RT7739GGE System Performance Test Report

Product P/N	*RT7739GGE*
Project Code + Version	TKV151B03
Date Code	
EVB Number	RT7739-45W-V0
Document Version	

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Reviewed by: _____

Approved by: _____

Date: 2015/10/02

Application Engineering Department
System Development Division

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Version	Description	Date
00	Initial	2015/10/02

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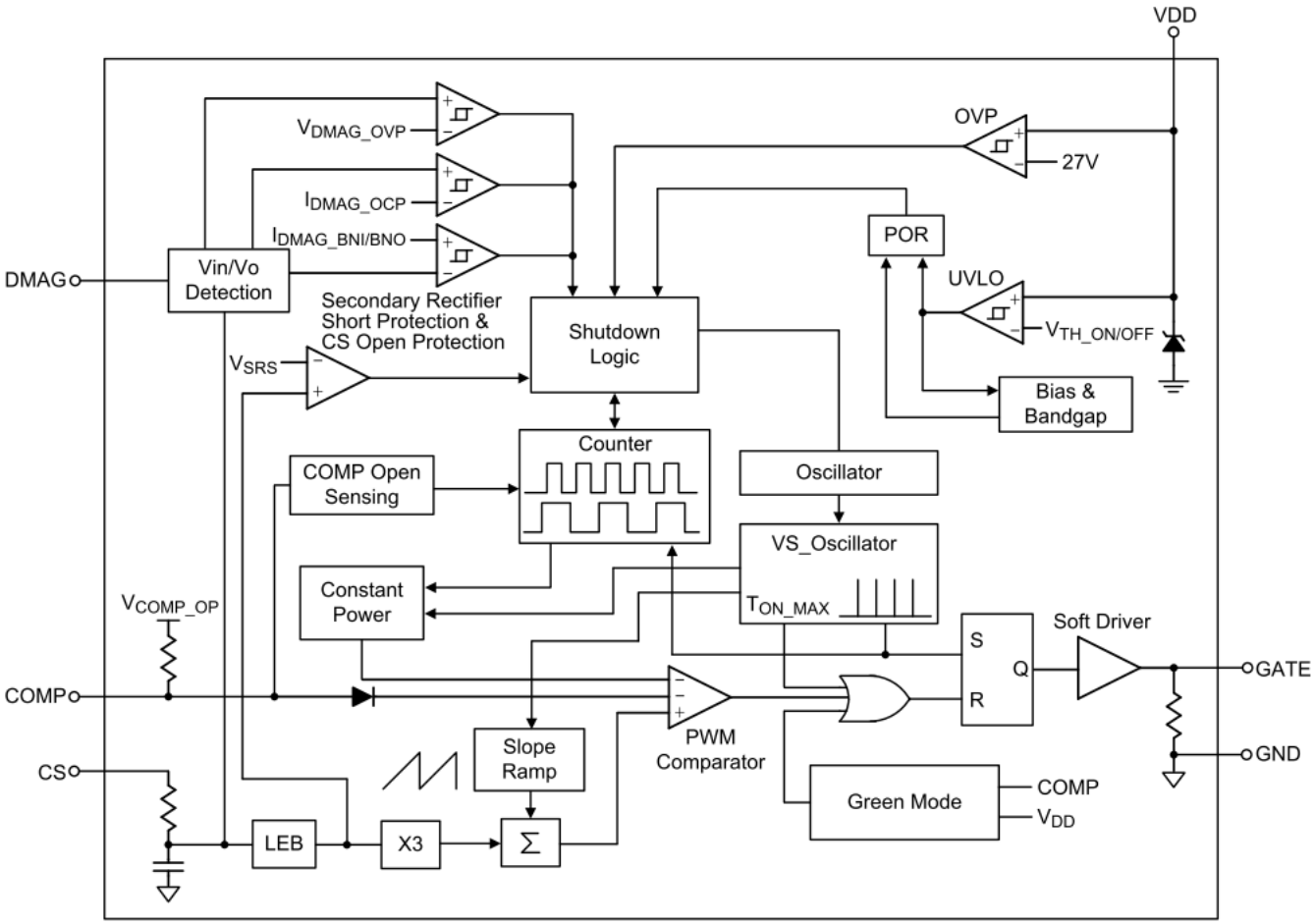
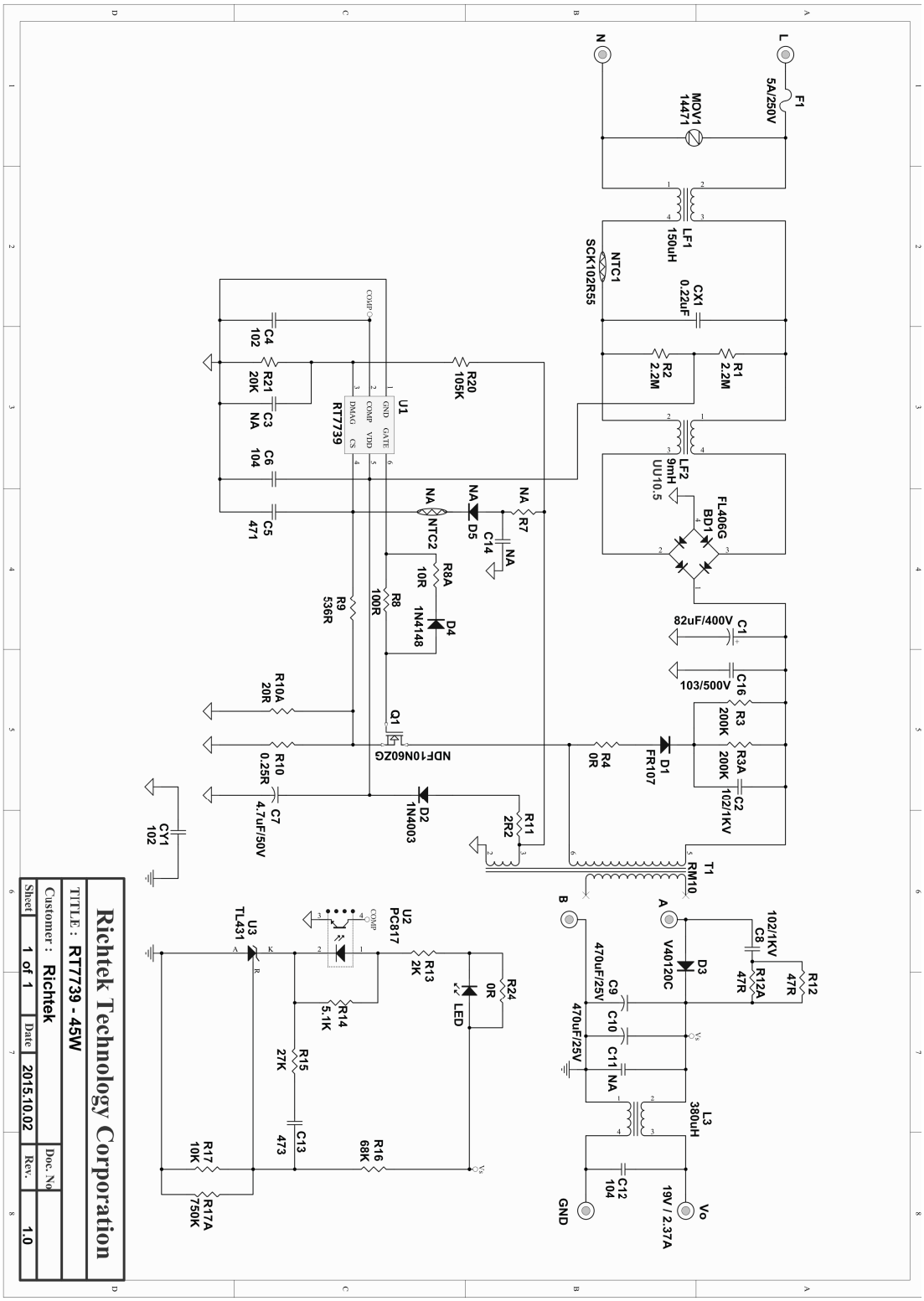
2. Test Facility

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

3. Function Block Diagram



4. Test Circuit



5. Electrical Characteristics Test Items

5.1 Input Characteristics

5.1.1 Efficiency

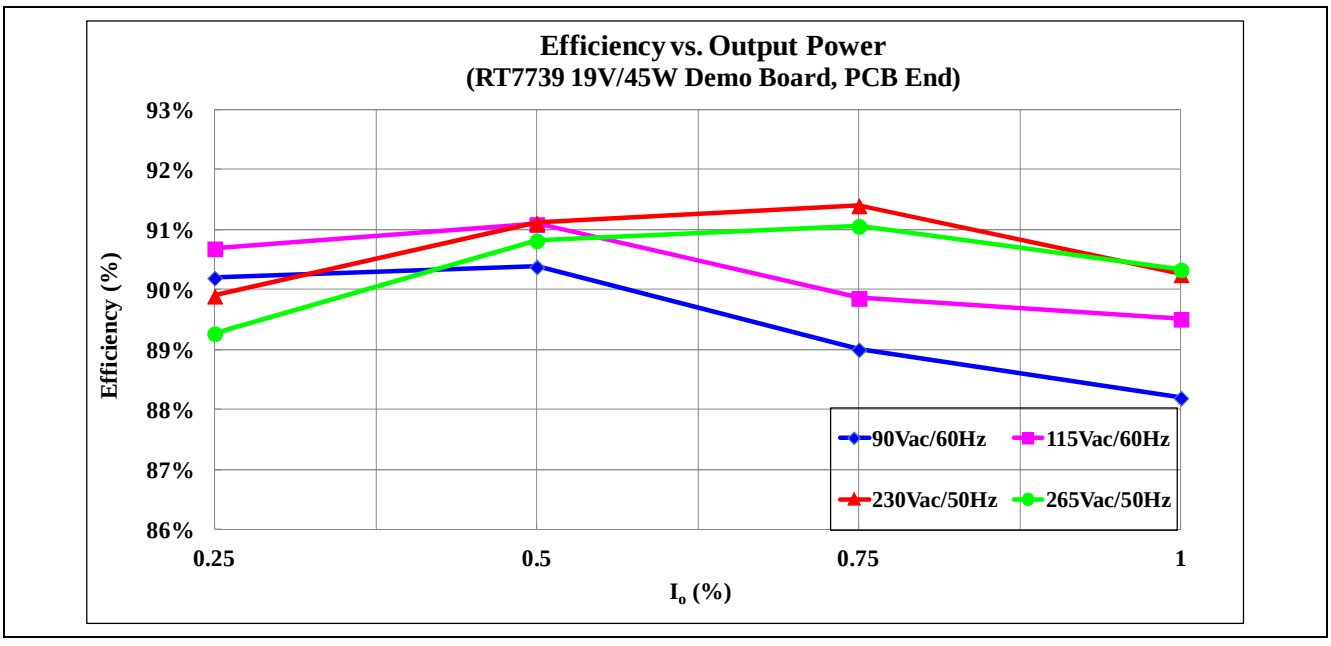
IC Version	TKV151B03
Test method	Efficiency at different load conditions (PS: PCB End)

Test Result

Input Voltage	Measured Efficiency η (%) / fs(kHz)				Average η (%)	DOE 6 > 87.73%	CoC Tier2 > 88.85%
	25%	50%	75%	100%			
90Vac / 60Hz	90.20 22.27	90.38 45.01	89.01 64.24	88.20 64.45	89.45	Pass	Pass
115Vac / 60Hz	90.69 22.28	91.09 40.83	89.86 61.50	89.51 64.54	90.29	Pass	Pass
230Vac / 50Hz	89.90 22.63	91.11 32.26	91.40 46.50	90.25 60.84	90.67	Pass	Pass
265Vac / 50Hz	89.27 22.64	90.82 33.07	91.06 47.20	90.34 61.01	90.37	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%)



