RT7740GA for 19V/45W Demo Board Test Report

Product P/N	*RT7740GAGE*
Lot No.	
Date Code	
EVB Number	19V_45W_V0
Document Version	

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Reviewed by: _____

Approved by: _____

Date: 2018/10/15

Application Engineering Department
System Development Division

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Revision History

Version	Description	Date
00	Initial	2018/10/15

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1. Electrical Specification

AC Input Voltage ..... $90V_{rms}$~$265V_{rms}$

Line Frequency ..... 47Hz~63Hz

DC Output Voltage 19V

Nominal Output Current 2.37A

Efficiency ..... ＞DOE 6 & CoC Tier2 Standard

Power Consumption ..... ＜75mW

Hold-up Time ..... ＞5mS

Output Ripple & Noise ..... ＜190mV

Load Regulation ..... ±5%

Line Regulation ..... ±1%

Over Load Protection ..... Auto Recovery

Short Circuit Protection ..... Auto Recovery

Over Voltage Protection ..... Auto Recovery

CS Pin Over Temperature Protection ..... Auto Recovery

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2. Summary

Item No.	Test Item	Test Result	Comment
5.1	Input Characteristics		
5.1.1	Efficiency	Pass	
5.1.2	Efficiency at 10% load of full rated output current	Pass	
5.1.3	Input power under no load & light load	Pass	
5.1.4	Standby power test	Pass	
5.1.5	Start-up time	Pass	
5.1.6	Brown-in and Brown-out	Pass	
5.1.7	Slope compensation and sub-harmonic	Pass	
5.1.8	Hold-up time	Pass	
5.2	Output Characteristics		
5.2.1	Line regulation and load regulation	Pass	
5.2.2	Output ripple & noise	Pass	
5.2.3	Overshoot and rising time at start up	Pass	
5.2.4	Undershoot and falling time at power off	Pass	
5.2.5	Load transient and cycle test	Pass	

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5.3	Protections		
5.3.1	OCP and recovery	Pass	
5.3.2	Vout OVP and recovery	Pass	
5.3.3	SC and recovery	Pass	
5.3.4	CS Pin OTP	Pass	
5.4	Key Component Waveforms		
5.4.1	Voltage stress on MOSFET	Pass	
5.4.2	Voltage stress on Secondary Rectifier Diode	Pass	
5.5	Standard and safety		
5.5.1	EMI	Pass	
5.5.2	Safety (ESD & Surge)	Pass	

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3. Test Facility

Instrument	Manufacturer	Type/Serial No.
AC Source	EXTECH	6800
Power meter	YOKOGAWA	WT210
Oscilloscope	LeCroy	44MXi-A
Electronic Load	Chroma	63030
Multi-meter	Fluke	287
Differential probe	LeCroy	ADP305
Current amplifier	LeCroy	CP030

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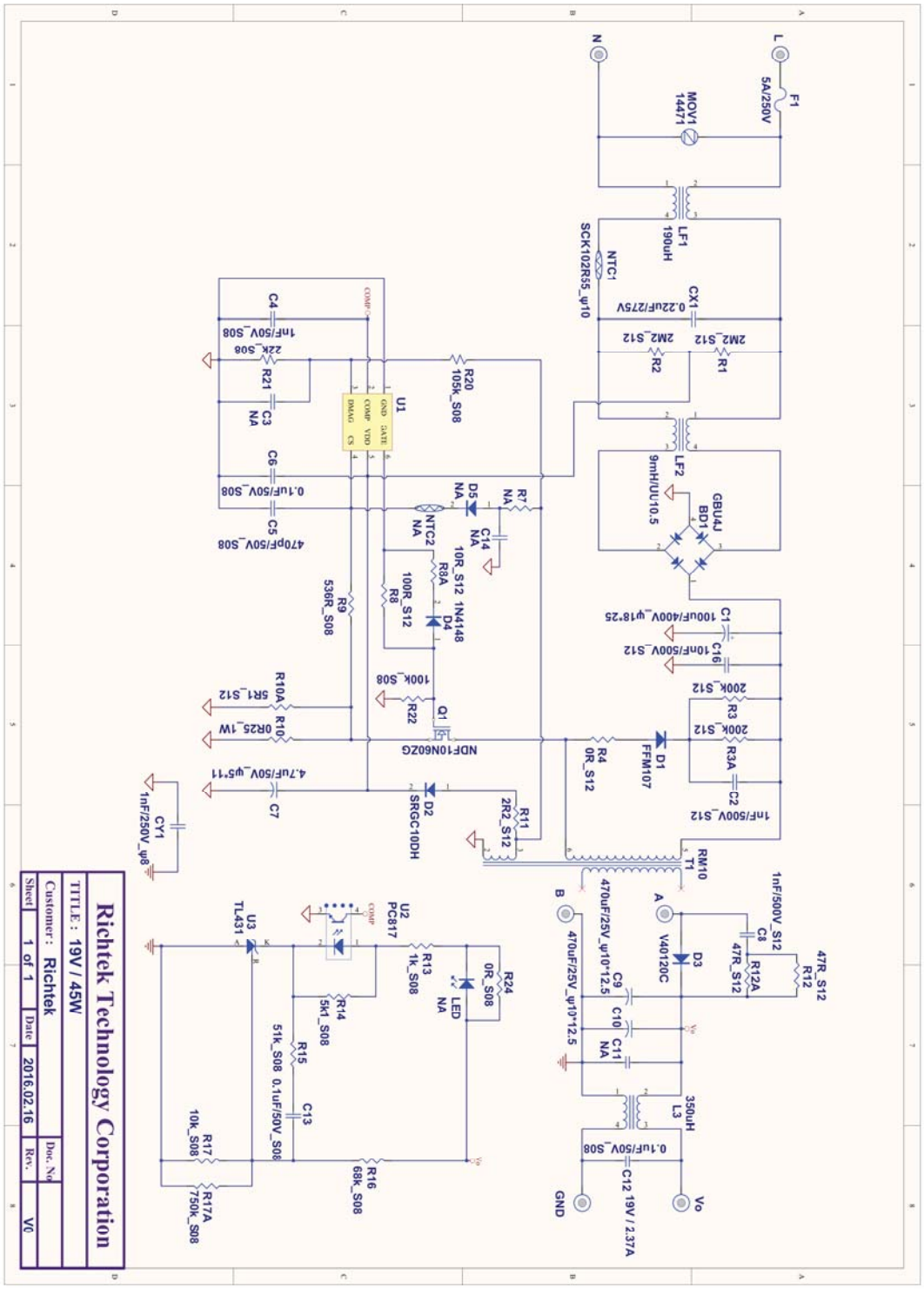
4. Test Circuit



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5. Electrical Characteristics Test Items

5.1 Input Characteristics

5.1.1 Efficiency

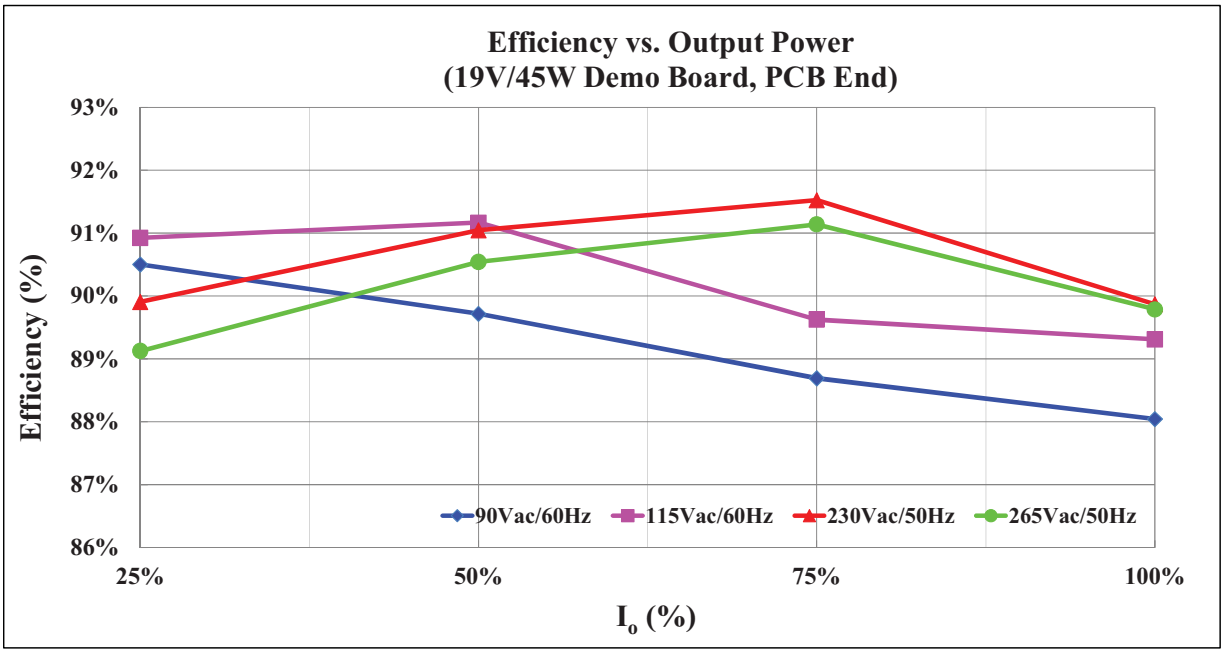
Test Method	Efficiency at different load conditions & Burn-in 20min
Test Conditions	**Measured at PCB End**

Test Result

Input Voltage	Measured Efficiency η (%)				Average η (%)	DOE VI > 87.73%	CoC Tier2 > 88.85%
	25%	50%	75%	100%			
90Vac / 60Hz	90.50	89.72	88.69	88.04	89.24	Pass	Pass
115Vac / 60Hz	90.92	91.17	89.62	89.31	90.26	Pass	Pass
230Vac / 50Hz	89.91	91.05	91.52	89.87	90.59	Pass	Pass
265Vac / 50Hz	89.13	90.54	91.14	89.79	90.15	Pass	Pass

Note: DOE VI regulation limit：$\eta \geqq 0.071*\ln(Pout)-0.0014*Pout+0.67$ (45W spec. > 87.73%)

CoC Tier2 regulation limit：$\eta \geqq 0.071*\ln(Pout)-0.00115*Pout+0.67$ (45W spec. > 88.85%)



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5.1.2 Efficiency at 10% load of full rated output current

Test Method	
Test Conditions	Measured at PCB End

Test Result

Input Voltage	Output Load	Measured Eff. (%)	Specification	Test Result
90Vac / 60Hz	10% Full Load	88.61	> 77.73%	Pass
115Vac / 60Hz		88.43		Pass
230Vac / 50Hz		84.91		Pass
265Vac / 50Hz		83.34		Pass

Note 1: CoC Tier2 regulation limit： $\eta \geqq 0.071*\ln(Pout)-0.00115*Pout+0.57$ (45W spec. > 77.73%)

5.1.3 Input power under no load & light load

Test Method	
Test Conditions	

Input power under no load:

Test Result

Input Voltage	Output Load	Input Wattage (mW)	DOE VI < 100mW	CoC Tier2 < 75mW
90Vac / 60Hz	No Load	24.03	Pass	Pass
115Vac / 60Hz		27.49	Pass	Pass
230Vac / 50Hz		53.85	Pass	Pass
265Vac / 50Hz		68.71	Pass	Pass

Note: DOE VI no load power consumption: < 100mW
CoC Tier2 no load power consumption: < 75mW

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EPA 4.0 Regulation Limit:

