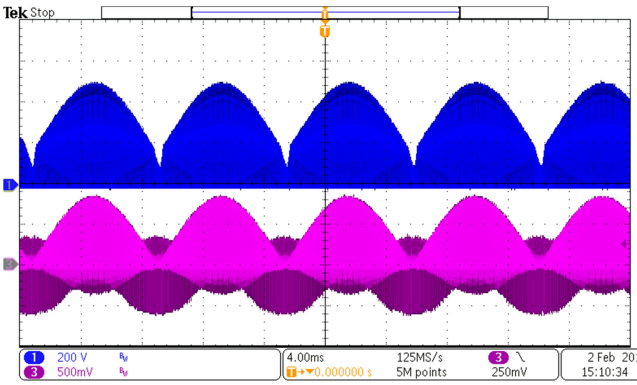


Fig. 14 Drain & CS waveforms @ 90Vac/60Hz
CH4: Drain, CH3:CS

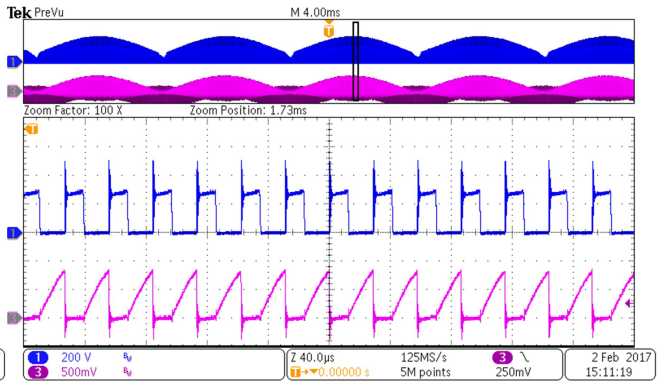


Fig. 15 Drain & CS waveforms @ 90Vac/60Hz/Zoom-In
CH4: Drain, CH3:CS

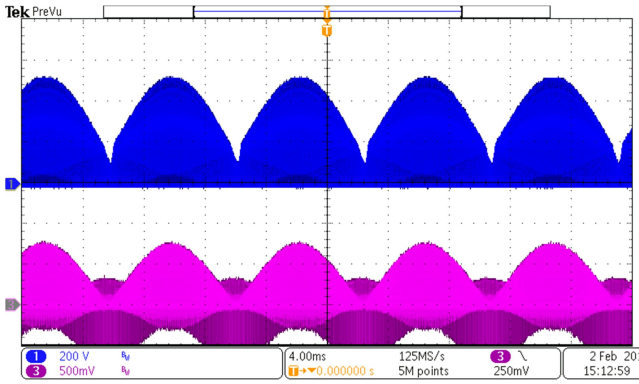


Fig. 16 Drain & CS waveforms @ 115Vac/60Hz
CH4: Drain, CH3:CS

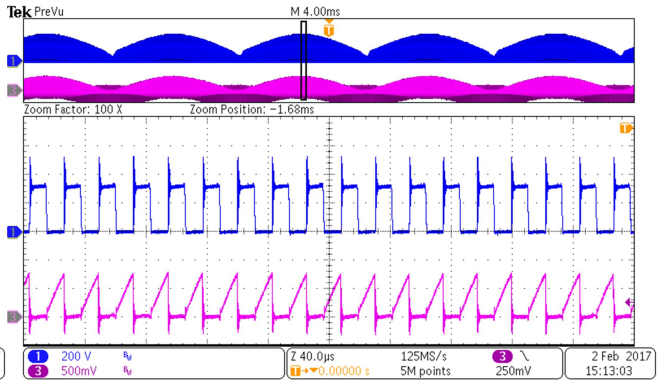


Fig. 17 Drain & CS waveforms @ 115Vac/60Hz/Zoom-In
CH4: Drain, CH3:CS

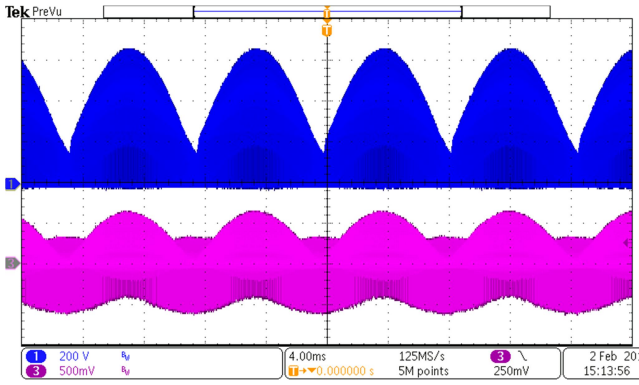


Fig. 18 Drain & CS waveforms @ 230Vac/50Hz
CH4: Drain, CH3:CS

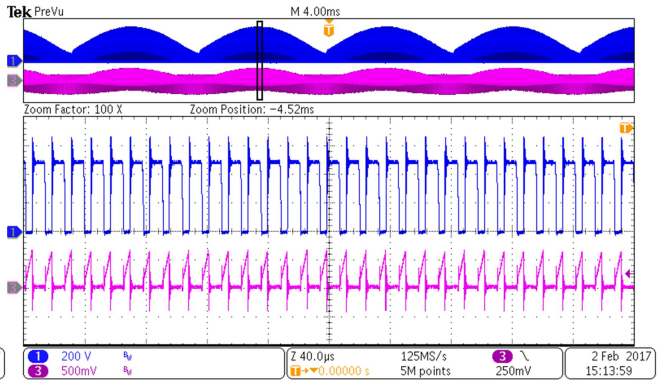


Fig. 19 Drain & CS waveforms @ 230Vac/50Hz/Zoom-In
CH4: Drain, CH3:CS

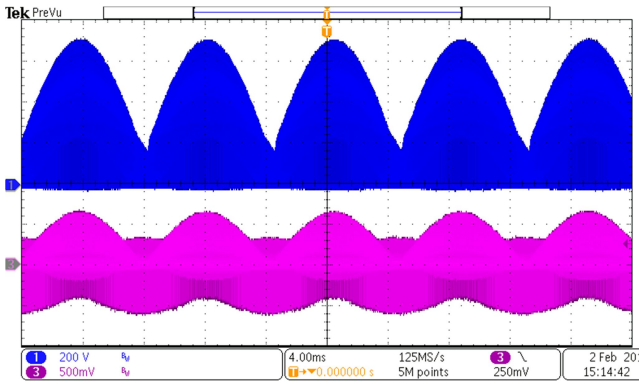


Fig. 20 Drain & CS waveforms @ 264Vac/50Hz
CH4: Drain, CH3:CS

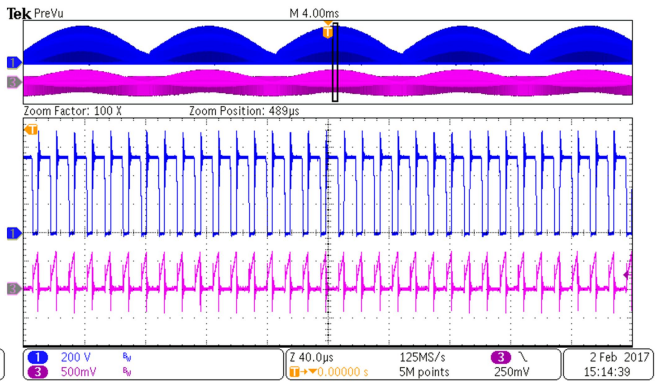


Fig. 21 Drain & CS waveforms @ 264Vac/50Hz/Zoom-In
CH4: Drain, CH3:CS

3.8. AC On/Off Test