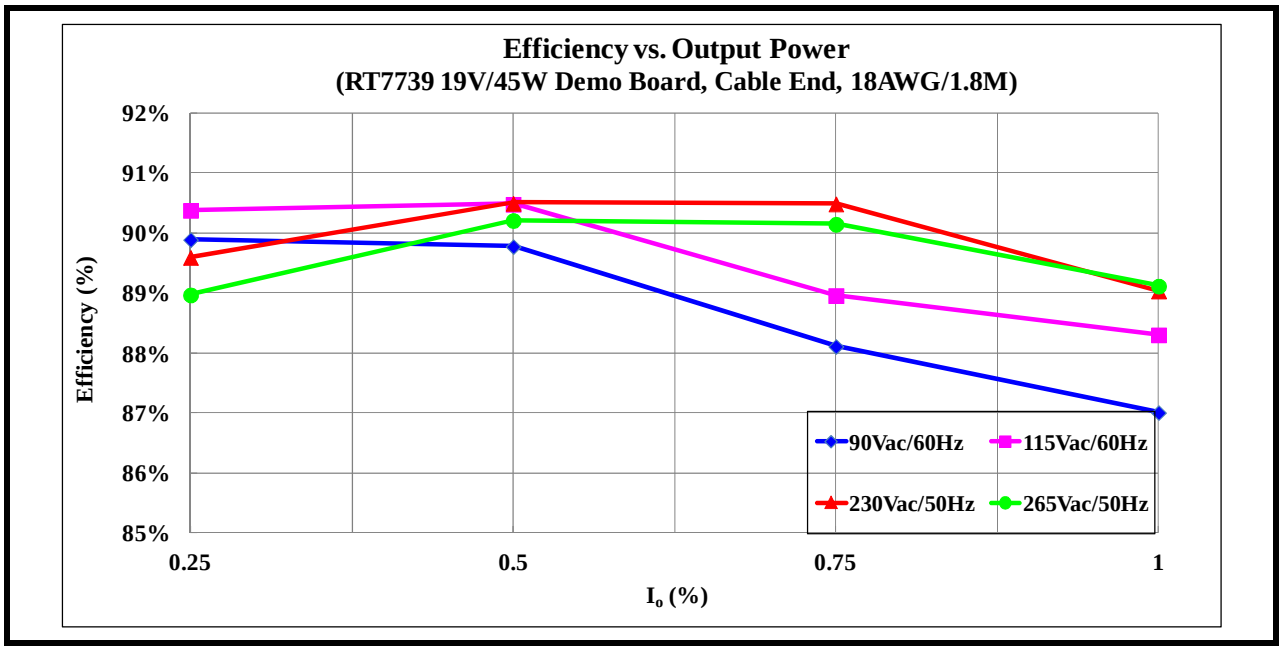
IC Version	TKV151B03
Test method	Efficiency at different load conditions (PS: with 1.8M / 18AWG Cable)

Test Result

Input Voltage	Measured Efficiency η (%) / fs(kHz)				Average η (%)	DOE 6 > 87.73%	CoC Tier2 > 88.85%
	25%	50%	75%	100%			
90Vac / 60Hz	89.90 22.27	89.78 45.01	88.12 64.24	87.01 64.45	88.70	Pass	Fail
115Vac / 60Hz	90.39 22.28	90.49 40.83	88.96 61.50	88.31 64.54	89.54	Pass	Pass
230Vac / 50Hz	89.60 22.63	90.51 32.26	90.49 46.50	89.04 60.84	89.91	Pass	Pass
265Vac / 50Hz	88.98 22.64	90.22 33.07	90.15 47.20	89.12 61.01	89.62	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%)**



5.1.2 Efficiency at 10% load of full rated output current

IC Version	TKV151B03
Test method	With 1.8M / 18AWG Cable

Test Result

Input Voltage	Iout (A)	Measured Eff. (%) / *fs* (kHz)	Specification	Test result
90Vac / 60Hz	0.237 (0.237)	88.31 / 22.28	> 77.73%	Pass
115Vac / 60Hz		88.18 / 22.27		Pass
230Vac / 50Hz		84.92 / 22.64		Pass
265Vac / 50Hz		83.39 / 22.64		Pass

Note 1: CoC regulation limit：$\eta \geqq 0.071*\ln(Pout)-0.0014*Pout+0.57$ (45W spec. > 77.73%)

5.1.3 Input power under no load & Light load

IC Version	TKV151B03
Test method	No Load

Test Result

Input Voltage	Input wattage (mW)	Specification	Test result
90Vac / 60Hz	28.78	< 75mW	Pass
115Vac / 60Hz	32.29		Pass
230Vac / 50Hz	57.66		Pass
265Vac / 50Hz	71.80		Pass

EPA 4.0 Regulation Limit

IC Version	TKV151B03
Test method	With 1.8M / 18AWG Cable

Output Wattage (W)	Input Wattage (W)		Specification	Test Result
	115V	230V		
0.25W (0.260)	**0.330**	**0.386**	< 0.5W (η >50%)	**Pass**
0.5W (0.524)	**0.633**	**0.701**	< 0.714W (η >70%)	**Pass**
1W (1.023)	**1.202**	**1.302**	< 1.428W (η >70%)	**Pass**
1.15W (1.169)	**1.367**	**1.469**	< 1.642W (η >70%)	**Pass**
1.5W (1.521)	**1.763**	**1.877**	< 2.142W (η >70%)	**Pass**
1.7W (1.727)	**1.991**	**2.115**	< 2.428W (η >70%)	**Pass**
2W (2.013)	**2.319**	**2.451**	< 2.857W (η >70%)	**Pass**

5.1.4 Standby power test

IC Version	TKV151B03
Test method	With 1.8M / 18AWG Cable

Input Voltage	Input wattage (W)	Pout	Specification	Test result
90Vac / 60Hz	**0.626**	0.5W (0.524W)	< 1W	**Pass**
115Vac / 60Hz	**0.633**			**Pass**
230Vac / 50Hz	**0.701**			**Pass**
265Vac / 50Hz	**0.739**			**Pass**

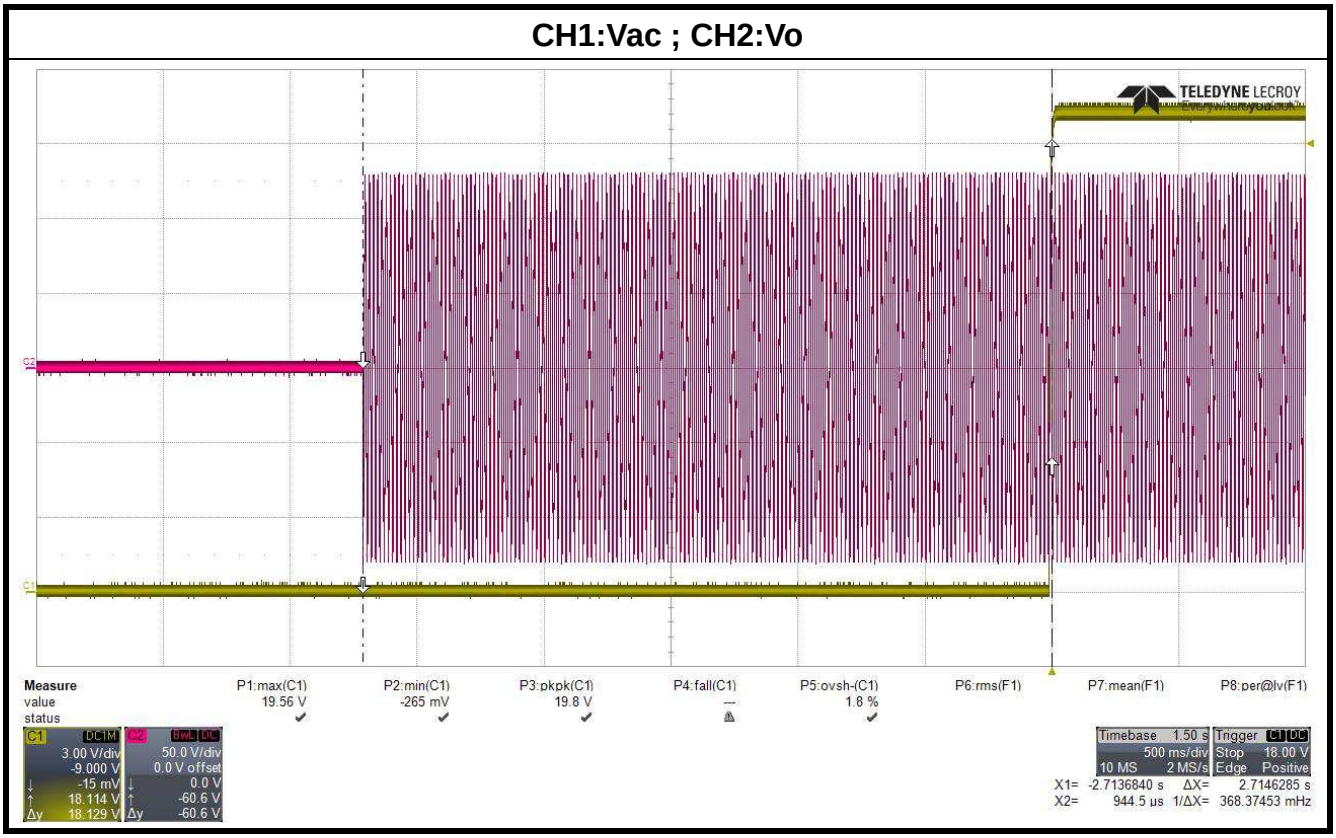
5.1.5 Start up time

IC Version	TKV151B03
Test method	With 1.8M / 18AWG Cable

Test Result

Input Voltage	Start up time (sec.)	Specification	Test result
90Vac / 60Hz	2.7146	< 3 sec.	Pass

CH1:Vac ; CH2:Vo



Note: Output power at full load.