Test Result

Output Wattage (W)	Input Wattage (W)		Specification	Test Result
	115V	230V		
0.25W (0.267)	0.338	0.382	< 0.5W (η >50%)	Pass
0.5W (0.502)	0.605	0.666	< 0.714W (η >70%)	Pass
1W (1.000)	1.172	1.264	< 1.428W (η >70%)	Pass
1.15W (1.176)	1.373	1.474	< 1.642W (η >70%)	Pass
1.5W (1.500)	1.738	1.854	< 2.142W (η >70%)	Pass
1.7W (1.703)	1.969	2.102	< 2.428W (η >70%)	Pass
2W (2.025)	2.335	2.482	< 2.857W (η >70%)	Pass

Measurement by Power Meter YOKOGAWA WT210

5.1.4 Standby power test

Test Method	
Test Conditions	

Input Voltage	Input wattage (W)	Pout	Specification	Test Result
90Vac / 60Hz	0.602	0.5W (0.502W)	< 1W	Pass
115Vac / 60Hz	0.605			Pass
230Vac / 50Hz	0.666			Pass
265Vac / 50Hz	0.701			Pass

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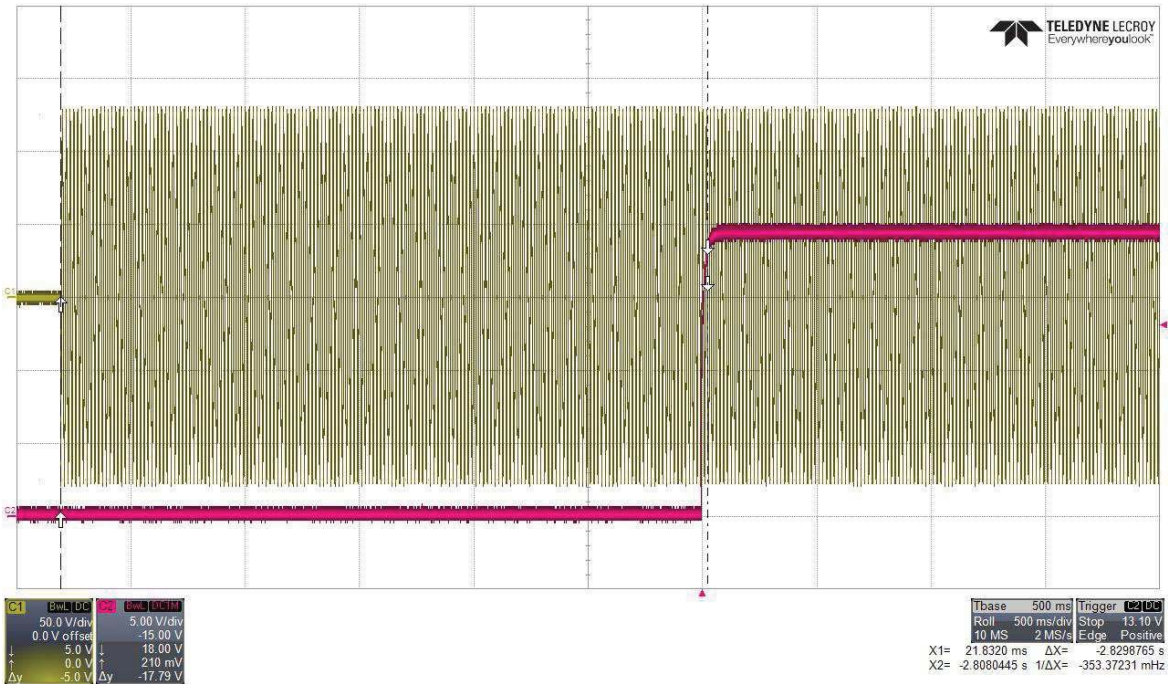
5.1.5 Start-up time

Test Method	
Test Conditions	

Test Result

Input Voltage	Start-up Time (sec.)	Specification	Test Result
90Vac / 60Hz	2.8299	< 3 sec.	Pass

CH1:V_{AC} ; CH2:V_O



Note: Output power at full load.

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5.1.6 Brown-in and Brown-out

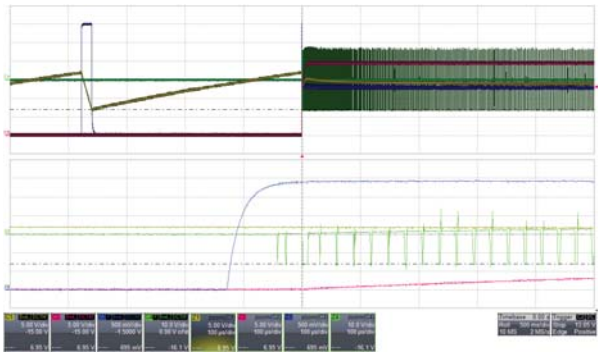
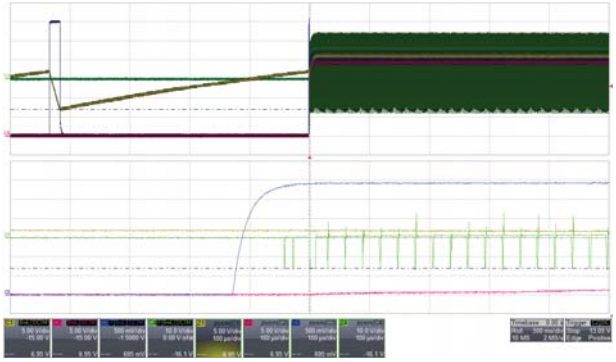
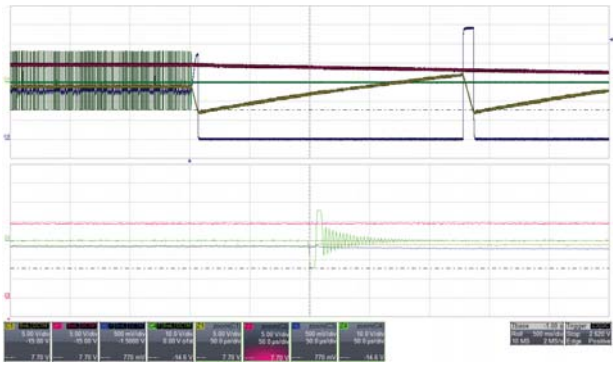
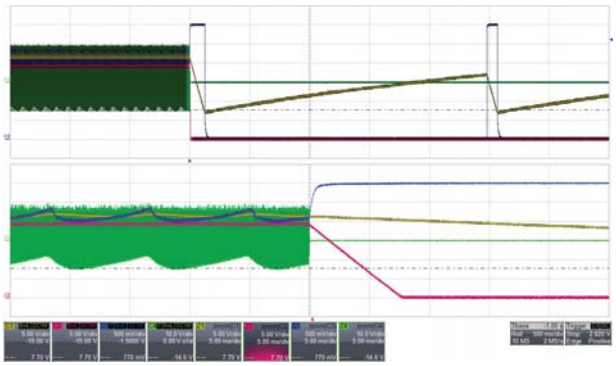
Test Method	
Test Conditions	

Test Result

Input Voltage	Input Wattage (W)
90Vac / 60Hz	52.17
85Vac / 60Hz	52.46
80Vac / 60Hz	52.74
75Vac / 60Hz	53.21
70Vac / 60Hz	53.91
65Vac / 60Hz	X

BNI/BNO : 74.9Vac / 66.0Vac (No Load)

BNI/BNO : 74.9Vac / 69.0Vac (Full Load)

Brown-in , No Load	Brown-in , Full Load
	
Brown-out , No Load	**Brown-out , Full Load**
	

CH1:V_{DD}, CH2:V_O, CH3:V_{Bulk}, CH4:V_{AUX} waveforms must be taken simultaneously.

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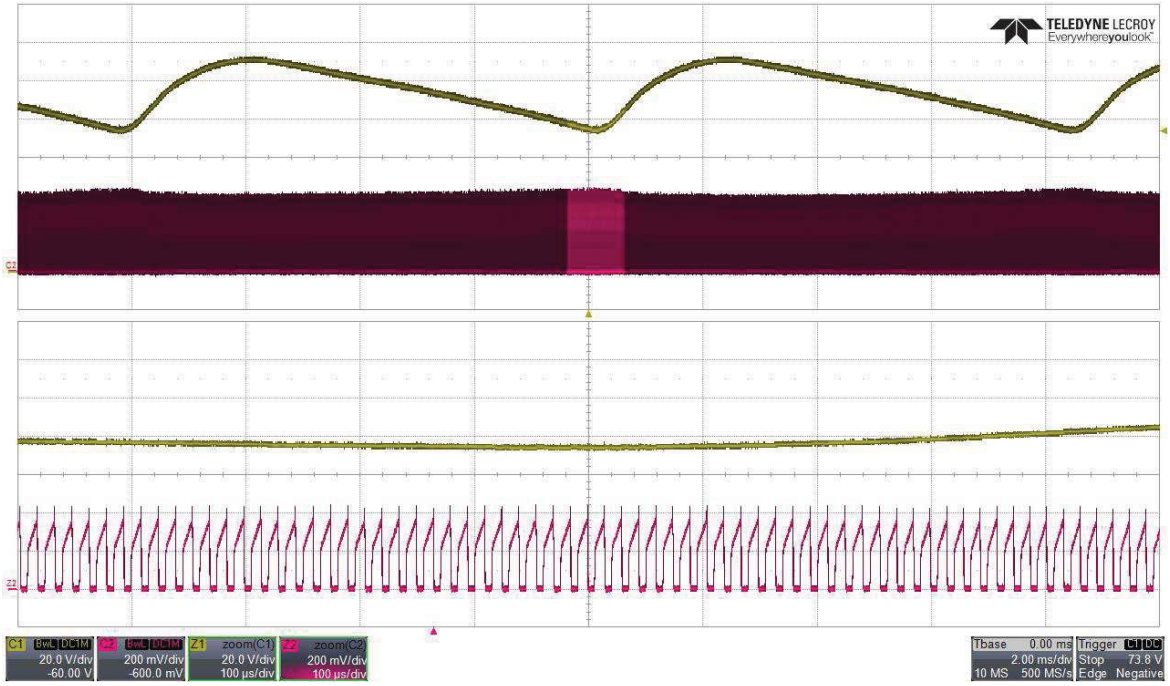
5.1.7 Slope compensation and sub-harmonic