Specification	Judgment
No Latch Ton=0.5S and Toff=0.5S	PASS

Power On: 500ms & Power Off 500ms

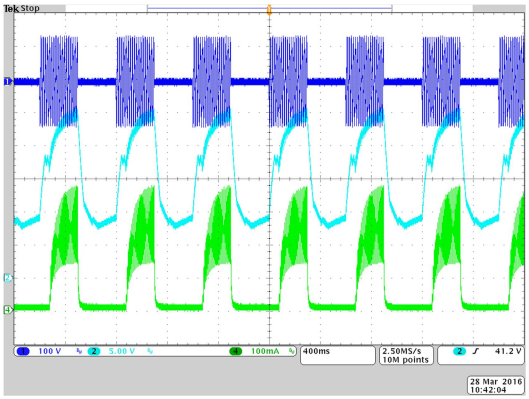


Fig. 22 AC On/Off Test @ 90Vac/60Hz
CH1: Vac, CH2:V_{cc}, CH4:I_{LED}

3.9. DC Dimmer Test

DCDIM Test 42V (LED 14PCS)									
	90Vac (A)	100Vac (A)	115Vac (A)	132Vac (A)	198Vac (A)	220Vac (A)	240Vac (A)	264Vac (A)	277Vac (A)
0V	0	0	0	0	0	0	0	0	0
1V	0.08811	0.08789	0.08793	0.08781	0.08782	0.08738	0.08716	0.08705	0.08705
2V	0.18485	0.18539	0.18534	0.18537	0.18529	0.18515	0.18503	0.18497	0.18497
3V	0.2821	0.2819	0.2818	0.28151	0.28089	0.28063	0.28052	0.28042	0.28042
4V	0.3774	0.3773	0.3772	0.3771	0.37735	0.37723	0.37712	0.3772	0.3772
5V	0.4742	0.4741	0.4735	0.4731	0.4732	0.4729	0.4727	0.4726	0.4726
6V	0.5678	0.5676	0.5676	0.5674	0.5677	0.5674	0.5673	0.5673	0.5673
7V	0.6634	0.6636	0.6635	0.6632	0.6634	0.6631	0.6631	0.6631	0.6631