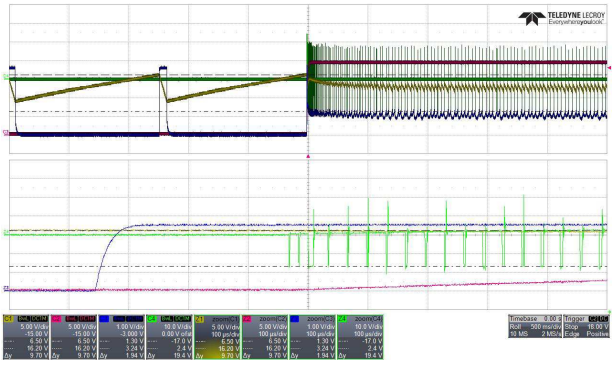
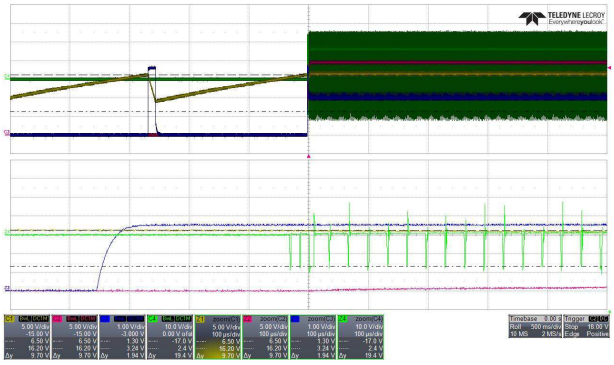
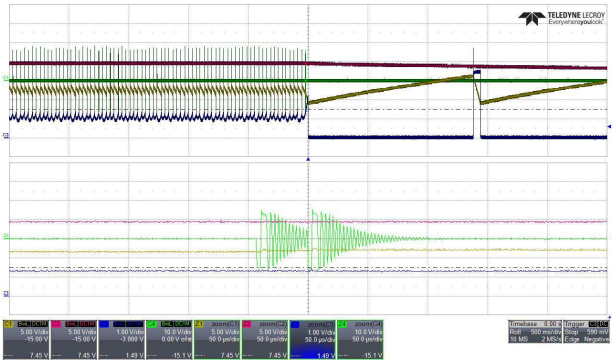
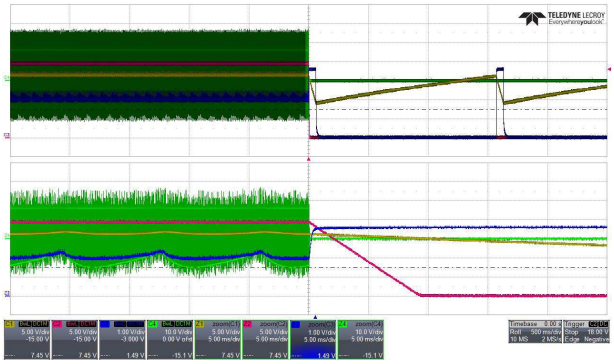
5.1.6 Brown-In and Brown-Out

IC Version	TKV151B03
Test method	

Input Voltage	Input wattage (W)
90Vac / 60Hz	**52.51**
85Vac / 60Hz	**52.79**
80Vac / 60Hz	**53.17**
75Vac / 60Hz	**53.88**
70Vac / 60Hz	**X**

BNI/BNO : 78.2Vac / 70.6Vac (No Load)

BNI/BNO : 78.2Vac / 72.1Vac (Full Load)

Brown-In , No Load	Brown-In , Full Load
	
Brown-Out , No Load	**Brown-Out , Full Load**
	

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

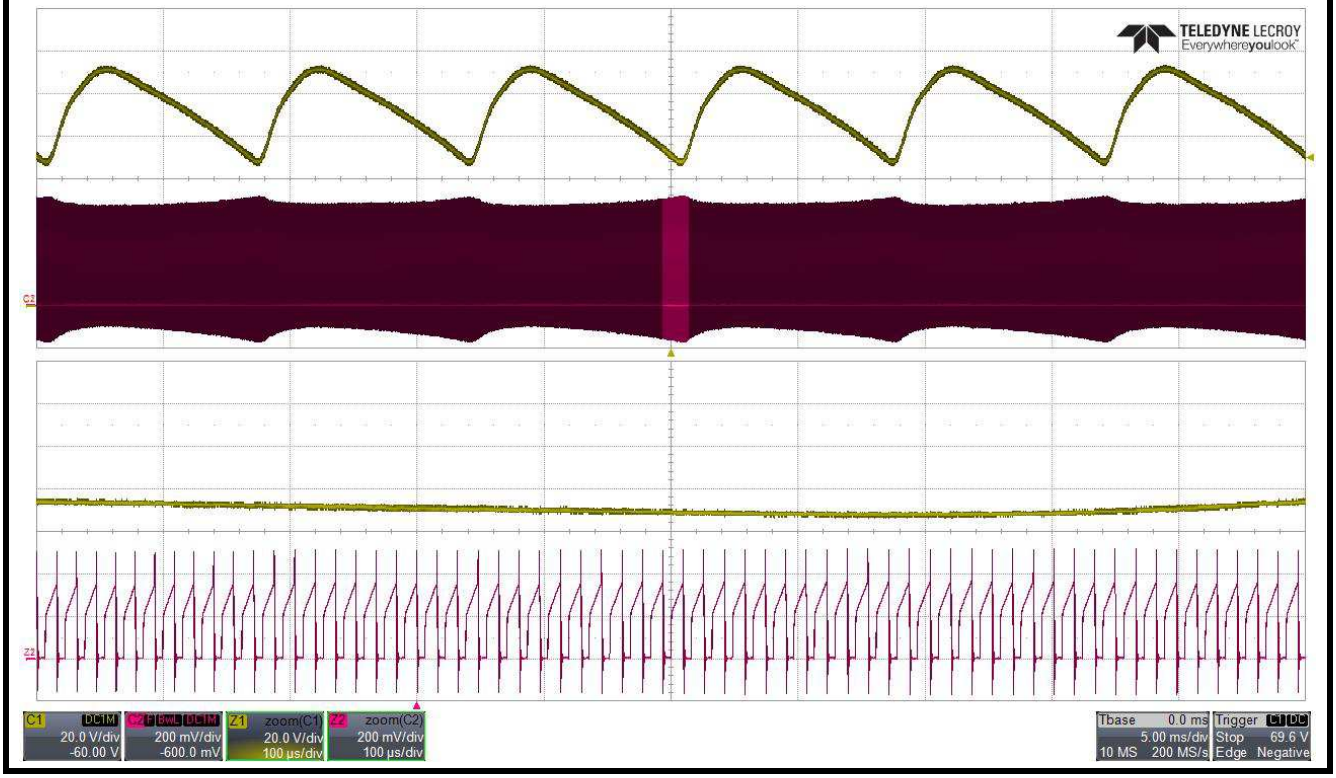
5.1.7 Slope compensation and sub-harmonic

IC Version	TKV151B03
Test method	

Test Result

Input Voltage	Output load (A)	Test result
80Vac / 60Hz	**Full Load**	**Pass**

CH1:V_{bulk} ; CH2:V_{cs}



5.1.8 Hold up time

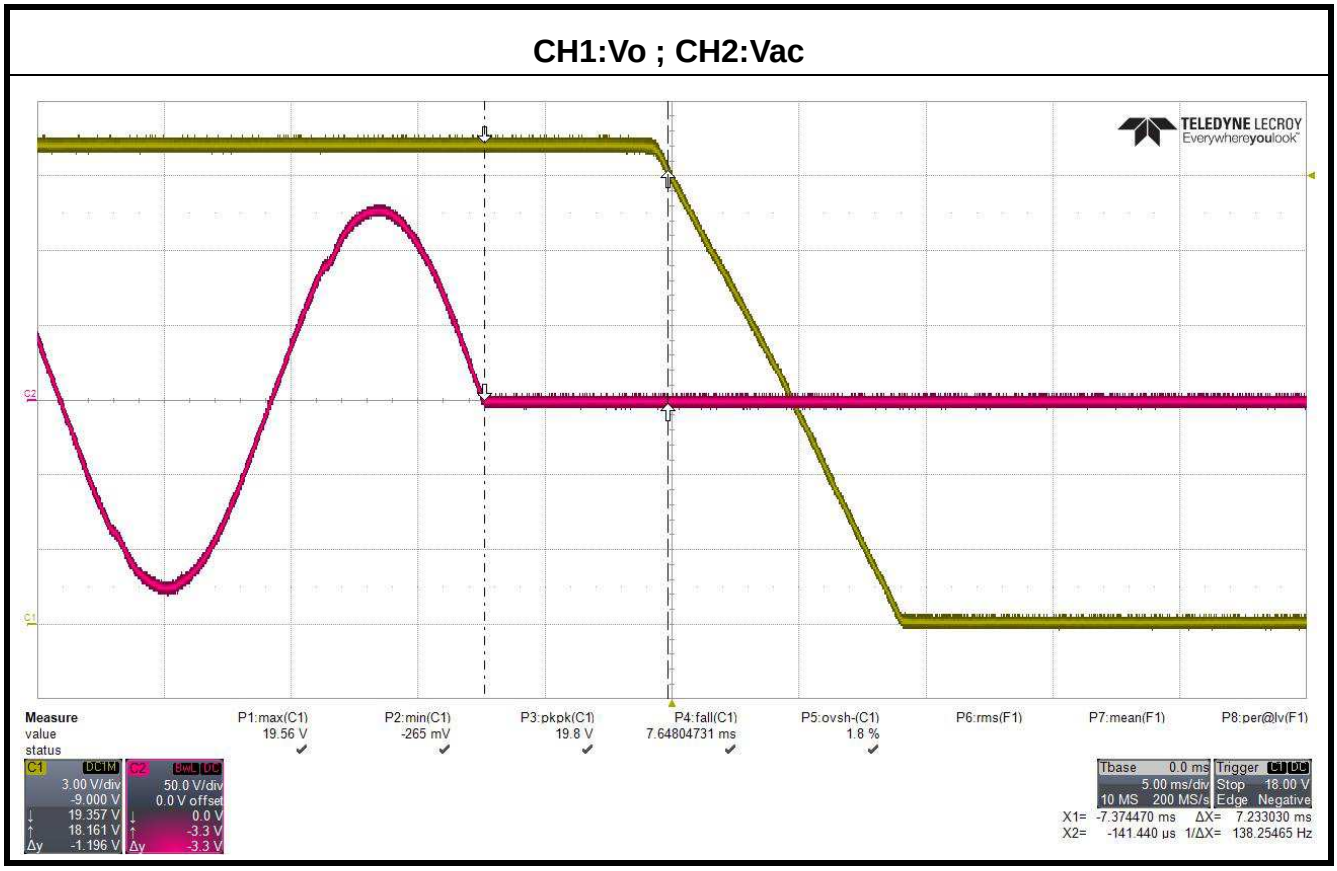
IC Version	TKV151B03
Test method	With 1.8M / 18AWG Cable

Test Result

Input Voltage	Hold up time (ms)	Specification	Test result
90Vac / 60Hz	**7.233**	**> 5ms**	**Pass**

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

CH1:Vo ; CH2:Vac



5.2 Output characteristics

5.2.1 Line regulation and load regulation

IC Version	TKV151B03
Test method	With 1.8M / 18AWG Cable

Test Result

Input Voltage	Measured (V)			Load Regulation Specification	Result
	Output Full Load	Output Mid Load	Output No Load		
90Vac / 60Hz	19.253	19.422	19.585	Vout ± 5 %	Pass
115Vac / 60Hz	19.253	19.422	19.585		Pass
132Vac / 60Hz	19.253	19.422	19.585		Pass
180Vac / 50Hz	19.253	19.421	19.585		Pass
230Vac / 50Hz	19.253	19.420	19.585		Pass
265Vac / 50Hz	19.253	19.420	19.585		Pass
Line Regulation Specification	Vout ± 1 %				
Result	Pass	Pass	Pass		

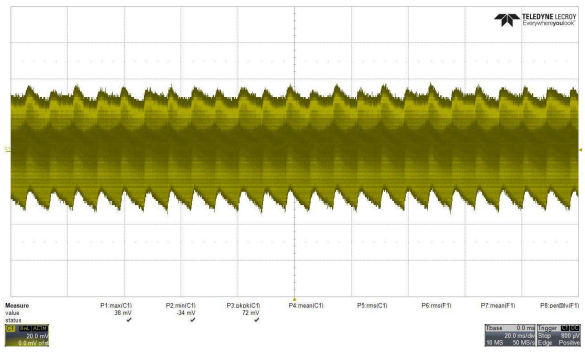
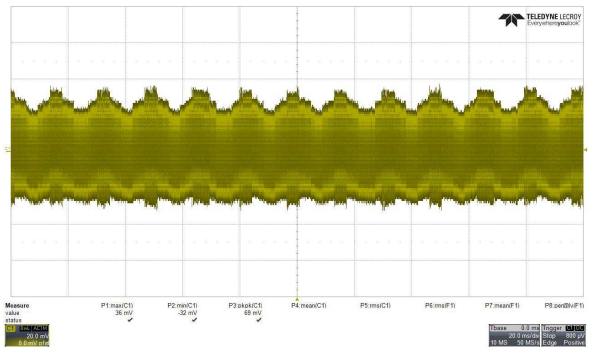
5.2.2 Output ripple & noise

IC Version	TKV151B03
Test method	With 1.8M / 18AWG Cable

Test Result

Input Voltage	Output Full load (A)	Measured (mVp-p)	Specification	Test result
90Vac / 60Hz	**2.37**	**72**	< 190mV	**Pass**
265Vac / 50Hz	**2.37**	**69**		**Pass**

CH1 : Vo_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.