Test Method	
Test Conditions	

Test Result

Input Voltage	Output Load	Test Result
80Vac / 60Hz	Full Load	Pass

CH1:V_{Bulk} ; CH2:V_{CS}



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5.1.8 Hold-up time

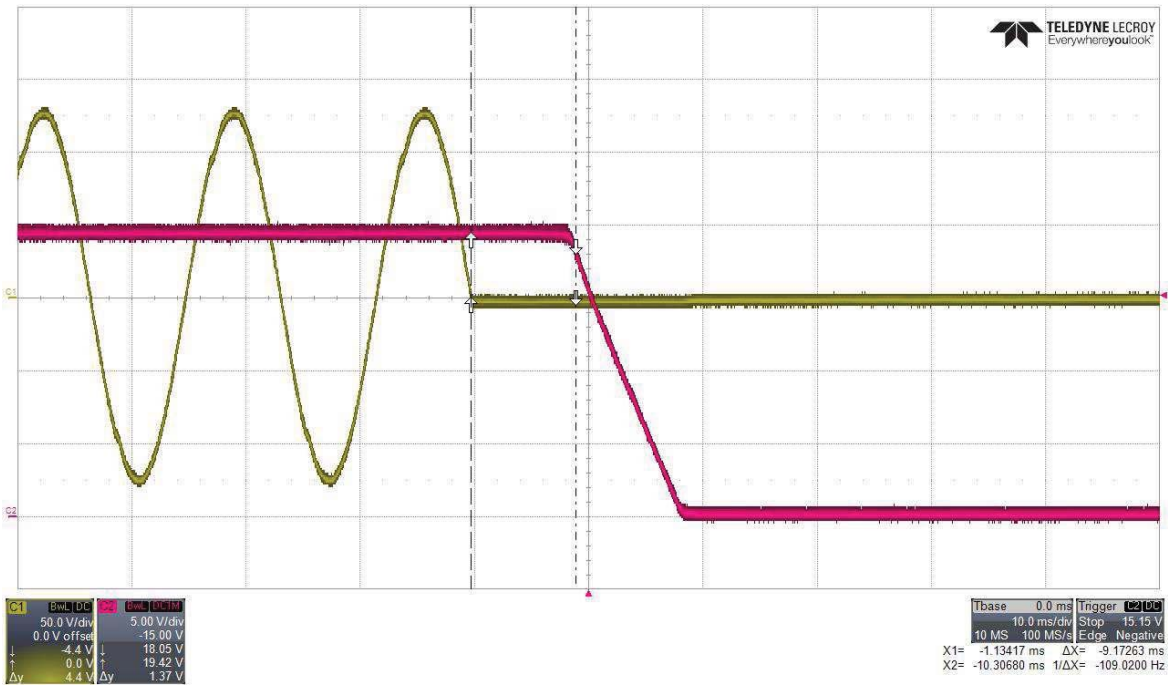
Test Method	
Test Conditions	

Test Result

Input Voltage	Hold-up Time	Specification	Test Result
90Vac / 60Hz	9.173m sec.	> 5m sec.	Pass

Note: Output power at full load. (90Vin @ 0 deg)

CH1:V_{AC} ; CH2:V_O



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5.2 Output Characteristics

5.2.1 Line regulation and load regulation

Test Method	
Test Conditions	Measured at PCB End

Test Result

Input Voltage	Measured (V)			Load Regulation Specification	Result
	Output Full Load	Output Mid Load	Output No Load		
90Vac / 60Hz	19.452	19.494	19.531	Vout ± 5 %	Pass
115Vac / 60Hz	19.450	19.492	19.531		Pass
132Vac / 60Hz	19.447	19.491	19.531		Pass
180Vac / 50Hz	19.440	19.486	19.531		Pass
230Vac / 50Hz	19.422	19.481	19.531		Pass
265Vac / 50Hz	19.407	19.476	19.531		Pass
Line Regulation Specification	Vout ± 1 %				
Result	Pass	Pass	Pass		

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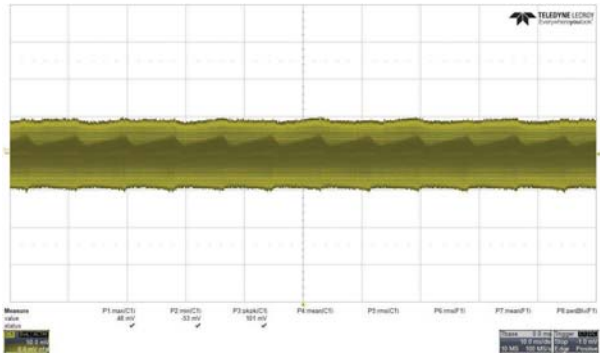
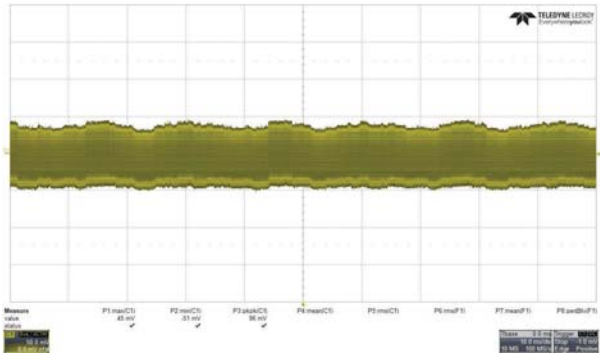
5.2.2 Output ripple & noise

Test Method	
Test Conditions	Measured at 18AWG / 1.8M Cable End

Test Result

Input Voltage	Output load	Measured (mVp-p)	Specification	Test Result
90Vac / 60Hz	Full Load	101	< 190mV	Pass
265Vac / 50Hz	Full Load	96		Pass

CH1 : V_{O_Ripple}	
90Vac / 60Hz , Full Load	265Vac / 50Hz , Full Load
	

Note: Measured by using a 12 inch twisted pair terminal with a 10uF aluminum electrolytic capacitor and a 0.1uF ceramic in parallel, measured at full load.

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5.2.3 Overshoot and rising time at start up

Test Method	
Test Conditions	Measured at 18AWG / 1.8M Cable End

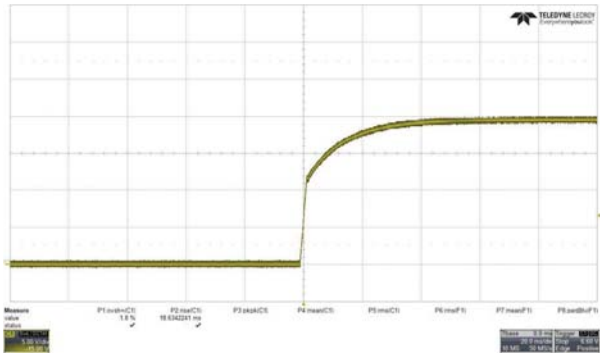
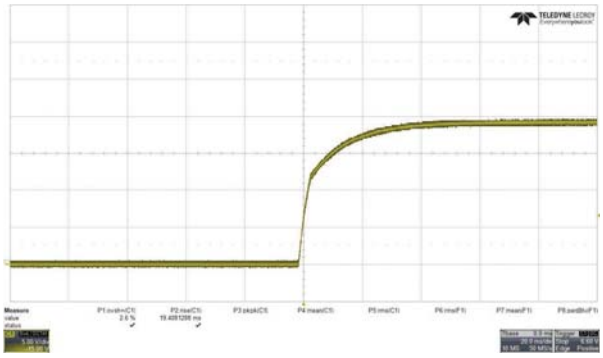
Test Result

Output rise time test result

Input Voltage	Measured (ms)		Specification (10% ~ 90% Vout)	Test Result
	No Load	Full Load		
90Vac / 60Hz	18.634	19.408	< 50ms	Pass
265Vac / 50Hz	18.320	18.845	< 50ms	Pass

Output overshoot test result

Input Voltage	Measured (%)		Specification	Test Result
	No Load	Full Load		
90Vac / 60Hz	1.8	2.6	≤ 8% of V_O	Pass
265Vac / 50Hz	2.6	3.4	≤ 8% of V_O	Pass

Vin = 90Vac/60Hz ; CH1:V_O @No Load	Vin = 90Vac/60Hz ; CH1:V_O @Full Load
	

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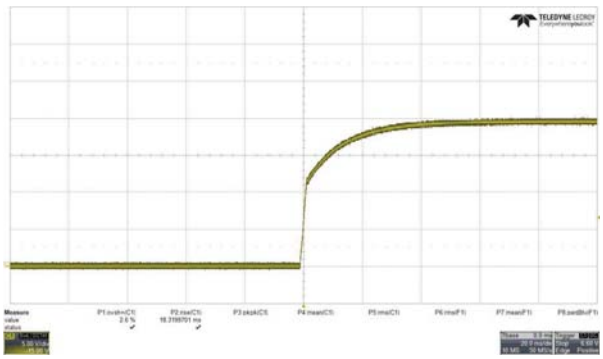
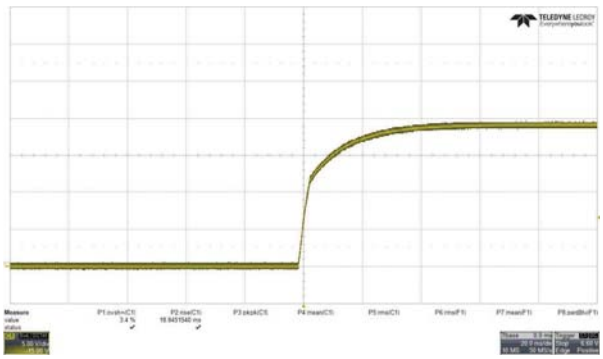
Vin = 265Vac/50Hz ; CH1:V_O @No Load	Vin = 265Vac/50Hz ; CH1:V_O @Full Load
	

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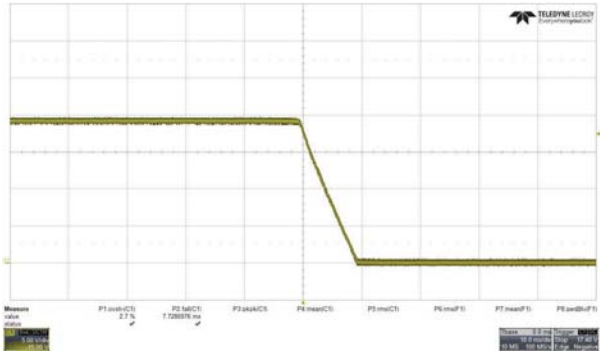
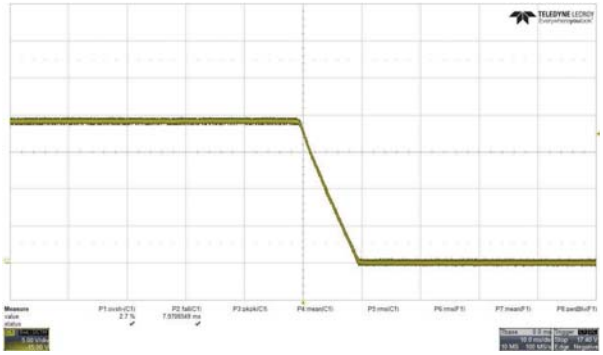
5.2.4 Undershoot and falling time at power off

Test Method	
Test Conditions	Measured at 18AWG / 1.8M Cable End

Output falling time test result

Input Voltage	Measured (ms)	Specification (90% ~ 10% Vout)	Test Result
	Full Load		
90Vac / 60Hz	7.729	< 50ms	Pass
265Vac / 50Hz	7.971	< 50ms	Pass