8V	0.7593	0.7591	0.7591	0.7587	0.7589	0.7587	0.7585	0.7585	0.7585
9V	0.8547	0.8545	0.8544	0.8541	0.8547	0.8543	0.8544	0.8546	0.8546
10V	0.9136	0.9131	0.9126	0.9122	0.9123	0.912	0.9116	0.9114	0.9114

Table 11 Dimming performance test at full range

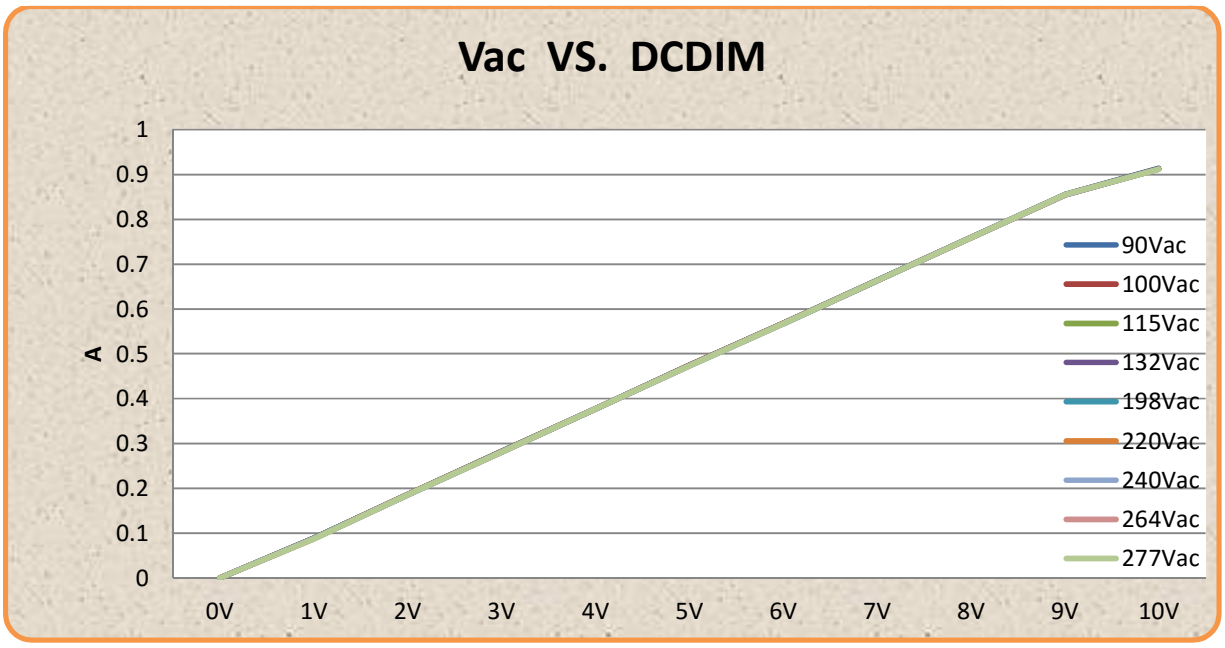


Fig. 23 Dimming performance test at full range

Vin = 220Vac , LED Mode 42V						
DC_DIM	220Vac (A)	PF	Pin (W)	Vout (V)	THDi (%)	Efficiency (%)
0V	0	0	0	0	0	0.00%
1V	0.08977	0.5586	5.373	37.8265	29.2	63.20%
2V	0.18704	0.7119	9.425	38.3928	21.7	76.19%
3V	0.28307	0.8109	13.444	38.87	16.9	81.84%
4V	0.38002	0.8708	17.671	39.3594	13.6	84.64%
5V	0.47572	0.9071	21.929	39.8899	11.6	86.54%
6V	0.5719	0.9302	26.247	40.2437	10.5	87.69%
7V	0.6661	0.9463	30.821	40.7833	9.84	88.14%
8V	0.7679	0.9571	35.39	41.1502	9.67	89.29%
9V	0.8583	0.965	40.289	41.5689	9.51	88.56%
10V	0.9148	0.9687	42.84	41.8221	9.21	89.31%