5.2.3 Overshoot and rising time at start up

IC Version	TKV151B03
Test method	With 1.8M / 18AWG Cable

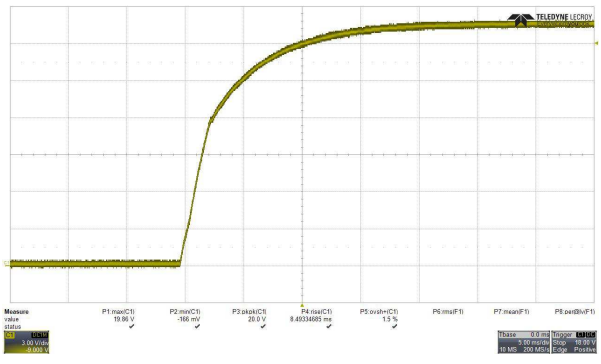
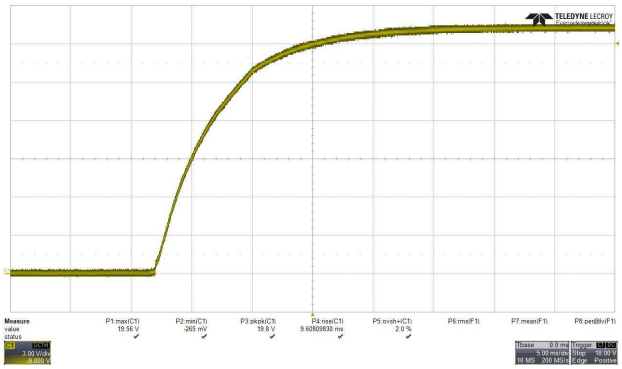
Test Result

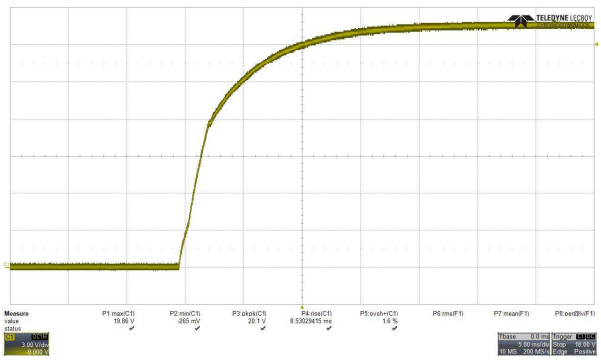
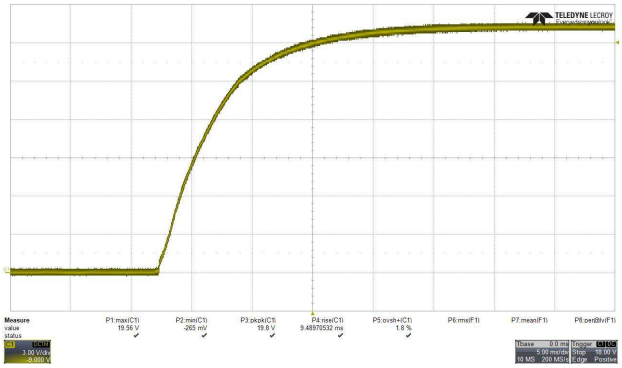
Output rise time test result

Input Voltage	Measured (ms)		Specification (10% ~ 90% Vout)	Test result
	No Load	Full Load		
90Vac / 60Hz	**8.493**	**9.608**	< 50ms	**Pass**
265Vac / 50Hz	**8.530**	**9.489**	< 50ms	**Pass**

Output overshoot test result

Input Voltage	Measured (%)		Specification	Test result
	No Load	Full Load		
90Vac / 60Hz	**1.5**	**2.0**	≤ 8% of Vo	**Pass**
265Vac / 50Hz	**1.6**	**1.8**	≤ 8% of Vo	**Pass**

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

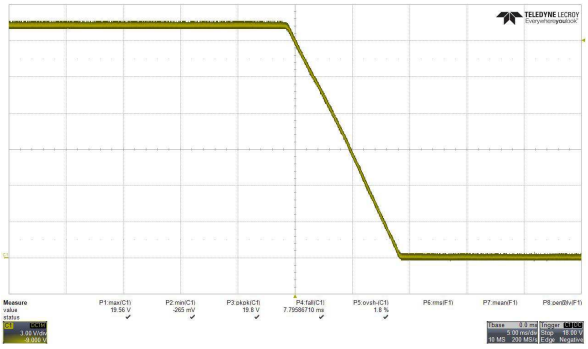
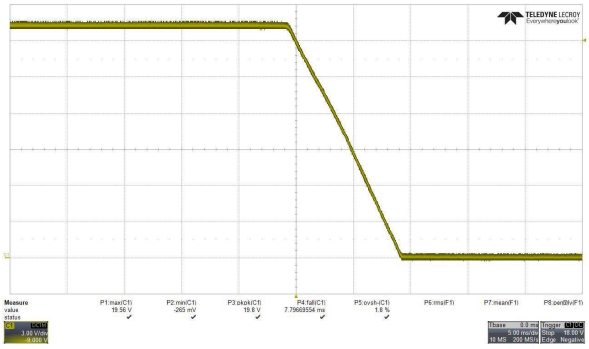
Vin = 265Vac/50Hz ; CH1:Vo @No Load	Vin = 265Vac/50Hz ; CH1:Vo @Full Load
	

5.2.4 Undershoot and falling time at power off

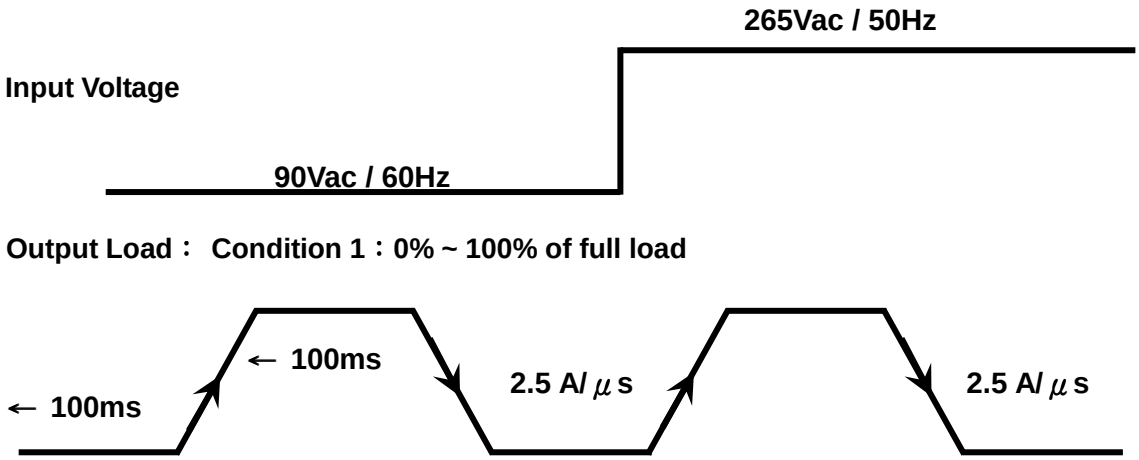
IC Version	TKV151B03
Test method	With 1.8M / 18AWG Cable

Output falling time test result

Input Voltage	Measured (ms)	Specification (90% ~ 10% Vout)	Test result
	Full Load		
90Vac / 60Hz	**7.796**	< 50ms	**Pass**
265Vac / 50Hz	**7.797**	< 50ms	**Pass**

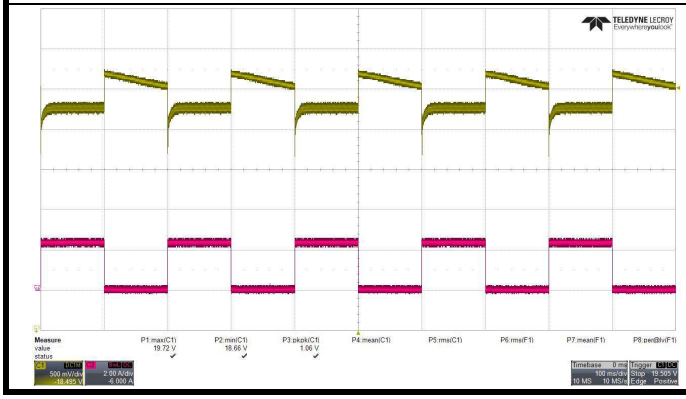
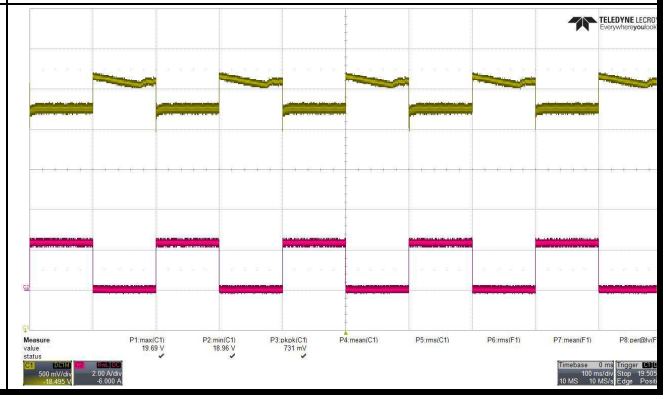
Vin = 90Vac / 60Hz ; CH1:Vo @Full Load	Vin = 265Vac / 50Hz ; CH1:Vo @Full Load
	

5.2.5 Load transient and cycle test

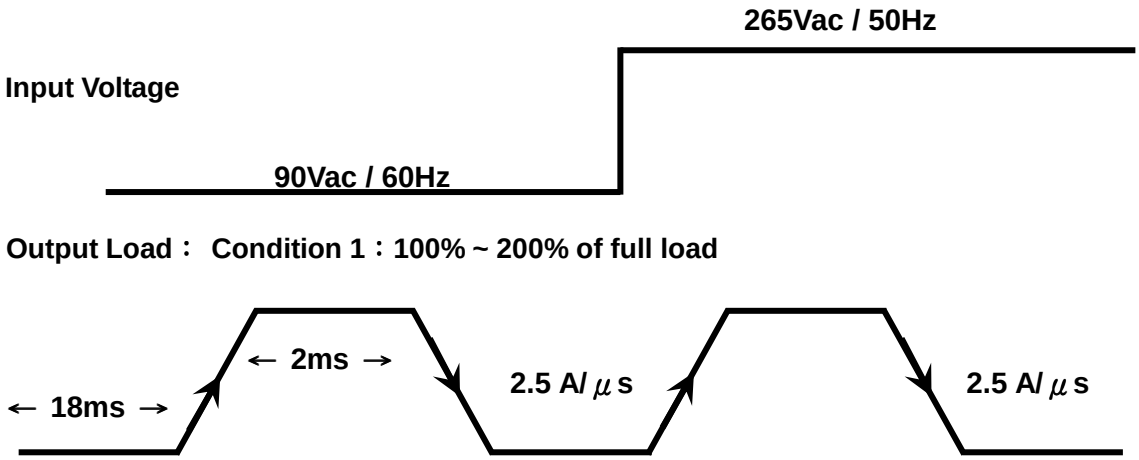
IC Version	TKV151B03
Test method	With 1.8M / 18AWG Cable
Definition	