Vin = 90Vac/60Hz ; CH1:Vo @Full Load	Vin = 265Vac/60Hz ; CH1:Vo @Full Load
	

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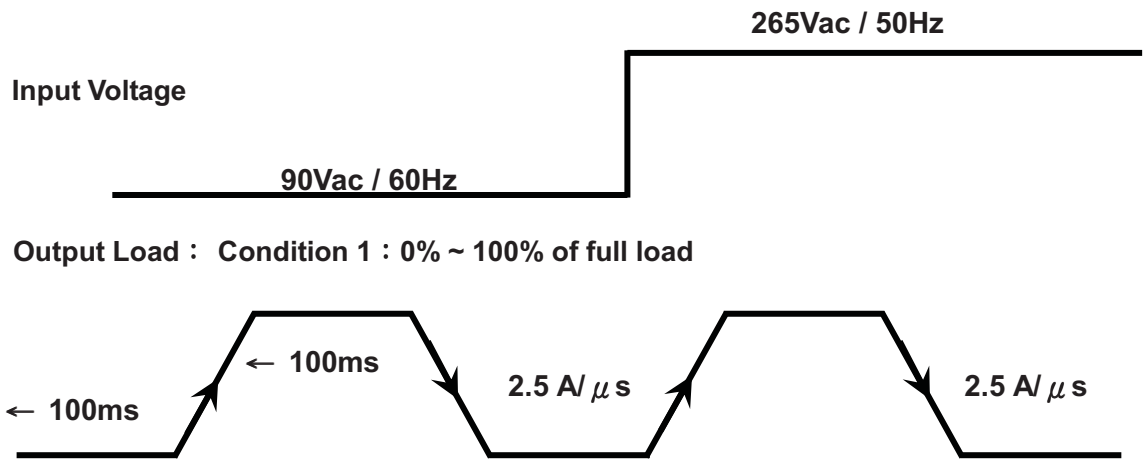
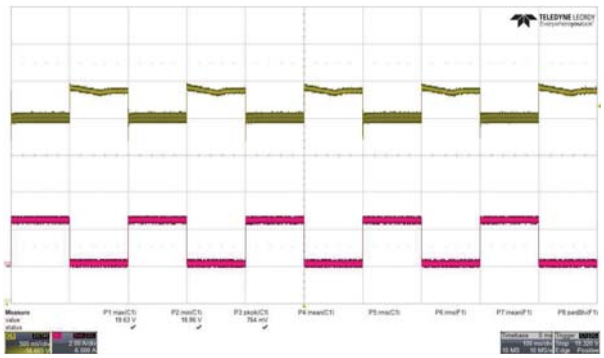
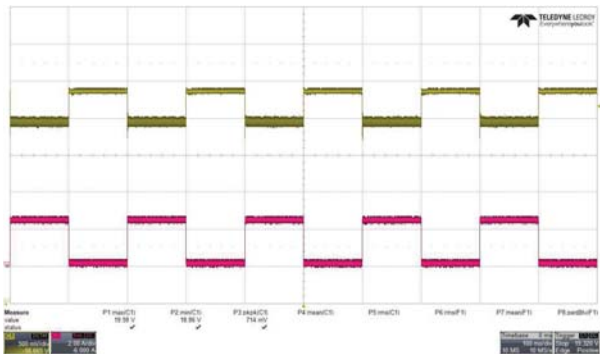
5.2.5 Load transient and cycle test

Test Method	Measured at 18AWG / 1.8M Cable End
Test Conditions	

Test Result

Input Voltage	Measured Vo (V)		Specification	Test Result
	0% -- 100% Load	100% -- 0% Load		
90Vac / 60Hz	18.860	19.630	Vout ± 5 %	Pass
265Vac / 50Hz	18.860	19.580	Vout ± 5 %	Pass

Vin = 90Vac / 60Hz ; CH1 : V_O ; CH2 : I_O ; 0% --- 100% Load	Vin = 265Vac / 50Hz ; CH1 : V_O ; CH2 : I_O ; 0% --- 100% Load
	

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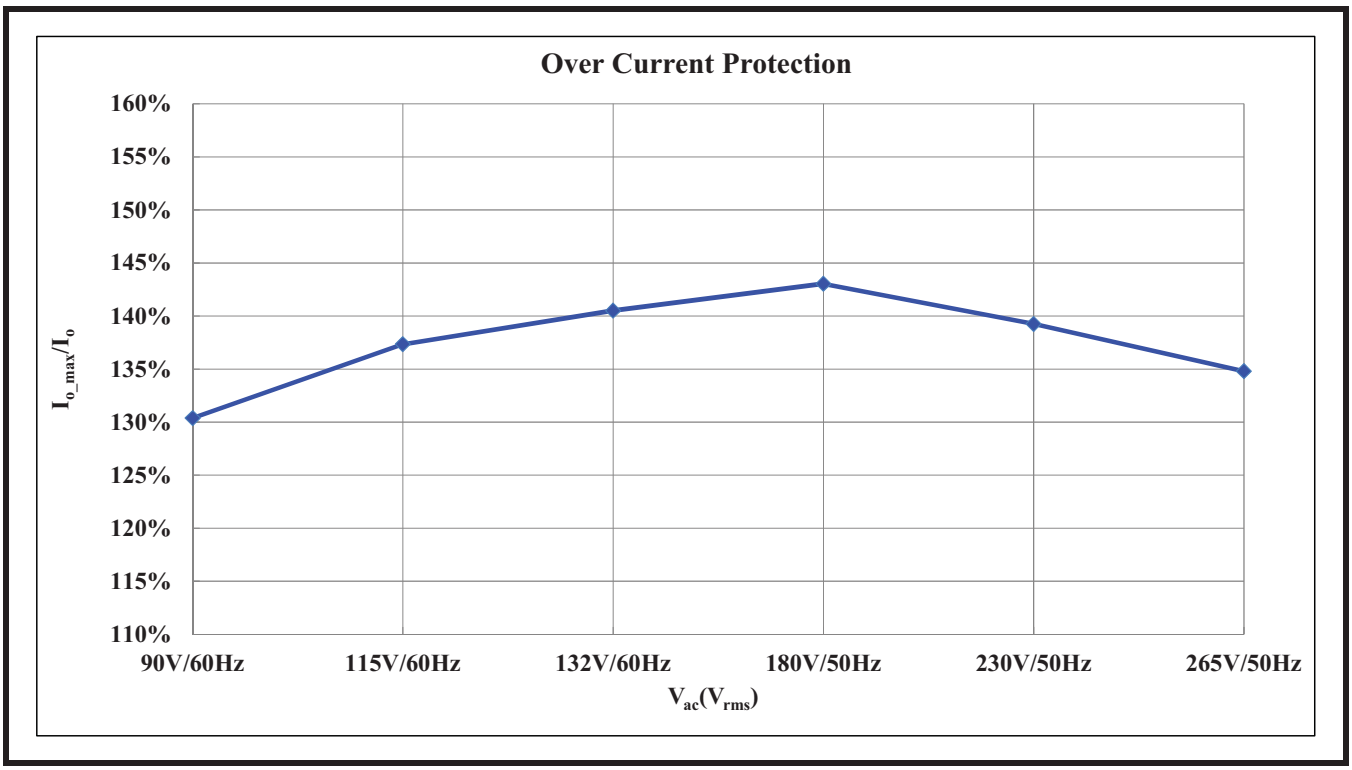
5.3 Protections

5.3.1 OCP and recovery

Test Method	
Test Conditions	

Test Result

Input Voltage	Output Current (A)	Io_max / Io (%)	Test Result	Specification
90Vac / 60Hz	3.090	130.4	Pass	120% ~ 150% of the full load
115Vac / 60Hz	3.255	137.3	Pass	
132Vac / 60Hz	3.330	140.5	Pass	
180Vac / 50Hz	3.390	143.0	Pass	
230Vac / 50Hz	3.300	139.2	Pass	
265Vac / 50Hz	3.195	134.8	Pass	
△	0.300	12.6		



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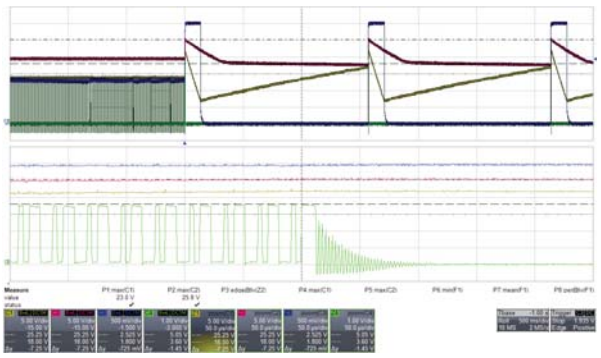
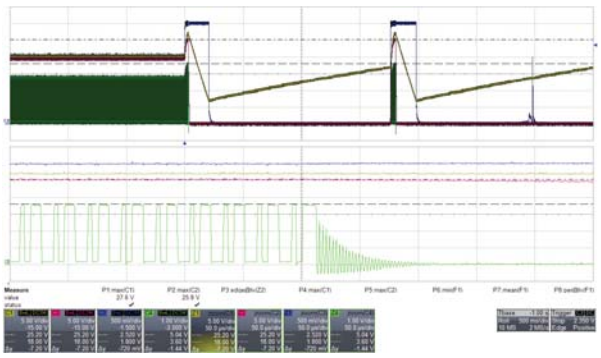
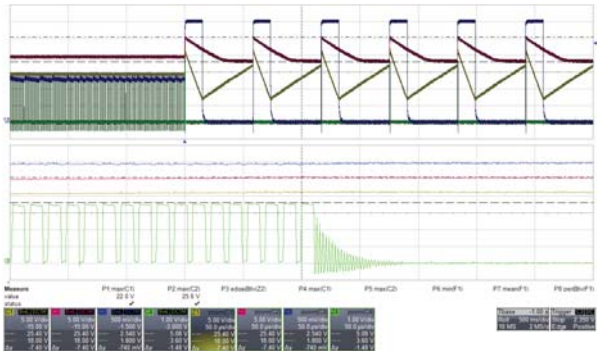
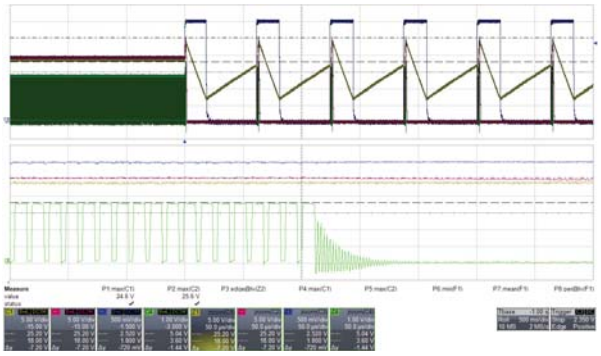
5.3.2 Vout OVP and recovery

Test Method	Secondary side photo-coupler short circuit
Test Conditions	**Measured at PCB End**

Test Result

Input Voltage	Output Load	Output Voltage (V)	Measured (W)	Specification
90Vac / 60Hz	No Load	25.80	0.116	Auto Recovery
	Full Load	25.80	1.778	
265Vac / 50Hz	No Load	25.60	0.341	
	Full Load	25.60	2.261	

Vin = 90Vac / 60Hz , No Load	Vin = 90Vac / 60Hz , Full Load
	
Vin = 265Vac / 50Hz , No Load	**Vin = 265Vac / 50Hz , Full Load**
	

Note: CH1:V_{DD}, CH2:V_O, CH3:V_{COMP}, CH4:V_{DMAG} waveforms must be taken simultaneously.