Table 12 Dimming performance test at full range

3.10. PWM Dimmer Test

DCDIM Test 42V (LED 14PCS)									
	90Vac	100Vac	115Vac	132Vac	198Vac	220Vac	240Vac	264Vac	277Vac
Duty=1%	0	0	0	0	0	0	0	0	0
Duty=5%	0.0504	0.0504	0.0503	0.0503	0.0502	0.0502	0.0501	0.0501	0.0501
Duty=10%	0.101	0.1011	0.1011	0.1009	0.1011	0.101	0.1011	0.1009	0.1009
Duty=15%	0.1494	0.1493	0.1492	0.1492	0.1494	0.1491	0.1487	0.1487	0.1487
Duty=20%	0.1971	0.1969	0.1967	0.1968	0.1971	0.1971	0.1969	0.1969	0.1969
Duty=25%	0.2448	0.2446	0.2446	0.2443	0.2446	0.2444	0.2443	0.2443	0.2443
Duty=30%	0.2924	0.2924	0.2924	0.2922	0.2923	0.2924	0.2925	0.2924	0.2923
Duty=35%	0.3404	0.3403	0.3403	0.3399	0.3401	0.3401	0.34	0.3399	0.3398
Duty=40%	0.3881	0.3878	0.3879	0.3878	0.3881	0.3879	0.3879	0.3879	0.3878
Duty=45%	0.4357	0.4355	0.4356	0.4355	0.4353	0.4354	0.4351	0.4351	0.4351
Duty=50%	0.4831	0.4829	0.4828	0.4826	0.4828	0.4827	0.4828	0.4828	0.4826
Duty=55%	0.5309	0.5305	0.5306	0.5303	0.5305	0.5305	0.5304	0.5302	0.5302
Duty=60%	0.5781	0.5787	0.5785	0.5782	0.5785	0.5784	0.5783	0.5782	0.5781
Duty=65%	0.6262	0.6261	0.6259	0.6258	0.6259	0.6259	0.6258	0.6257	0.6257
Duty=70%	0.6743	0.6739	0.6739	0.6738	0.6741	0.6741	0.6741	0.6741	0.6739
Duty=75%	0.7225	0.7223	0.7223	0.7218	0.7222	0.7224	0.7221	0.722	0.7219
Duty=80%	0.7715	0.7706	0.7704	0.7702	0.7706	0.7705	0.7706	0.7703	0.7701
Duty=85%	0.8189	0.8182	0.8184	0.8183	0.8181	0.8185	0.8182	0.8182	0.8179
Duty=90%	0.8667	0.8664	0.8664	0.8667	0.8669	0.8667	0.8665	0.8664	0.8663
Duty=95%	0.9169	0.9164	0.9165	0.9162	0.9165	0.9166	0.9165	0.9165	0.9166
Duty=99%	0.9178	0.9171	0.9172	0.917	0.9174	0.9175	0.9171	0.9171	0.9171