Test Result

Input Voltage	Measured Vo (V)		Specification	Test result
	0% -- 100% load	100% -- 0% load		
90Vac / 60Hz	18.66	19.72	Vout ± 5 %	Pass
265Vac / 50Hz	18.96	19.69	Vout ± 5 %	Pass

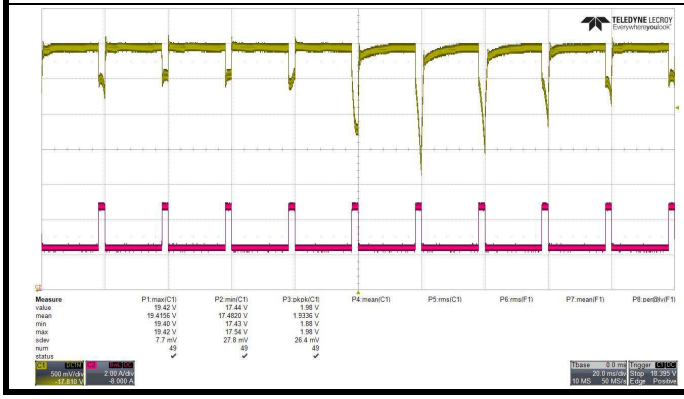
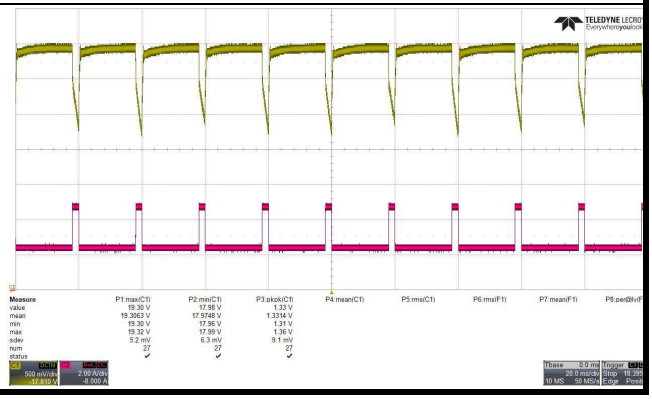
Vin = 90Vac / 60Hz ; CH1 : Vo ; CH2 : Io ; 0% --- 100% Load	Vin = 265Vac / 50Hz ; CH1 : Vo ; CH2 : Io ; 0% --- 100% Load
	

5.2.6 Peak Load transient and cycle test

IC Version	TKV151B03
Test method	With 1.8M / 18AWG Cable
Definition	

Test Result

Input Voltage	Measured Vo (V)		Specification	Test result
	100% -- 200% load	200% -- 100% load		
90Vac / 60Hz	17.43	19.40	Vo_min > 17V	Pass
265Vac / 50Hz	17.97	19.31	Vo_min > 17V	Pass

Vin = 90Vac / 47Hz ; CH1 : Vo ; CH2 : Io ; 100% --- 200% Load	Vin = 265Vac / 50Hz ; CH1 : Vo ; CH2 : Io ; 100% --- 200% Load
	

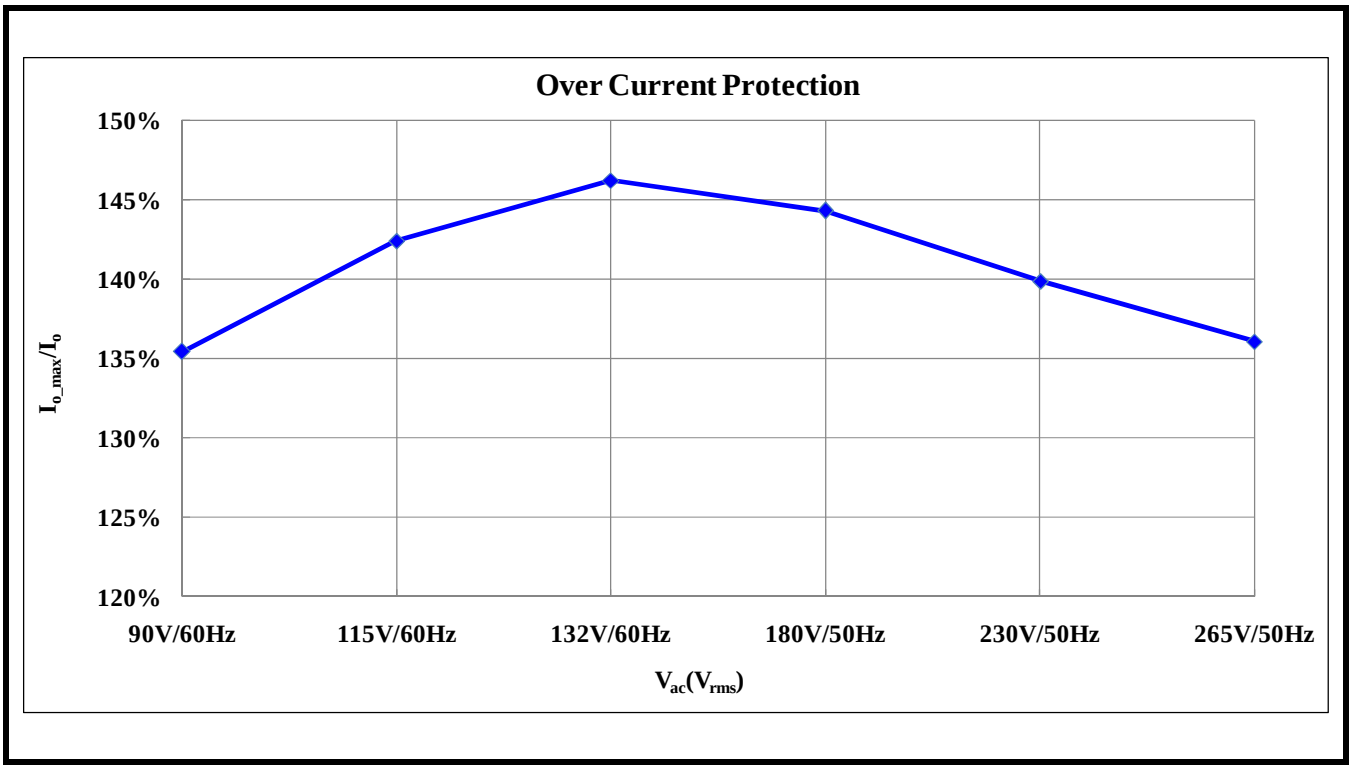
5.3 Protections

5.3.1 OCP and recovery

IC Version	TKV151B03
Test method	
Test Condition	Rf=536Ω，Cf=470pF，Rcs=0.25Ω//20Ω

Test Result

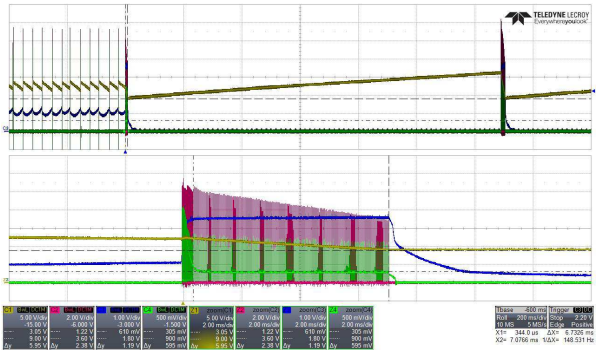
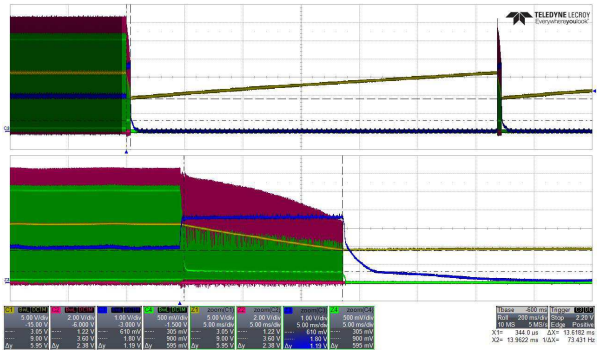
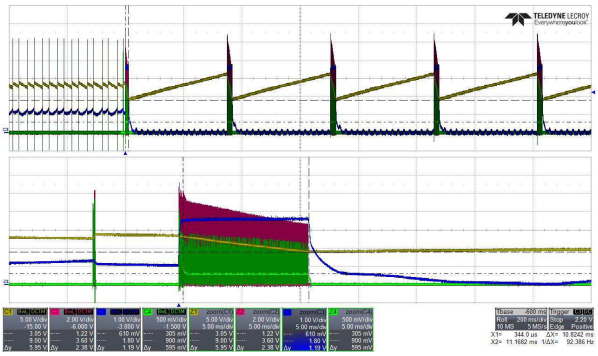
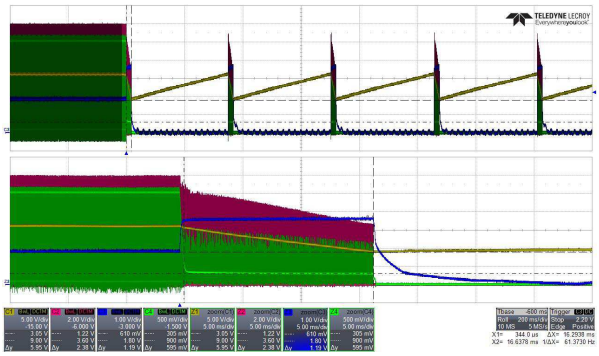
Input Voltage	Output Current (A)	Io_max / Io (%)	Test result	Specification
90Vac / 60Hz	3.210	135.44	Pass	120% ~ 150% of the full load
115Vac / 60Hz	3.375	142.41	Pass	
132Vac / 60Hz	3.465	146.20	Pass	
180Vac / 50Hz	3.420	144.30	Pass	
230Vac / 50Hz	3.315	139.87	Pass	
265Vac / 50Hz	3.225	136.07	Pass	
△	0.255	10.76		



5.3.2 SC and recovery

IC Version	TKV151B03
Test method	
Test Condition	

Input Voltage	Output Load	Measured (mW)	Specification	Test Result
90Vac / 60Hz	0A	151.9 (UVLO)	Auto Recovery	Pass
	2.37A	156.5 (UVLO)		Pass
265Vac / 50Hz	0A	736.6 (UVLO)		Pass
	2.37A	749.0 (UVLO)		Pass