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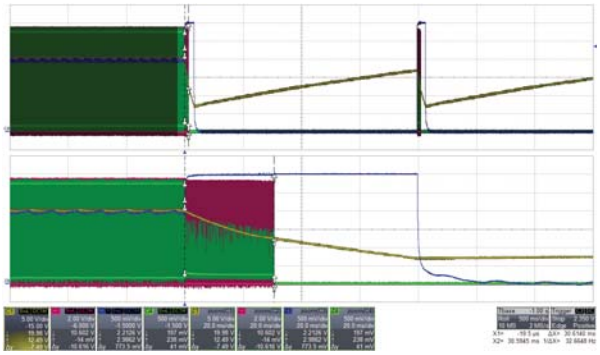
5.3.3 SC and recovery

Test Method	Output short circuit
Test Conditions	

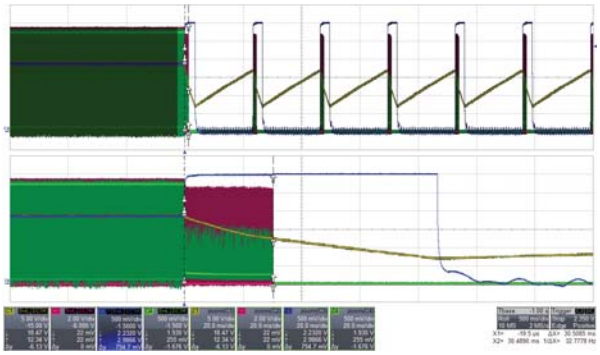
Test Result

Input Voltage	Output Load	Measured (W)	Specification
90Vac / 60Hz	Full Load	0.203	Auto Recovery
265Vac / 50Hz	Full Load	0.872	

Vin = 90Vac / 60Hz , Full Load



Vin = 265Vac / 50Hz , Full Load



Note: CH1:V_{DD}, CH2:V_{GATE}, CH3:V_{COMP}, CH4:V_{DMAG} waveforms must be taken simultaneously.

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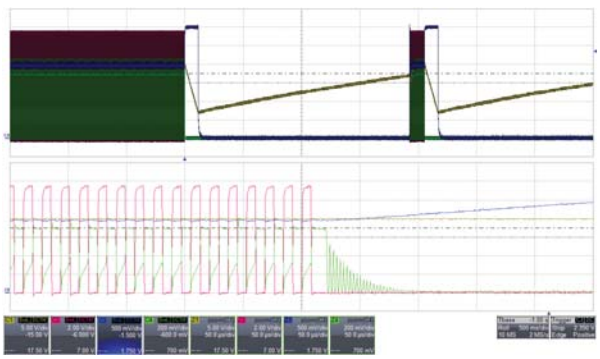
5.3.4 CS pin OTP and recovery

Test Method	1N4148+50kΩVR
Test Conditions	

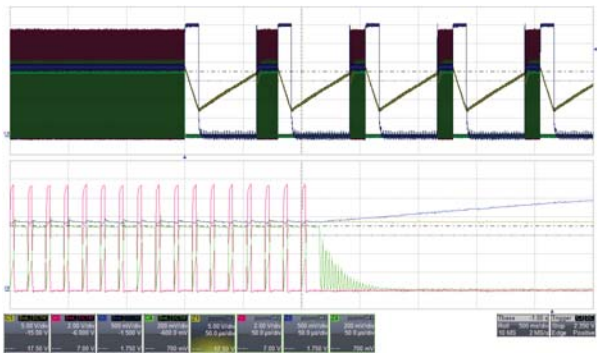
Test Result

Input Voltage	Output Load	V_{CS_OTP} (V)	R_{NTC} (kΩ)	Specification	Test Result
90Vac / 60Hz	Full Load	0.7	11.242	Auto Recovery	Pass
					Pass
265Vac / 50Hz	Full Load	0.7	11.207		Pass
					Pass

Vin = 90Vac / 60Hz , Full Load



Vin = 265Vac / 50Hz , Full Load



Note: CH1:V_{DD}, CH2:V_{GATE}, CH3:V_{COMP}, CH4:V_{CS} waveforms must be taken simultaneously.

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5.4 Key Component Waveforms

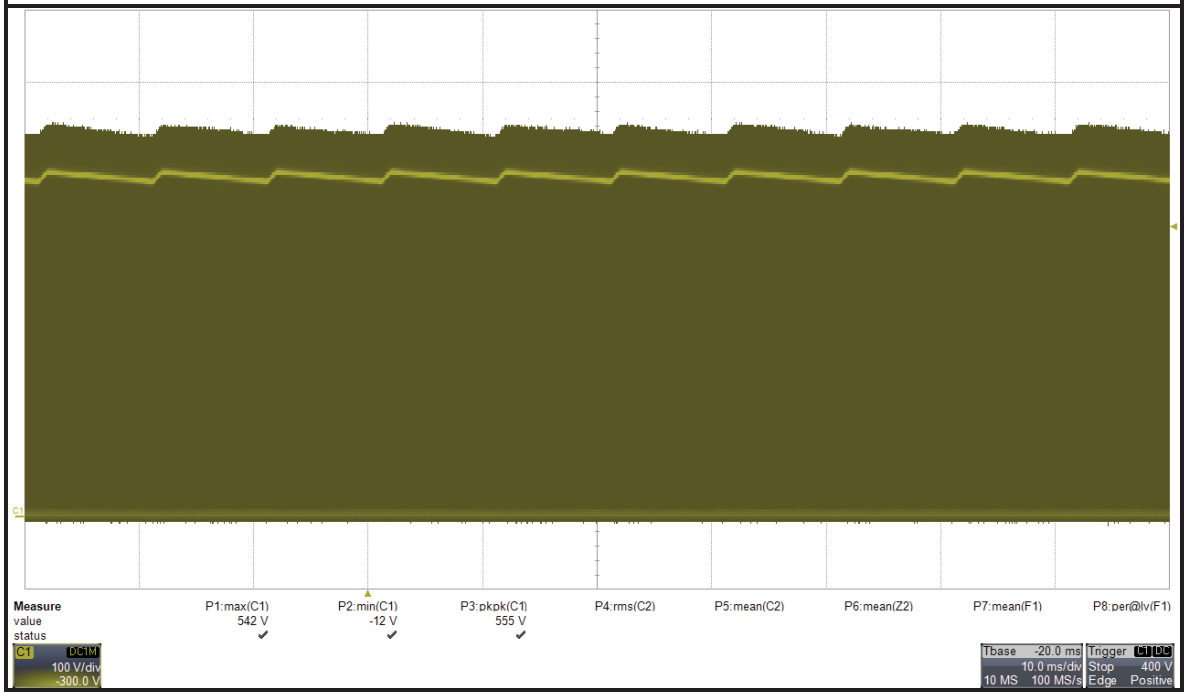
5.4.1 Voltage stress on MOSFET

Test Method	
Test Conditions	

Test Result

Input Voltage	Test Condition	Stress on MOSFET	Component Rating
265Vac / 50Hz	Normal operation at full load	542	600V
	Start-up at full load	542	
	Output short at full load	542	

265Vac / Normal operation at full load ; CH1:V_{DS}



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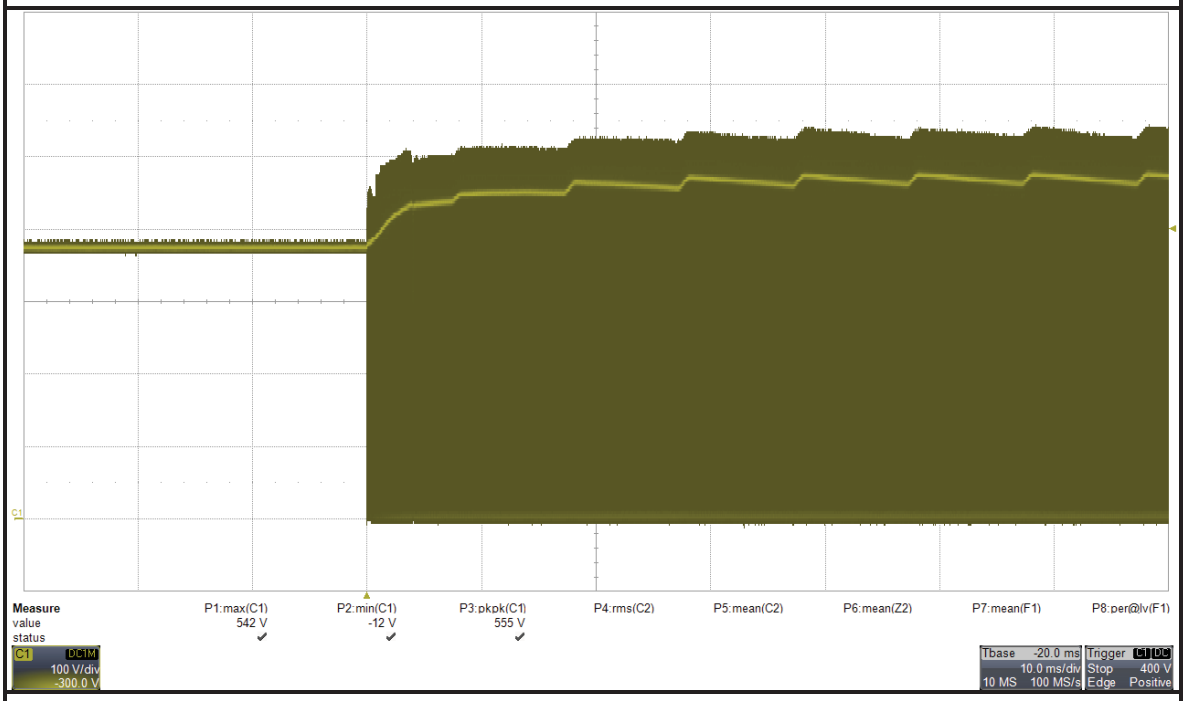
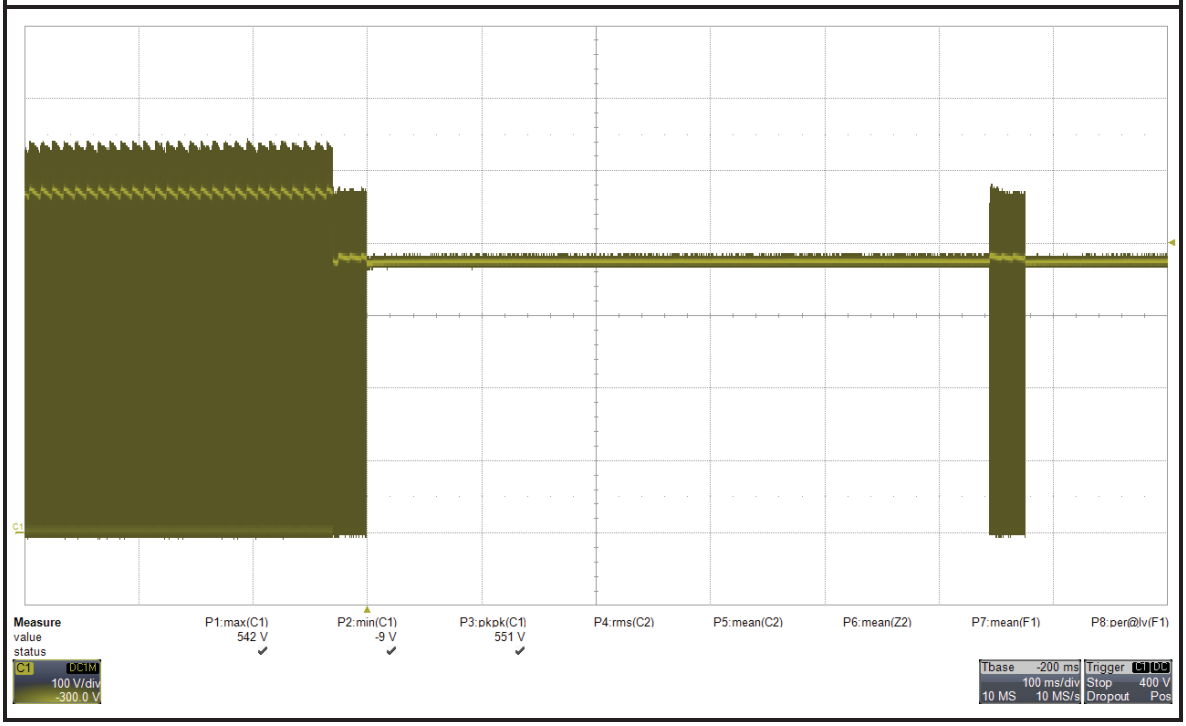
265Vac / Start-up at full load ; CH1:VDS