Table 13 Dimming performance test at full range

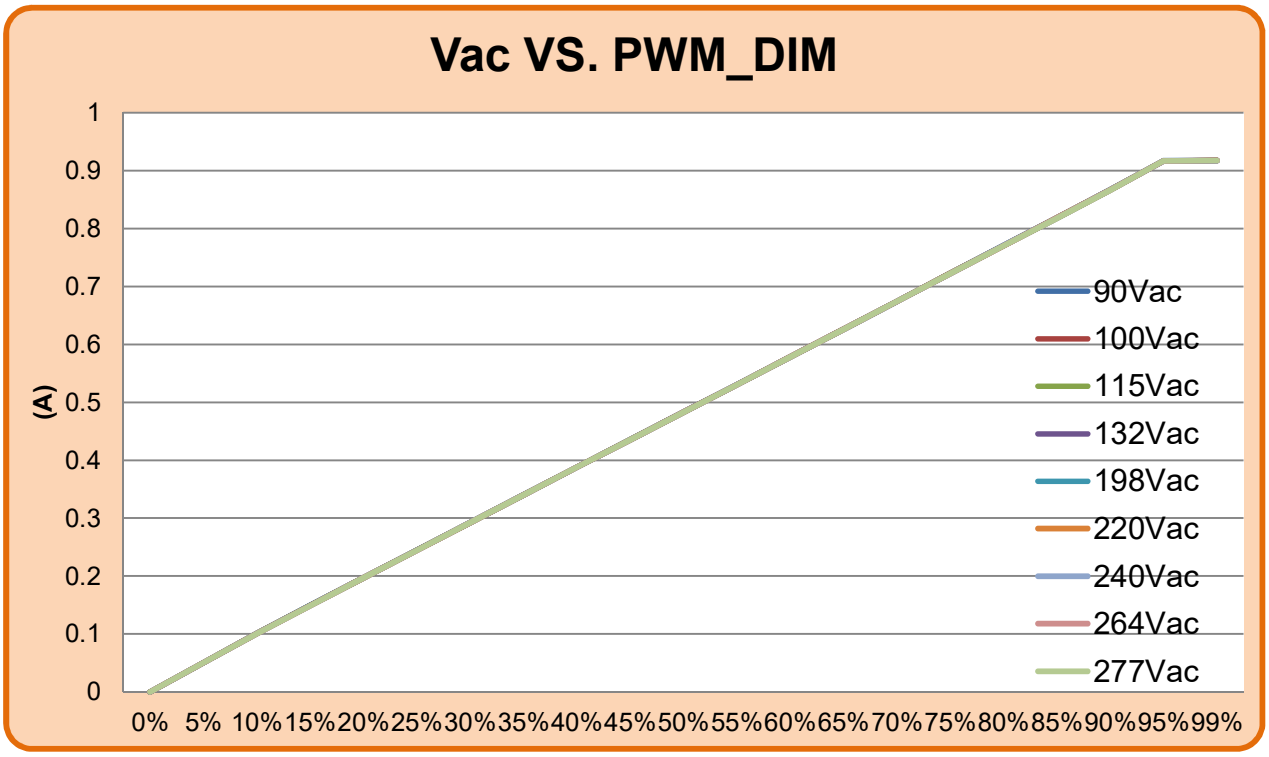


Fig. 24 Dimming performance test at full range

3.11. VR Dimmer Test

DCDIM Test 42V (LED 14PCS)									
	90Vac	100Vac	115Vac	132Vac	198Vac	220Vac	240Vac	264Vac	277Vac
VR=5K	0.0377	0.0377	0.0373	0.0372	0.0371	0.0371	0.0371	0.0372	0.0372
VR=10K	0.0892	0.0891	0.0891	0.089	0.0889	0.0889	0.0888	0.0887	0.0883
VR=15K	0.1355	0.1358	0.1358	0.1358	0.1357	0.1357	0.1355	0.1355	0.1353
VR=20K	0.1841	0.184	0.1837	0.1834	0.1837	0.1835	0.1833	0.1832	0.1831
VR=25K	0.2321	0.2321	0.2319	0.2319	0.2321	0.2319	0.2317	0.2313	0.2314
VR=30K	0.2789	0.2788	0.2786	0.2786	0.2788	0.2781	0.2779	0.2774	0.2777
VR=35K	0.3262	0.3264	0.3266	0.3265	0.3272	0.3268	0.3266	0.3261	0.3263
VR=40K	0.3774	0.3769	0.3768	0.3767	0.3769	0.3768	0.3767	0.3765	0.3762
VR=45K	0.4258	0.4261	0.4259	0.4259	0.4264	0.4262	0.4261	0.4259	0.4259
VR=50K	0.4743	0.4742	0.4741	0.4736	0.4742	0.4741	0.4739	0.4737	0.4734
VR=55K	0.5171	0.5175	0.5173	0.5168	0.5177	0.5175	0.5174	0.5172	0.5172
VR=60K	0.5623	0.5619	0.5617	0.5613	0.5618	0.5615	0.5615	0.5612	0.5614
VR=65K	0.5992	0.5997	0.5997	0.5991	0.5992	0.5993	0.5993	0.5992	0.5991
VR=70K	0.6363	0.6359	0.6359	0.6352	0.6361	0.6358	0.6352	0.6352	0.6348
VR=75K	0.6635	0.6638	0.6636	0.6636	0.6638	0.6635	0.6636	0.6634	0.6633
VR=80K	0.6972	0.6966	0.6968	0.6961	0.6964	0.6962	0.6962	0.6957	0.6951
VR=85K	0.7282	0.7286	0.7286	0.7278	0.7284	0.7281	0.7282	0.7281	0.7279
VR=90K	0.7632	0.7622	0.7623	0.7618	0.7621	0.7616	0.7614	0.7615	0.7611
VR=95K	0.7805	0.7815	0.7815	0.7806	0.7813	0.7811	0.7811	0.7808	0.7807
VR=100K	0.8074	0.8077	0.8077	0.8071	0.8074	0.8076	0.8068	0.8065	0.8052