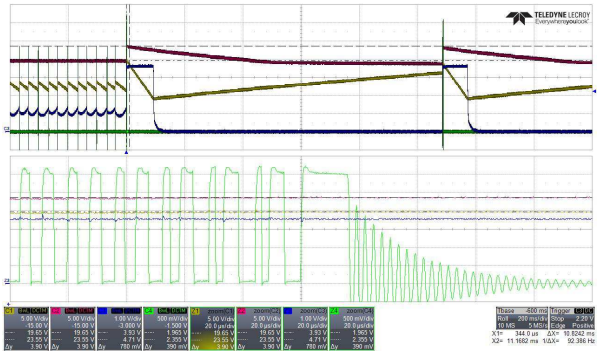
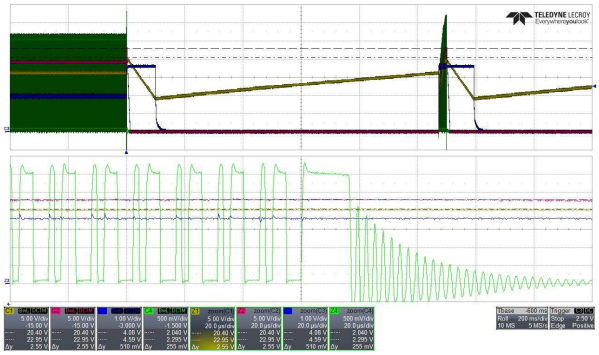
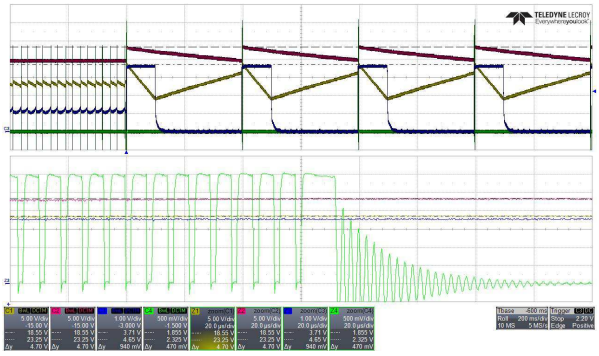
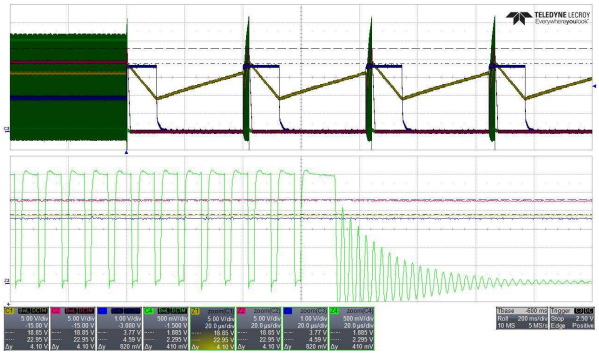
Vin = 90Vac / 60Hz , No Load	Vin = 90Vac / 60Hz , Full Load
	
Vin = 265Vac / 50Hz , No Load	**Vin = 265Vac / 50Hz , Full Load**
	

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

5.3.3 Photo-coupler short (Vout OVP)

IC Version	TKV151B03
Test method	Measured with 18AWG/1.8M cable
Test Condition	

Input Voltage	Output Load	Output Voltage (V)	Measured (W)	Specification
90Vac / 60Hz	0A	23.55	0.113	Auto Recovery (Vout OVP)
	2.37A	22.95	1.725	
265Vac / 50Hz	0A	23.25	0.309	
	2.37A	22.95	3.118	

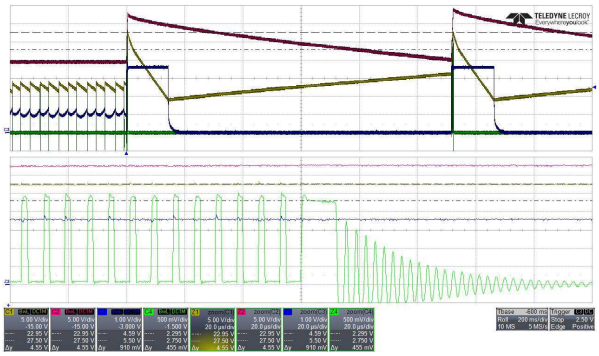
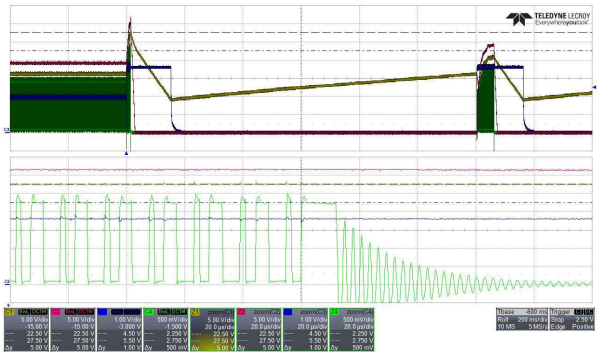
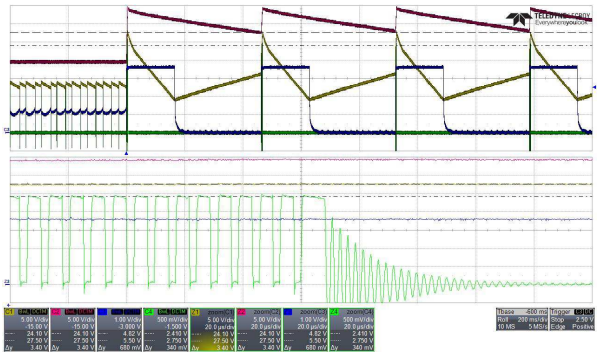
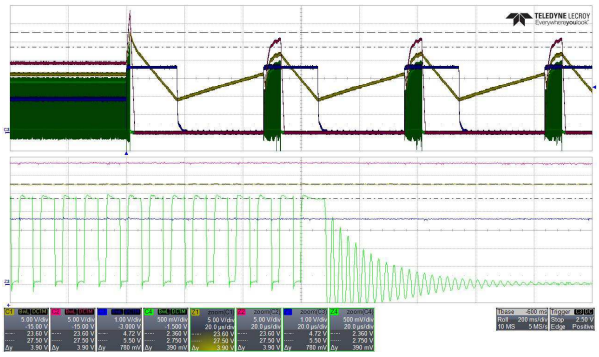
Vin = 90Vac / 60Hz , No Load	Vin = 90Vac / 60Hz , Full Load
	
Vin = 265Vac / 50Hz , No Load	**Vin = 265Vac / 50Hz , Full Load**
	

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

5.3.4 Photo-coupler short (VDD OVP)

IC Version	TKV151B03
Test method	Measured with 18AWG/1.8M cable
Test Condition	R_{21}=10k

Input Voltage	Output Load	VDD Voltage (V)	Measured (W)	Specification
90Vac / 60Hz	0A	27.50	0.431	Auto Recovery (VDD OVP)
	2.37A	27.50	3.451	
265Vac / 50Hz	0A	27.50	0.597	
	2.37A	27.50	8.118	

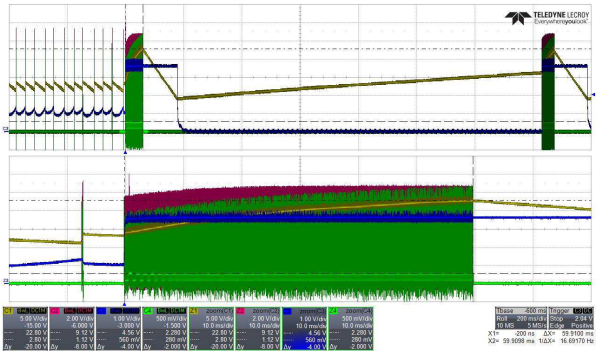
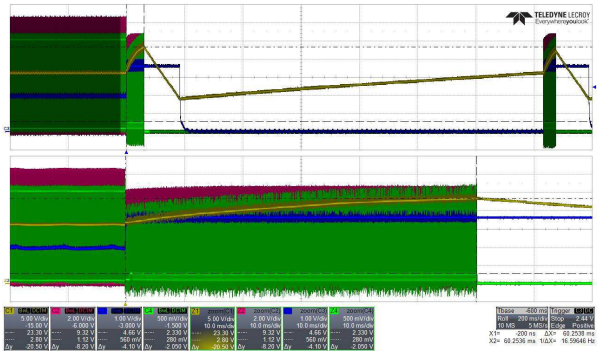
Vin = 90Vac / 60Hz , No Load	Vin = 90Vac / 60Hz , Full Load
	
Vin = 265Vac / 50Hz , No Load	**Vin = 265Vac / 50Hz , Full Load**
	

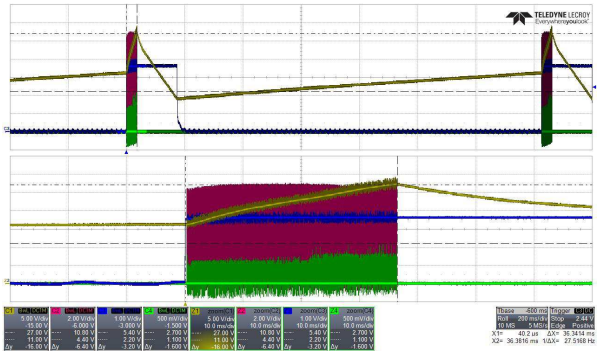
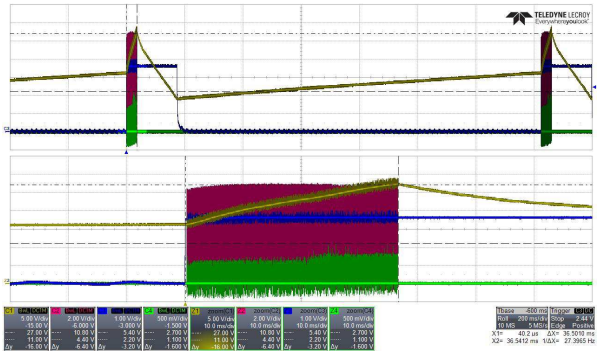
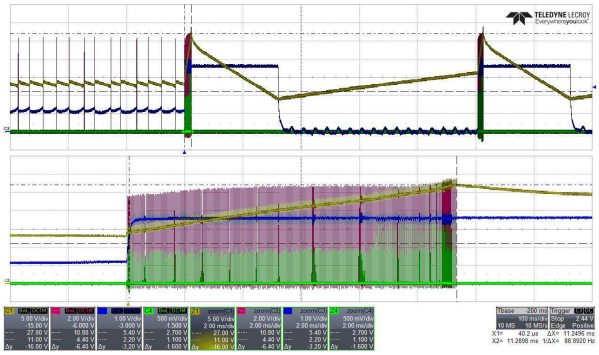
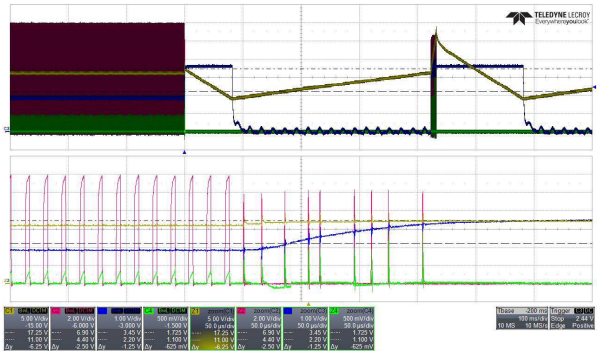
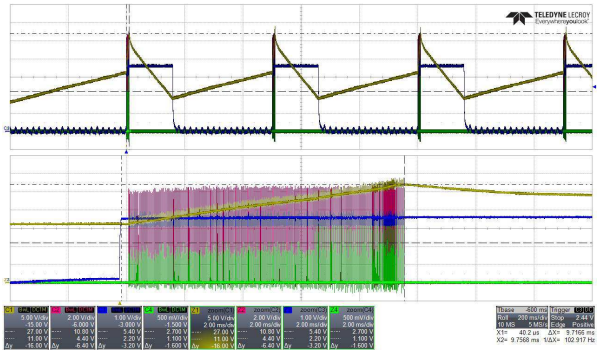
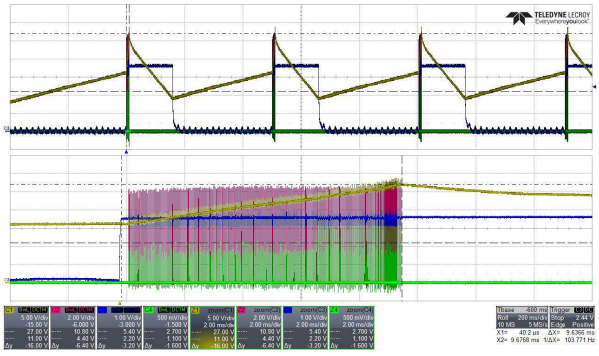
Note: CH1:V_{DD}, CH2:V_O CH3:V_{COMP}, CH4:V_{DMAG} waveforms must be taken simultaneously.