265Vac / Output short circuit at full load ; CH1:VDS



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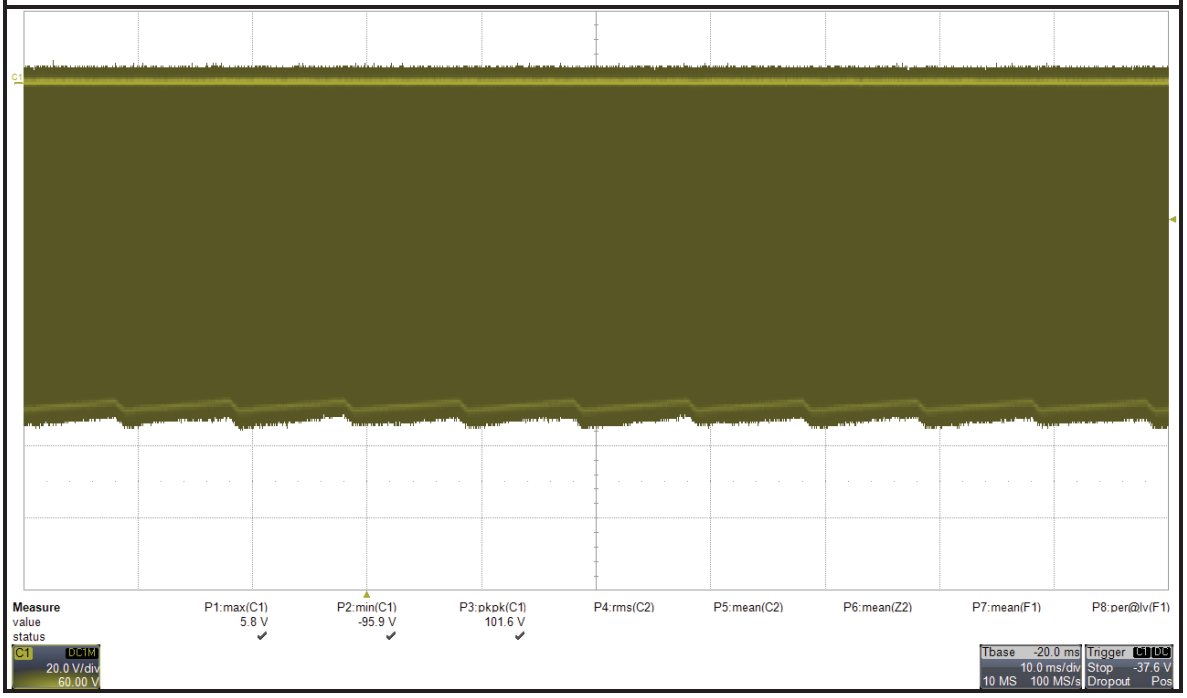
5.4.2 Voltage stress on Secondary Rectifier Diode

Test Method	
Test Conditions	

Input Voltage	Test Condition	Stress on Diode	Component Rating
265Vac/50Hz	Normal operation at full load	95.9	120V
	Start-up at full load	95.9	
	Output short at full load	95.9	

265Vac / Normal operation at full load ; CH1:VD



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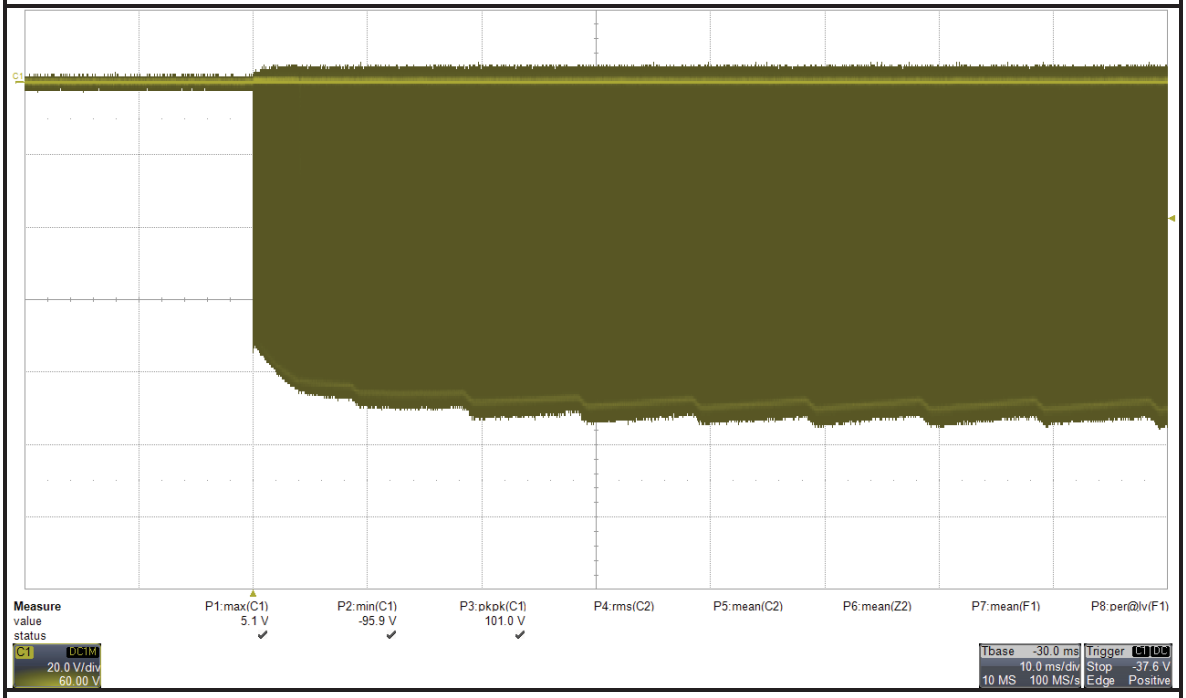
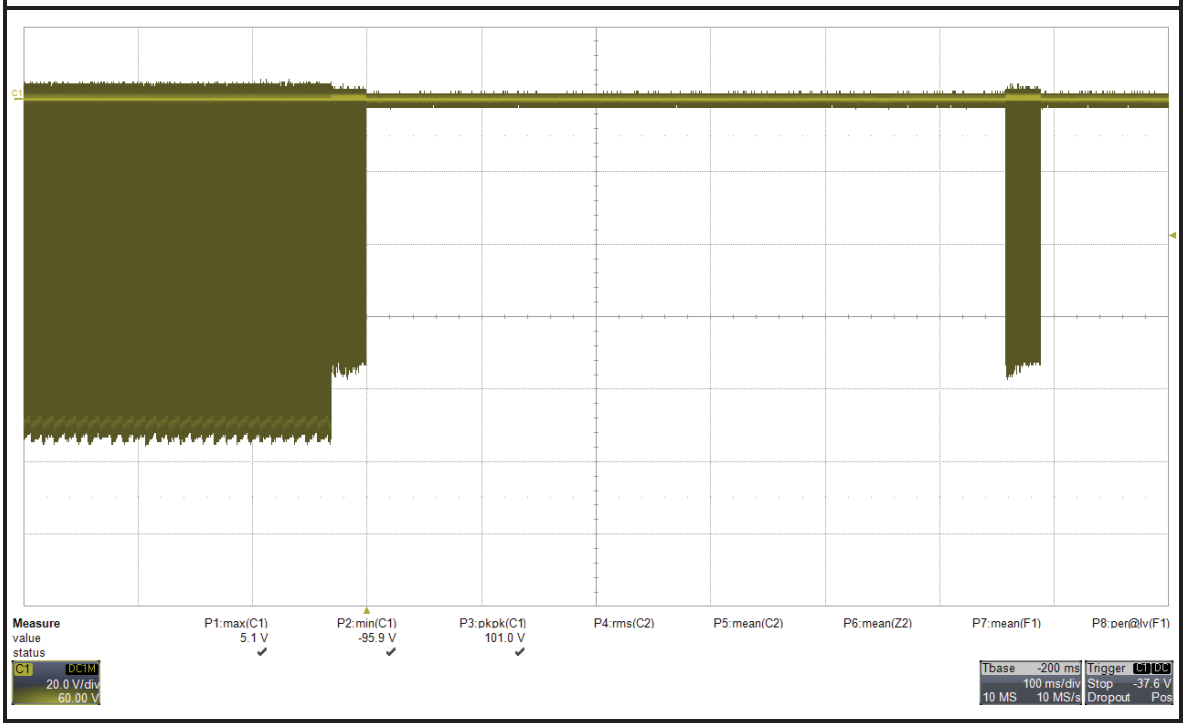
265Vac / Start-up at full load ; CH1:VD



265Vac / Output short circuit at full load ; CH1:VD



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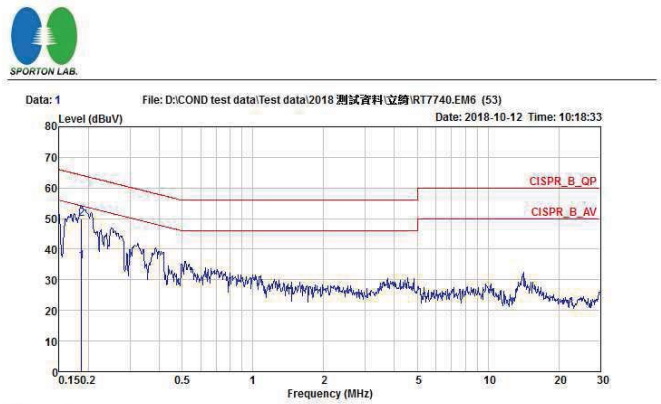
5.5 Standard and safety

5.5.1 EMI (Test result is peak)

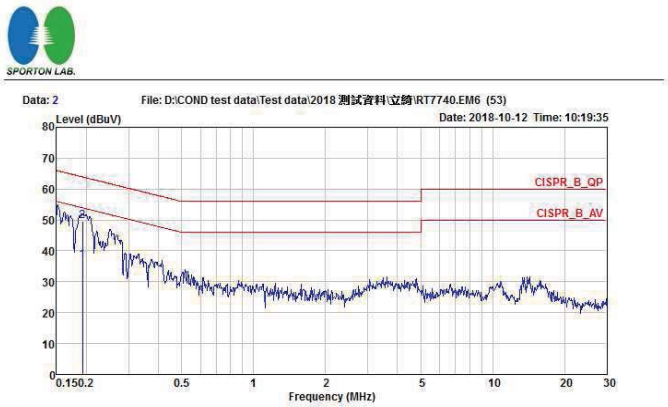
Conduction - Line @ Vin = 110Vac/60Hz；Output = Full Load



Site :
Condition: CISPR_B_QP LISN+PULSE 201805 LINE
No : G
EUT : RT7740
Power : 110V
Mode : 19V/45W 100% Load
Memo : RT7738GA

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1864	36.15	-18.05	54.20	25.98	10.16	0.01	Average	LINE
2	0.1864	49.82	-14.38	64.20	39.65	10.16	0.01	QP	LINE

Conduction - Neutral @ Vin = 110Vac/60Hz；Output = Full Load



Site :
Condition: CISPR_B_QP LISN+PULSE 201805 NEUTRAL
No : G
EUT : RT7740
Power : 110V
Mode : 19V/45W 100% Load
Memo : RT7738GA