Table 14 Dimming performance test at full range

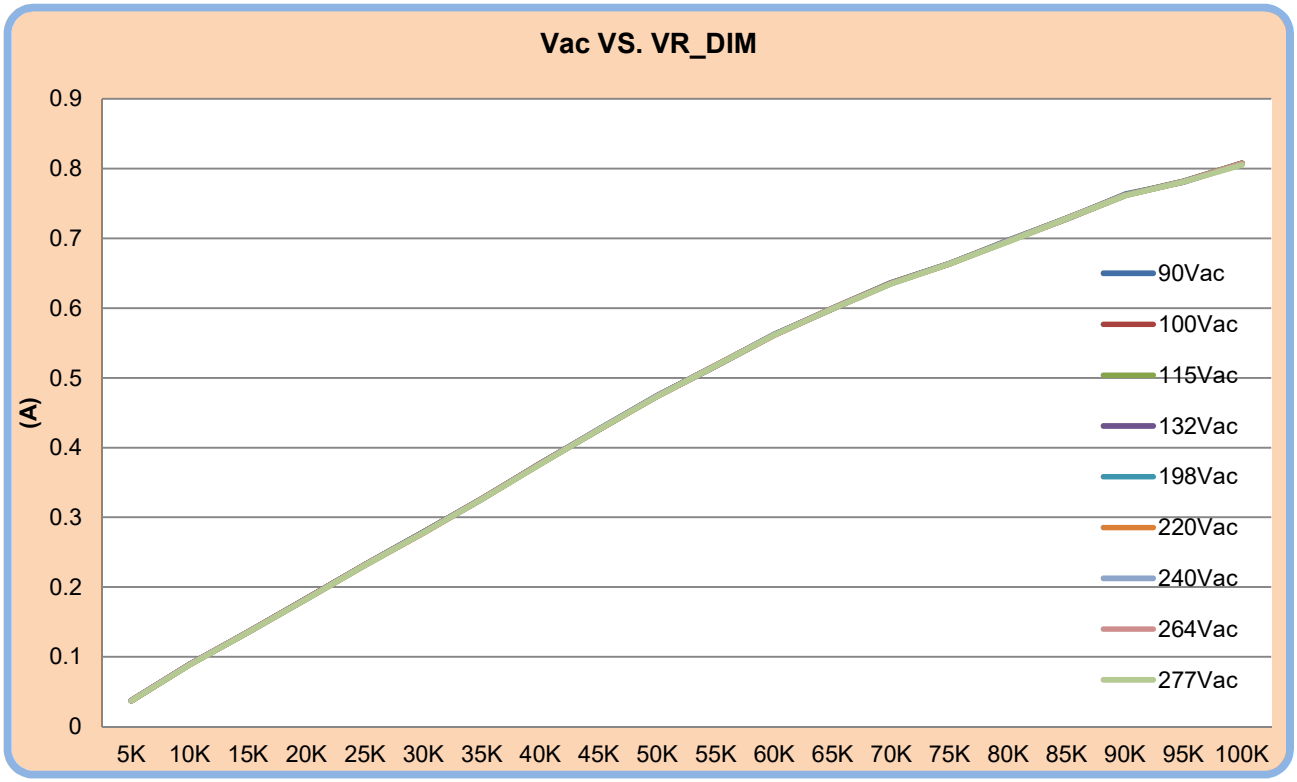
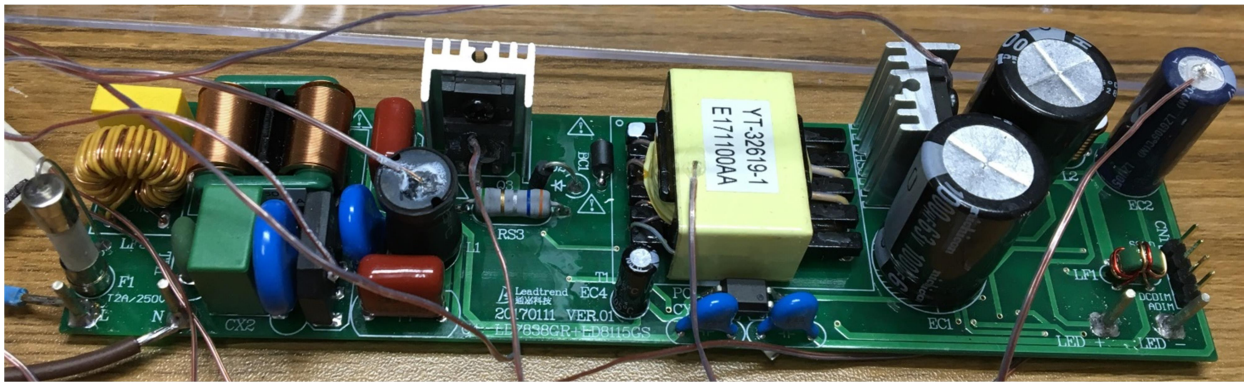