5.3.5 Output diode short at 90Vac and 265Vac

IC Version	TKV151B03
Test method	
Test condition	

Input Voltage	Output Load	Conduction	Specification
90Vac / 60Hz	0A Turn On Short	DMAG UVP	Auto Recovery
	Full Load Turn On Short	DMAG UVP	
	0A Short Turn On	VDD OVP	
	Full Load Short Turn On	VDD OVP	
265Vac / 50Hz	0A Turn On Short	VDD OVP	
	Full Load Turn On Short	SRSP (OC1.1)	
	0A Short Turn On	VDD OVP	
	Full Load Short Turn On	VDD OVP	

Vin = 90Vac / 60Hz , No Load (Turn On Short)	Vin = 90Vac / 60Hz , Full Load (Turn On Short)
	

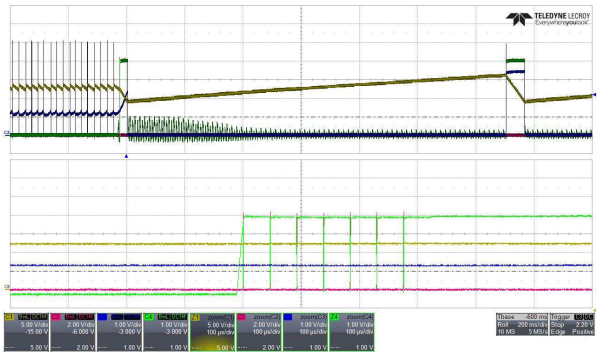
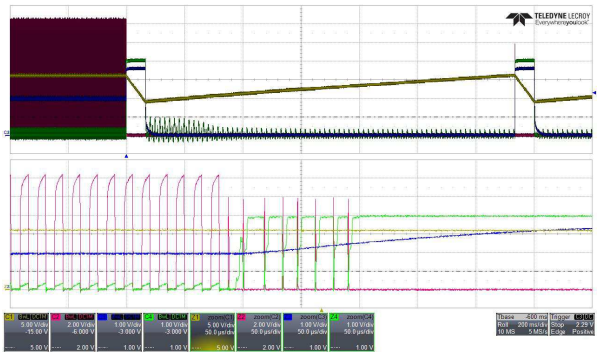
Vin = 90Vac / 60Hz , No Load (Short Turn On)	Vin = 90Vac / 60Hz , Full Load (Short Turn On)
	
Vin = 265Vac / 50Hz , No Load (Turn On Short)	**Vin = 265Vac / 50Hz , Full Load (Turn On Short)**
	
Vin = 265Vac / 50Hz , No Load (Short Turn On)	**Vin = 265Vac / 50Hz , Full Load (Short Turn On)**
	

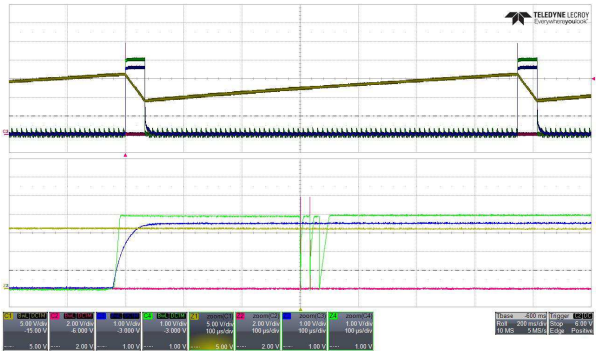
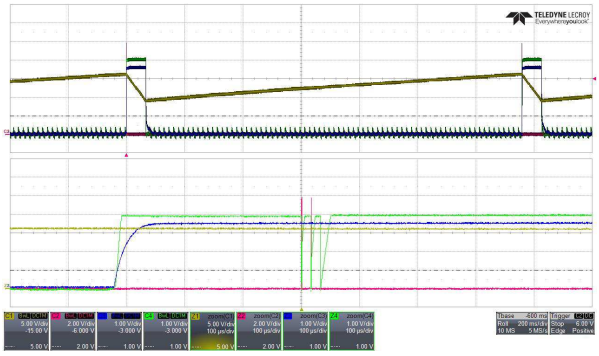
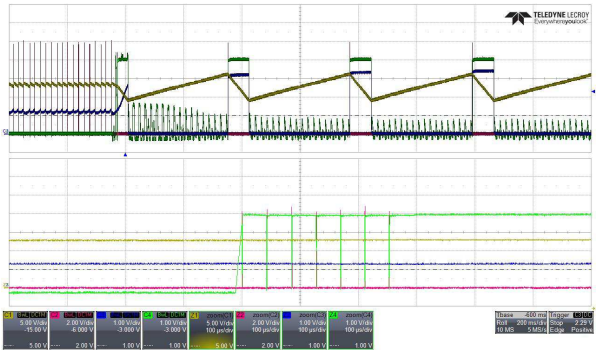
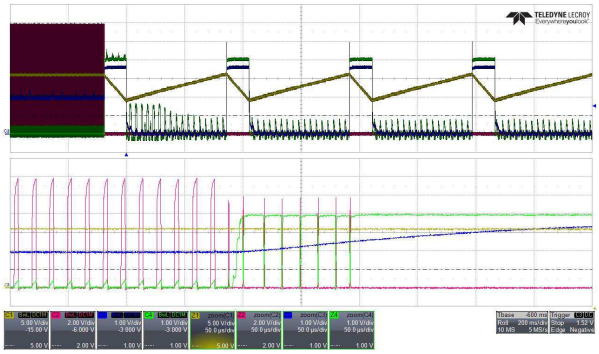
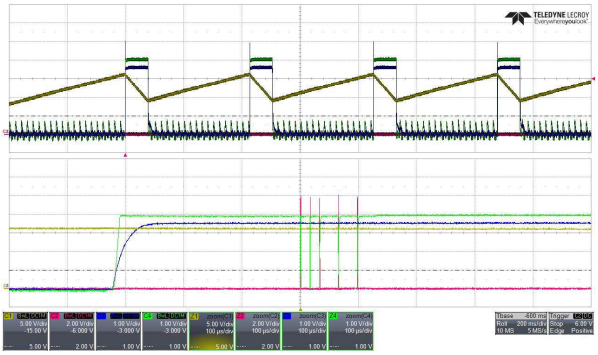
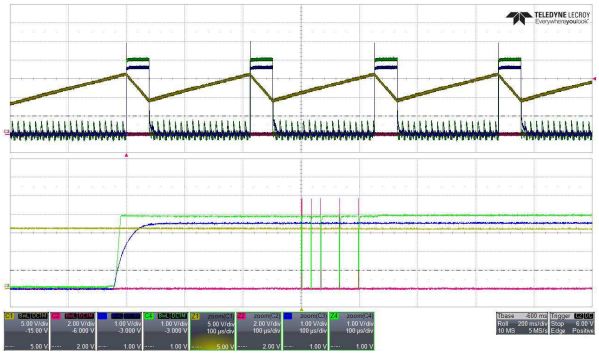
Note: CH1:V_{DD}, CH2:V_{GATE}, CH3:V_{COMP}, CH4:V_{CS} waveforms must be taken simultaneously.

5.3.6 Rcs open at 90Vac and 265Vac

IC Version	TKV151B03
Test method	

Input Voltage	Output Load	Conduction	Specification
90Vac / 60Hz	0A Turn On Open	Auto Recovery (OC1.1)	Auto Recovery
	Full Load Turn On Open	Auto Recovery (OC1.1)	
	0A Open Turn On	Auto Recovery (CSSP)	
	Full Load Open Turn On	Auto Recovery (CSSP)	
265Vac / 50Hz	0A Turn On Open	Auto Recovery (OC1.1)	
	Full Load Turn On Open	Auto Recovery (OC1.1)	
	0A Open Turn On	Auto Recovery (OC1.1)	
	Full Load Open Turn On	Auto Recovery (OC1.1)	

Vin = 90Vac / 60Hz , No Load (Turn On Open)	Vin = 90Vac / 60Hz , Full Load (Turn On Open)
	

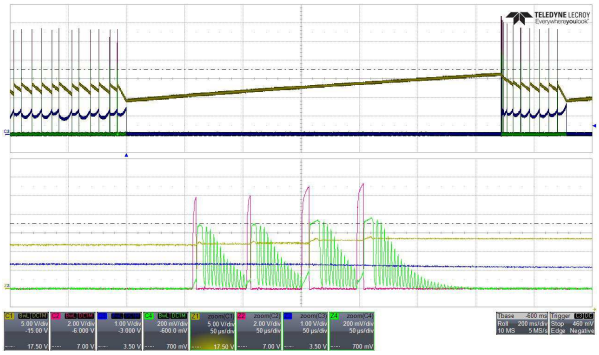
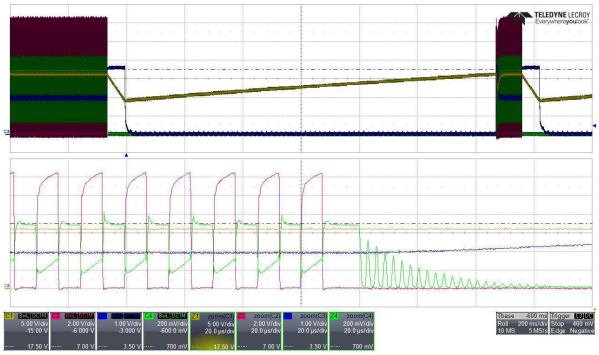
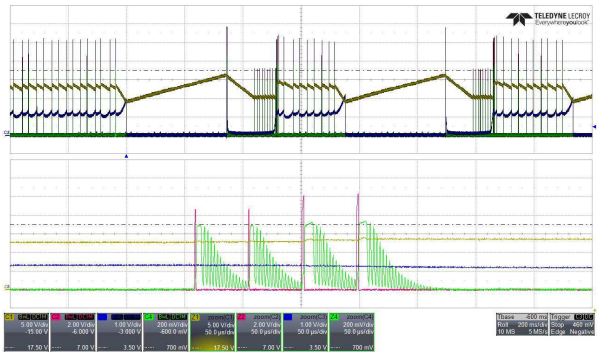
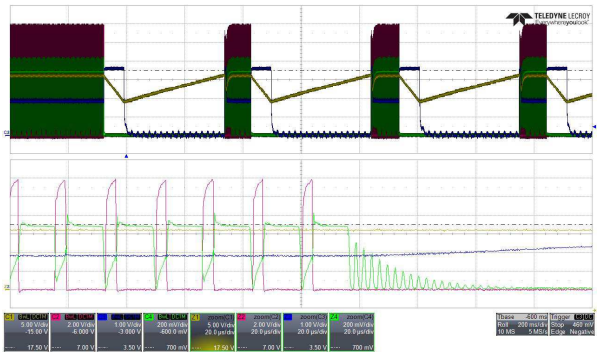
Vin = 90Vac / 60Hz , No Load (Open Turn On)	Vin = 90Vac / 60Hz , Full Load (Open Turn On)
	
Vin = 265Vac / 60Hz , No Load (Turn On Open)	**Vin = 265Vac / 60Hz , Full Load (Turn On Open)**
	
Vin = 265Vac / 60Hz , No Load (Open Turn On)	**Vin = 265Vac / 60Hz , Full Load (Open Turn On)**
	

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

5.3.7 Over Temperature Protection

IC Version	TKV151B03
Test method	
Test Condition	1N4148+50kΩ VR

Input Voltage	Output Load	R_{NTC} (KΩ)	Specification	Test Result
90Vac / 60Hz	0A	9.223	Auto Recovery	Pass
	2.37A	11.303		Pass
265Vac / 50Hz	0A	9.651		Pass
	2.37A	11.352		Pass

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_{GATE}, CH3:V_{COMP}, CH4:V_{CS} waveforms must be taken simultaneously.