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1924	37.00	-16.93	53.93	26.82	10.17	0.01	Average	NEUTRAL
2	0.1924	49.50	-14.43	63.93	39.32	10.17	0.01	QP	NEUTRAL

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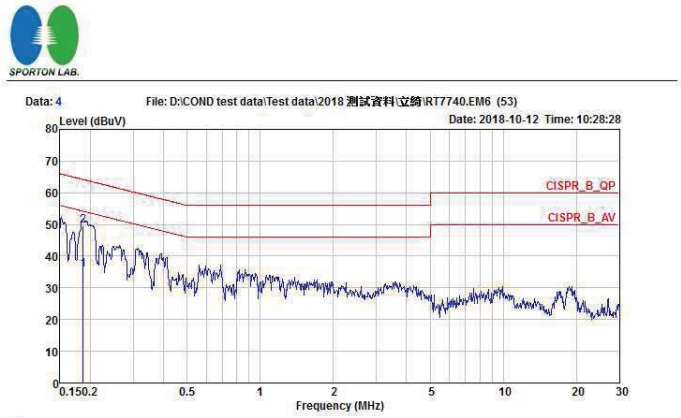
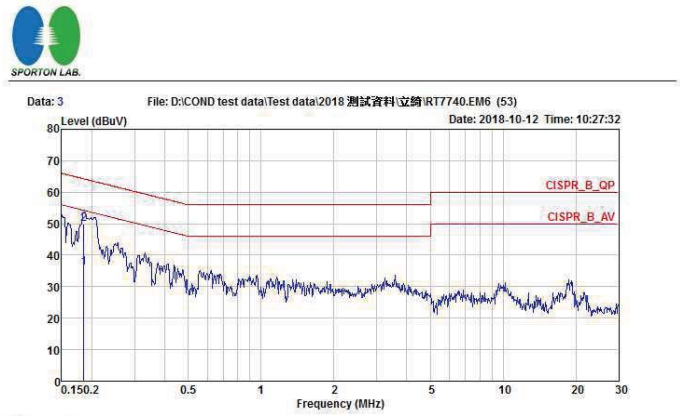
Conduction - Line @ Vin = 220Vac/50Hz；Output = Full Load



Site :
Condition: CISPR_B_QP LISN+PULSE 201805 LINE
No : G
EUT : RT7740
Power : 220V
Mode : 19V/45W 100% Load
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1864	35.85	-18.35	54.20	25.68	10.16	0.01	Average	LINE
2	0.1864	49.71	-14.49	64.20	39.54	10.16	0.01	QP	LINE

Conduction - Neutral @ Vin = 220Vac/50Hz；Output = Full Load



Site :
Condition: CISPR_B_QP LISN+PULSE 201805 NEUTRAL
No : G
EUT : RT7740
Power : 220V
Mode : 19V/45W 100% Load
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1854	36.11	-18.13	54.24	25.93	10.17	0.01	Average	NEUTRAL
2	0.1854	49.98	-14.26	64.24	39.80	10.17	0.01	QP	NEUTRAL

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5.5.2 Safety (ESD & Surge)

ESD Test:

Test Method	
Test Conditions	Applicable Standards: IEC61000-4-2

Test Result

IEC61000-4-2 ESD		
Testing Conditions		PSU Test Result
Contact Mode	Air Mode	
± 8KV	± 16KV	Pass
± 10KV	± 18KV	Pass
± 12KV	± 20KV	Pass

Surge Test:

Test Method	
Test Conditions	Applicable Standards: IEC61000-4-5

Test Result

IEC61000-4-5 Surge		
Testing Conditions		PSU Test Result
Line Coupling	Test Voltage	
L-FG	± 6kV	Pass
N-FG	± 6kV	Pass
LN-FG	± 6kV	Pass
L-N	± 6kV	Pass

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PRD001-14-1

6. Bill of Material

COMPONENT	SPECIFICATION	LOCATION	Q'TY
Resistor			
SMD Resistor	2.2MΩ±5% 1/4W 1206 RoHS	R1, R2	2
SMD Resistor	200kΩ±5% 1/4W 1206 RoHS	R3, R3A	2
SMD Resistor	0Ω±5% 1/4W 1206 RoHS	R4	1
SMD Resistor	100Ω±5% 1/4W 1206 RoHS	R8	1
SMD Resistor	10Ω±5% 1/4W 1206 RoHS	R8A	1
SMD Resistor	536Ω±1% 1/4W 0805 RoHS	R9	1
Dip Resistor	0.25Ω±1% 1W NKNP RoHS	R10	1
SMD Resistor	5.1Ω±1% 1/4W 1206 RoHS	R10A	1
SMD Resistor	2.2Ω±5% 1/4W 1206 RoHS	R11	1
SMD Resistor	47Ω±5% 1/4W 1206 RoHS	R12, R12A	2
SMD Resistor	1kΩ±5% 1/8W 0805 RoHS	R13	1
SMD Resistor	5.1kΩ±5% 1/8W 0805 RoHS	R14	1
SMD Resistor	51kΩ±5% 1/8W 0805 RoHS	R15	1
SMD Resistor	68kΩ±1% 1/8W 0805 RoHS	R16	1
SMD Resistor	10kΩ±1% 1/8W 0805 RoHS	R17	1
SMD Resistor	750kΩ±1% 1/8W 0805 RoHS	R17A	1
SMD Resistor	105kΩ±1% 1/8W 0805 RoHS	R20	1
SMD Resistor	22kΩ±1% 1/8W 0805 RoHS	R21	1
SMD Resistor	100kΩ±5% 1/8W 0805 RoHS	R22	1
SMD Resistor	0Ω±5% 1/8W 0805 RoHS	R24	1
NTC	SCK102R55 / ψ10	NTC1	1
Capacitor			
Electrolytic Capacitor	Rubycon BXW series: 100uF/400V±10% 105℃ ψ18*25mm P=7.5mm RoHS	C1	1
SMD Capacitor	102±10% 500V X7R 1206 RoHS	C2, C8	2
SMD Capacitor	102±10% 50V X7R 0805 RoHS	C4	1
SMD Capacitor	471±10% 50V X7R 0805 RoHS	C5	1
SMD Capacitor	104±10% 50V X7R 0805 RoHS	C6, C12, C13	2
Electrolytic Capacitor	CHI LI TEH GR series: 4.7uF/50V±20% 105℃ ψ5*11mm P=2mm RoHS	C7	1
Electrolytic Capacitor	Rubycon ZLH series: 470uF/25V±10% 105℃ ψ10*12.5 P=5mm RoHS	C9, C10	2
SMD Capacitor	103±10% 500V X7R 1206 RoHS	C16	1
X1 Capacitor	OKAYA 0.22uF/275V ±10% 14mm*8mm*13mm P=13mm RoHS	CX1	1
Y1 Capacitor	102±20% 250V ψ8 P=10mm RoHS	CY1	1
Inductor			
Line Filter	Size:12*6 max / ψ0.4*1_9Ts / 190uH / RoHS	LF1	1
Line Filter	UU10.5 / ψ0.45*1_52Ts / 9mH min / RoHS	LF2	1
Output Filter	Size:11*7 max / ψ6*1_8Ts / 350uH min / RoHS	L3	1
Transformer	RM-10 6Pin / Lm=950uH±5% / Lk=40uH max / Np: 0.35*2*52(4 Layer), Ns: 0.45*3*10(2 Layer/TEX), Na: 0.2*1*8(1 Layrer) / RoHS	T1	1
Semiconductor			
Bridge Rectifier	GBU4J 4A/600V VF=1V(max) RoHS	BD1	1
FAST Diode	FFM107 1A/1000V VF=1.3V SMA RoHS	D1	1
FAST Diode	SRGC10DH 1A/200V VF=1.05V Trr=150ns SMA(Halogen-free type) RoHS	D2	1
Schottky Diode	V40120C 40A/120V VF=0.43V(max) TO-220AB RoHS	D3	1
FAST Diode	1N4148 200mA/75V SOD-323 RoHS	D4	1
N-MOSFET	NDF10N60ZG 10A/600V 0.65Ω TO-220FP RoHS	Q1	1
IC	RT7739GGE	U1	1
Optocoupler	PC817(C-Type) Dip-4	U2	1
Shunt regulator	TL-431CSF SOT-23 3L RoHS	U3	1

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Others			
Fuse	CQMST T5A/250V 8.5x4mmx7.5mm P=5mm RoHS	F1	1
Varistor	TVR-D series: TVR14471 470V±10% ψ14 P=7.5mm S-Type RoHS	MOV1	1
PCB	90mm*40mm*22mm FR-4 1.6mm 2oz RoHS		1
HEAT SINK		HS1	1
HEAT SINK		HS2	1
Jumper	ψ0.6 L=29.5±0.5mm, H=3.5mm P=22.5mm TFL=21mm ㄇ字型	JP1	1
Jumper	ψ0.6 L=19.5±0.5mm, H=3.5mm P=12.5mm TFL=11mm ㄇ字型	JP2	1
Jumper	ψ0.6 L=22±0.5mm, H=3.5mm P=15mm TFL=13.5mm ㄇ字型	JP3	1
Jumper	ψ0.6 L=20.5±0.5mm, H=3.5mm P=13.5mm TFL=12mm ㄇ字型	JP4	1
Jumper	ψ0.6 L=14.5±0.5mm, H=3.5mm P=7.5mm TFL=6mm ㄇ字型	JP5	1
TFL Tube	ψ1.0 / C1"+": L=8mm±0.5mm / JP1: L=21mm±0.5mm / JP2: L=11mm±0.5mm / JP3: L=13.5mm±0.5m / JP4: L=12mm±0.5mm / JP5: L=6mm±0.5mm	C1+, JP1~JP5	1

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7. Transformer Specification

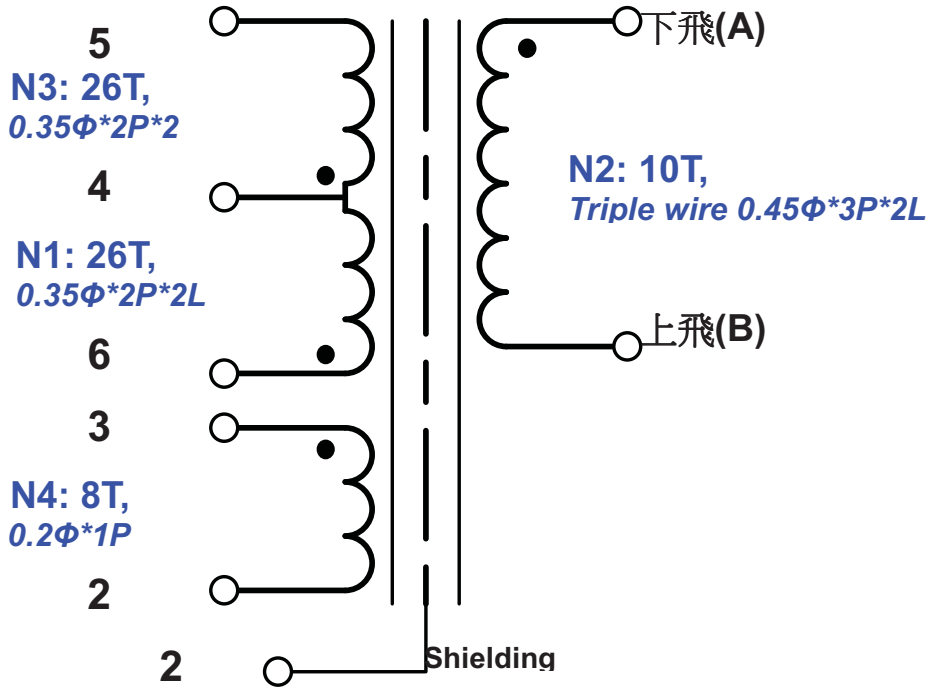
Core Size : RM-10 **Material :** 3C90

Bobbin/PINs : Vertical / 6 pins

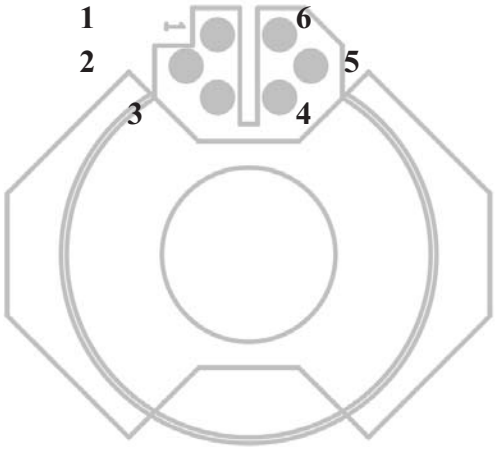
Primary Inductor (±5%) : 950μH

Leakage Inductor : 40μH(Maximum)