Fig. 25 Dimming performance test at full range

3.12. Thermal Test

Test Condition:
Output power : LED 13 PCS.



Thermal Test 置於 350(L)*200(H)*180(W)的塑膠殼中					
Input condition	90V	115V	230V	264V	277V
U1(LD7838)	**50.1℃**	**48.3℃**	**49.1℃**	**51℃**	**51.7℃**
U2(LD8115)	**40.7℃**	**40.7℃**	**40.1℃**	**41.1℃**	**41.2℃**
MOSFET	**60.1℃**	**52℃**	**47℃**	**49.8℃**	**50.7℃**
X'FRM	**61.3℃**	**59.4℃**	**59.4℃**	**61.1℃**	**61.7℃**
Output Diode	**68.1℃**	**67.5℃**	**66.7℃**	**67.9℃**	**68.1℃**
Case	**35.3℃**	**35.1℃**	**34.5℃**	**35.4℃**	**35.1℃**
Ambient	28℃ room temp				

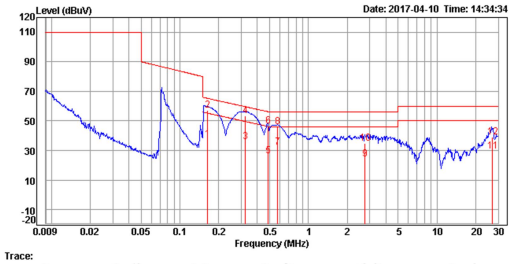
Table 15 Thermal Test

3.13. Conduction Test

230Vac / 50Hz

EUT : POWER
Model No. : LD7838+LD8115 40W
Test Mode : Normal
Test Engineer : Alan
Remark :
Job No. : 2017-04-10
Test Voltage: 230Vac 50Hz
Phase : Line
Temp.& Hum. : 26/48

Data: 1

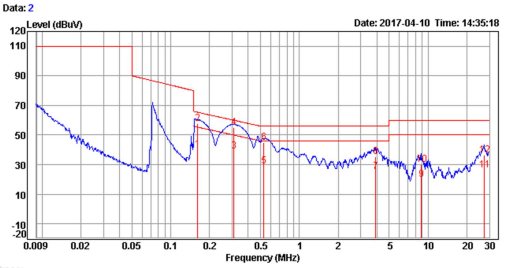


Trace:

Freq. MHz	Reading dBuV Q.P.	Reading dBuV AV.	C.F. dB	Result dBuV Q.P.	Result dBuV AV.	Limit dBuV Q.P.	Limit dBuV AV.	Margin dB Q.P.	Margin dB AV.
0.163	47.05	27.64	9.99	57.04	37.63	65.30	55.30	-8.26	-17.67
0.323	43.56	26.13	9.88	53.44	36.01	59.62	49.62	-6.18	-13.61
0.484	36.82	16.64	9.84	46.66	26.48	56.27	46.27	-9.61	-19.79
0.576	35.97	22.27	9.87	45.84	32.14	56.00	46.00	-10.16	-13.86
2.750	24.81	14.08	10.10	34.91	24.18	56.00	46.00	-21.09	-21.82
26.841	27.64	18.27	11.24	38.88	29.51	60.00	50.00	-21.12	-20.49