Electrical :



Top View



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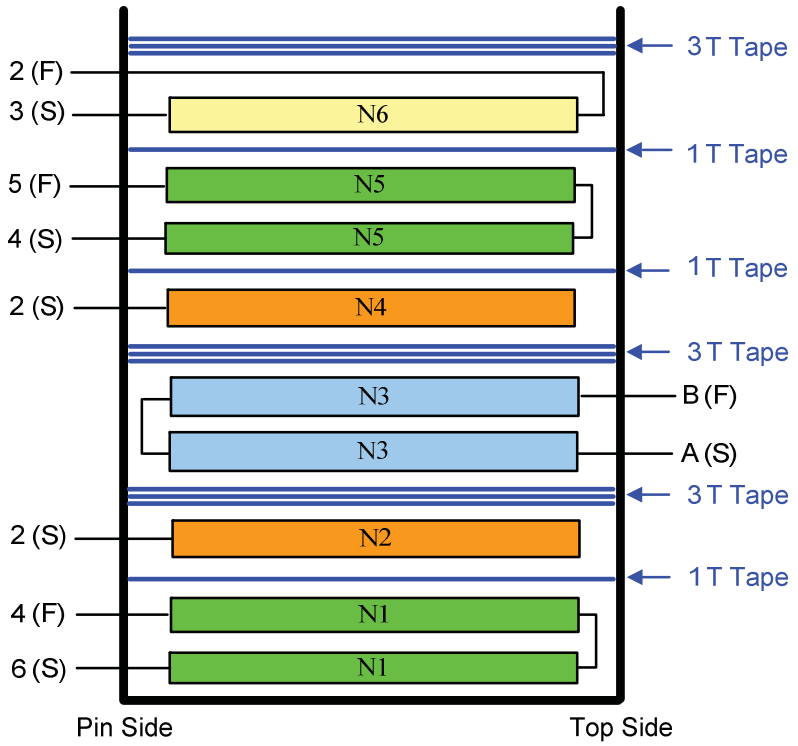
Winding	Terminal	Turns	Wire Gauge(mm)	Remark
Core RM-10				
N1	6 to 4	26	0.35Φ*2Wire*2Layer	
Tape * 1T				
N2	2	1.2	0.025t*8w*1Layer (Copper Shielding Open)	
Tape * 3T				
N3	A to B	10	0.45Φ*3Wire*2Layer	Triple wire
Tape * 3T				
N4	2	1.2	0.025t*8w*1Layer (Copper Shielding Open)	
Tape * 1T				
N5	4 to 5	26	0.35Φ*2Wire*2Layer	
Tape * 1T				
N6	3 to 2	8	0.2Φ* 1Wire*1layer	
Tape *3T				

Transformer Structure Diagram



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LF1 Specification

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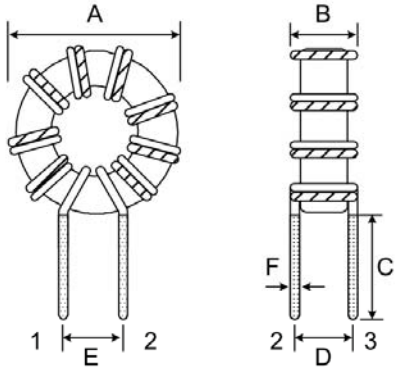
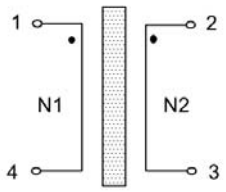
SPECIFICATION FOR APPROVAL

CUSTOMER	立 錡	DESCRIPTION	T9*5*3-C	CUSTOMER'S PART NO	T953-191Z

1. MECHANICAL ASSEMBLY



2. SCHEMATIC



A	12.0 MAX	m/m
B	6.0 MAX	m/m
C	10.0±1.5	m/m
D	4.0 ref	m/m
E	4.0 ref	m/m
F	Φ0.4	m/m
G		m/m
H		m/m
I		m/m
J		m/m
K		m/m
L		m/m

3. WINDING DATA :

WDG	WIRE / MATL	TURNS	ST	FIN	INDUCTANCE	DCR MAX	SLEEVE	REMARK
N1	Φ0.4 TEX-E	9 (內)	1	4	190.0uH min	30mΩ	NO	並繞
N2	Φ0.4 uew2	9 (內)	2	3	190.0uH min	30mΩ	NO	

- Test voltage : 500VDC,5mA 3 SEC. between Winding to Core .
- Insulation resistance : at 500VDC,more than 100MΩ.
- Temperature range : -25℃~80℃.
- Inductance measurement condition : 100KHz/1V (HP-4284A).

4. MATERIAL LIST:

ITEM	MATERIAL	VENDOR	NO	CLASS
CORE	A10,MA100,NC-10H N10,R10K	ACME,KAWATETSU,NICERA, ENCORE,VAKOS		
WIRE	UEW/U,UEW, UEW-4#,UEW-2	PACIFIC,TA WIN, JUNG SHING,FENG CHING	E201757,E317251, E174837,E172395	B
	TEX-E,TIW-M,TLW-B	FURUKAWA,COSMOLINK,DAH JIN	E206440,E213764, E236542	B

APPROVED	CHECKED	PREPARED	SAP NO.	DATE	REV	PAGE
工程部 29. JAN. 16 詹益銘	工程部 29. JAN. 16 羅月琴	工程部 29. JAN. 16 劉懿瑩	13070804-2	29-JAN-16	1.0	1/1

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LF2 Specification

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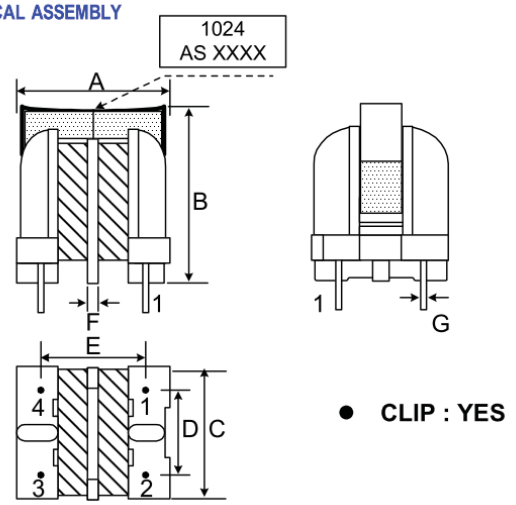
SPECIFICATION FOR APPROVAL

CUSTOMER	立 錡	DESCRIPTION	UU-10.5	CUSTOMER'S PART NO	1024

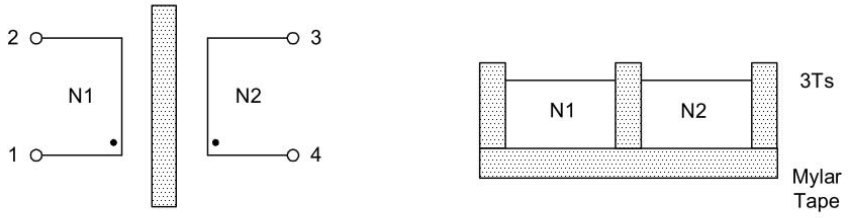
1. MECHANICAL ASSEMBLY



- CLIP : YES

A	19.0 MAX	m/m
B	22.0 MAX	m/m
C	17.0 MAX	m/m
D	10.0±0.5	m/m
E	13.0±0.5	m/m
F	1.2±0.5	m/m
G	Φ0.7±0.1	m/m
H		m/m
I		m/m
J		m/m
K		m/m
L		m/m

2. SCHEMATIC



NOTICE :

APPROVED	CHECKED	PREPARED	SAP NO.	DATE	REV	PAGE
工程部 29. JAN. 16 詹益銘	工程部 29. JAN. 16 羅月琴	工程部 29. JAN. 16 劉懿瑩	12102901-0	29-JAN-16	1.0	1/2

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L3 Specification

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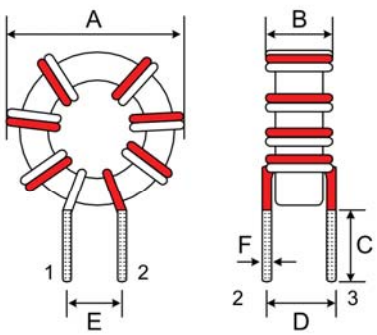
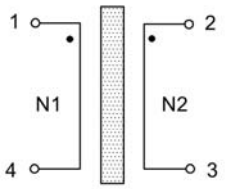
SPECIFICATION FOR APPROVAL

CUSTOMER	立 錡	DESCRIPTION	T10*5*5-C	CUSTOMER'S PART NO	T1055-351Z

1. MECHANICAL ASSEMBLY



2. SCHEMATIC



A	14.5 MAX	m/m
B	9.0 MAX	m/m
C	10.0±1.5	m/m
D	7.0 ref	m/m
E	5.0 ref	m/m
F	Φ0.6	m/m
G		m/m
H		m/m
I		m/m
J		m/m
K		m/m
L		m/m

3. WINDING DATA :

WDG	WIRE / MATL	TURNS	ST	FIN	INDUCTANCE	DCR MAX	SLEEVE	REMARK
N1	Φ0.6 UEW-NY	8 內	1	4	350.0uH min	11mΩ	NO	並繞
N2	Φ0.6 UEW-NY分色	8 內	2	3	350.0uH min	11mΩ	NO	

- Test voltage : 500VDC,5mA 3 SEC. between Winding to Core.
- Insulation resistance : at 500VDC,more than 100MΩ (between lines).
- Temperature range : -25℃~80℃.
- Inductance measurement condition : 10KHz/0.1V (HP-4284A).

4. MATERIAL LIST:

ITEM	MATERIAL	VENDOR	NO	CLASS
CORE	A121,R12K	ACME,VAKOS		
WIRE	UEWN/U,UEW-Y, UEY-2#,UEW-NY	PACIFIC,TA WIN, JUNG SHING,FENG CHING	E201757,E317251, E174837,E172395	B

APPROVED	CHECKED	PREPARED	SAP NO.	DATE	REV	PAGE
工程部 29. JAN. 16 詹益銘	工程部 29. JAN. 16 羅月琴	工程部 29. JAN. 16 劉懿瑩	16012903-1	29-JAN-16	1.0	1/1

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