EUT : POWER
Model No. : LD7838+LD8115 40W
Test Mode : Normal
Test Engineer : Alan
Remark :
Job No. : 2017-04-10
Test Voltage: 230Vac 50Hz
Phase : Neutral
Temp.& Hum. : 26/48

Data: 2



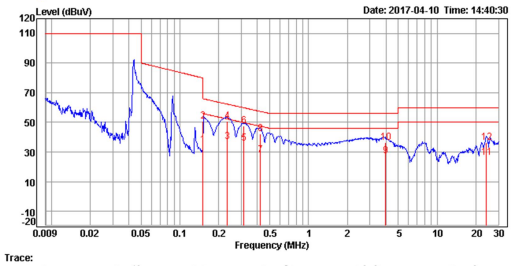
Trace:

Freq. MHz	Reading dBuV Q.P.	Reading dBuV AV.	C.F. dB	Result dBuV Q.P.	Result dBuV AV.	Limit dBuV Q.P.	Limit dBuV AV.	Margin dB Q.P.	Margin dB AV.
0.162	47.92	30.11	9.99	57.91	40.10	65.38	55.38	-7.47	-15.28
0.308	44.99	29.25	9.89	54.88	39.14	60.02	50.02	-5.14	-10.88
0.529	35.31	19.00	9.84	45.15	28.84	56.00	46.00	-10.85	-17.16
3.922	25.10	15.00	10.16	35.26	25.16	56.00	46.00	-20.74	-20.84
8.822	19.50	9.41	10.33	29.83	19.74	60.00	50.00	-30.17	-30.26
27.271	25.42	15.60	10.83	36.25	26.43	60.00	50.00	-23.75	-23.57

110Vac / 60Hz

EUT : POWER
Model No. : LD7838+LD8115 40W
Test Mode : Normal
Test Engineer : Alan
Remark :
Job No. : 2017-04-10
Test Voltage: 110Vac 60Hz
Phase : Line
Temp.& Hum. : 26/48

Data: 3

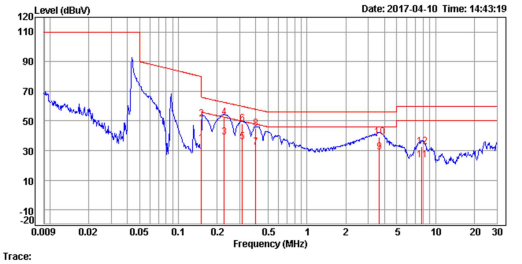


Trace:

Freq. MHz	Reading dBuV Q.P.	Reading dBuV AV.	C.F. dB	Result dBuV Q.P.	Result dBuV AV.	Limit dBuV Q.P.	Limit dBuV AV.	Margin dB Q.P.	Margin dB AV.
0.150	40.81	24.60	10.00	50.81	34.60	66.00	56.00	-15.19	-21.40
0.234	40.83	27.23	9.94	50.77	37.17	62.30	52.30	-11.53	-15.13
0.313	37.94	25.84	9.89	47.83	35.73	59.88	49.88	-12.05	-14.15
0.419	32.70	17.83	9.83	42.53	27.66	57.46	47.46	-14.93	-19.80
3.943	26.06	16.97	10.17	36.23	27.14	56.00	46.00	-19.77	-18.86
24.142	25.44	15.31	11.09	36.53	26.40	60.00	50.00	-23.47	-23.60

EUT : POWER
Model No. : LD7838+LD8115 40W
Test Mode : Normal
Test Engineer : Alan
Remark :
Job No. : 2017-04-10
Test Voltage: 110Vac 60Hz
Phase : Neutral
Temp.& Hum. : 26/48

Data: 4



Trace:

Freq. MHz	Reading dBuV Q.P.	Reading dBuV AV.	C.F. dB	Result dBuV Q.P.	Result dBuV AV.	Limit dBuV Q.P.	Limit dBuV AV.	Margin dB Q.P.	Margin dB AV.
0.150	41.60	24.95	9.99	51.59	34.94	66.00	56.00	-14.41	-21.06
0.226	42.54	29.00	9.97	52.51	38.97	62.61	52.61	-10.10	-13.64
0.313	38.30	25.95	9.89	48.19	35.84	59.88	49.88	-11.69	-14.04
0.398	35.03	22.50	9.80	44.83	32.30	57.90	47.90	-13.07	-15.60
3.661	28.71	18.75	10.14	38.85	28.89	56.00	46.00	-17.15	-17.11
7.810	22.60	13.10	10.29	32.89	23.39	60.00	50.00	-27.11	-26.61