5.4 Key Component Waveforms

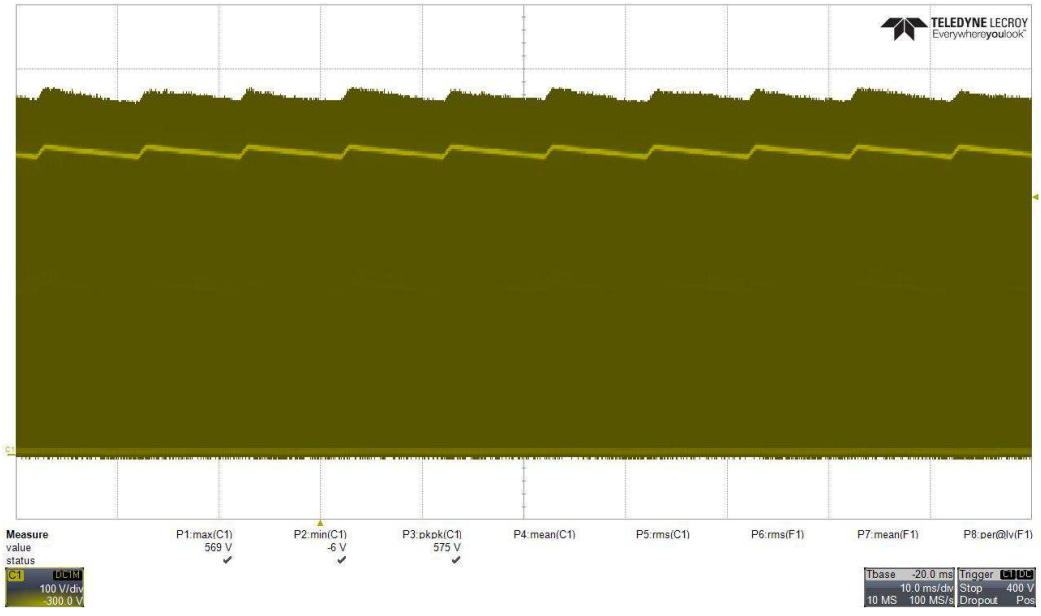
5.4.1 Voltage stress on MOSFET

IC Version	TKV151B03
Test method	

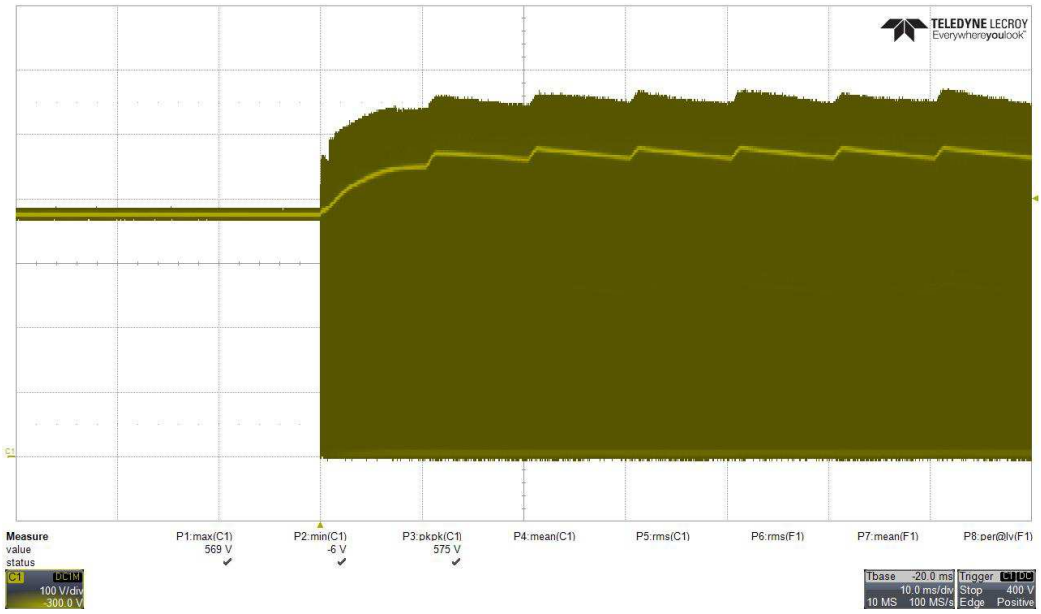
Test Result

Input Voltage	Test Condition	Stress on MOSFET (V)	Component Rating
265Vac / 50Hz	Normal operation at full load	569	600V
	Start-up at full load	569	
	Output short at full load	569	

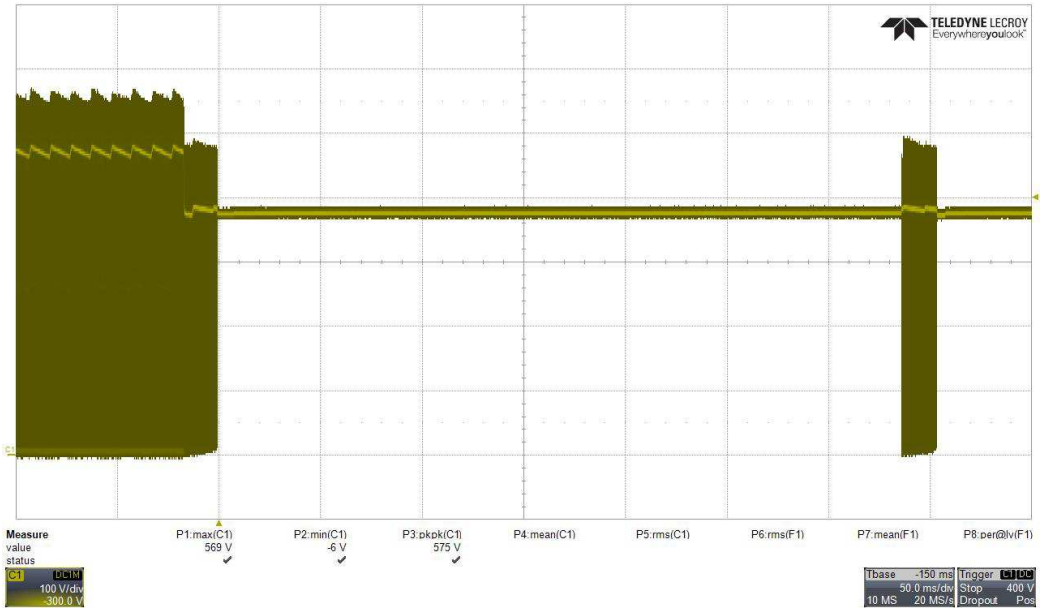
265Vac / Normal operation at full load ; CH1:V_{DS}



265Vac / Start-up at full load ; CH1:V_{DS}



265Vac / Output short at full load ; CH1:V_{DS}

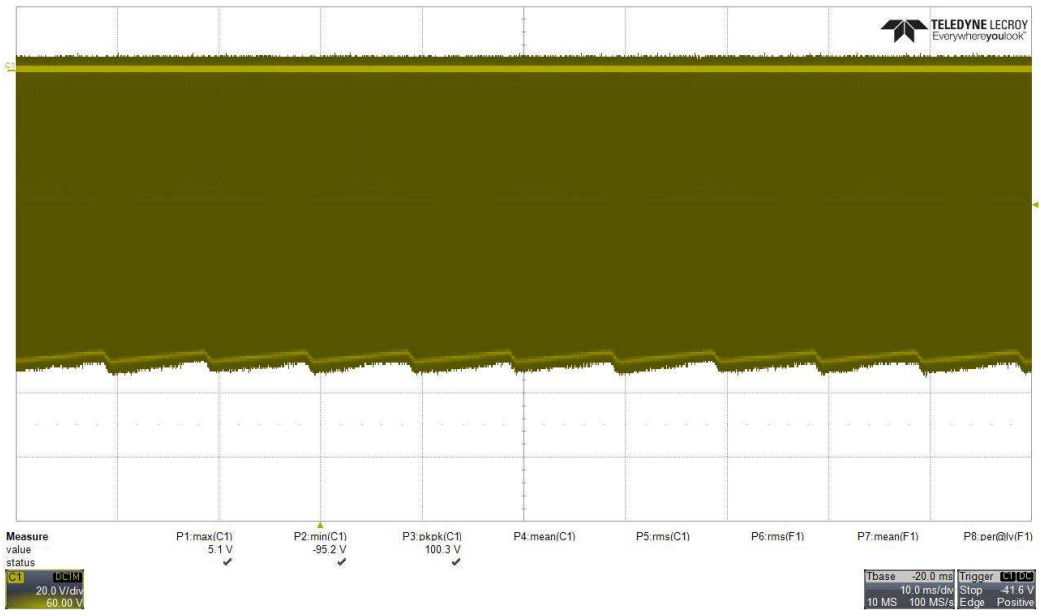


5.4.2 Voltage stress on Secondary Rectifier Diode

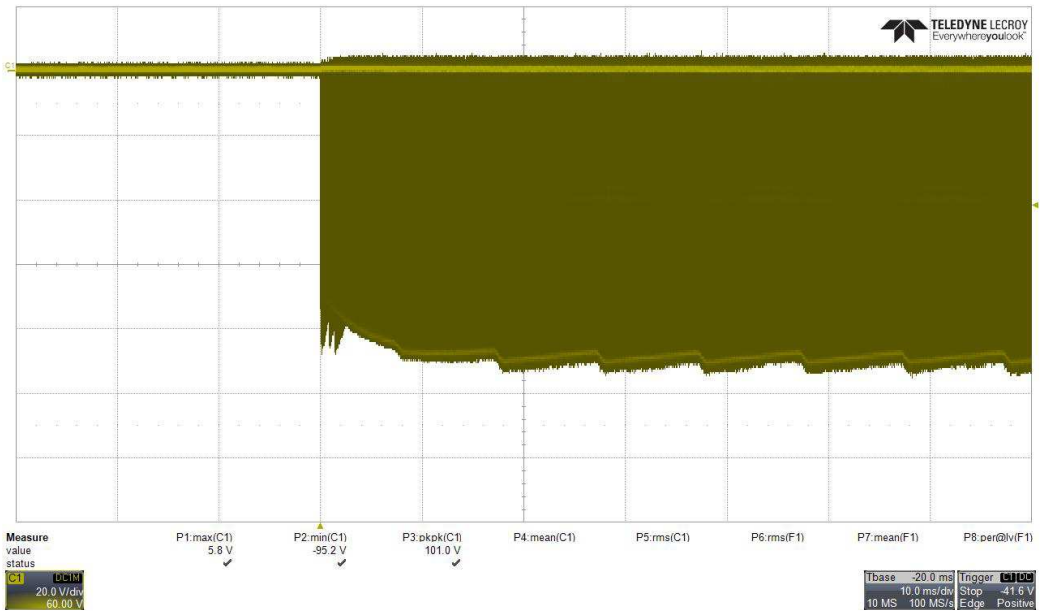
IC Version	TKV151B03
Test method	

Input Voltage	Test Condition	Stress on Diode (V)	Component Rating
265Vac/50Hz	Normal operation at full load	95.2	120V
	Start-up at full load	95.2	
	Output short at full load	95.2	

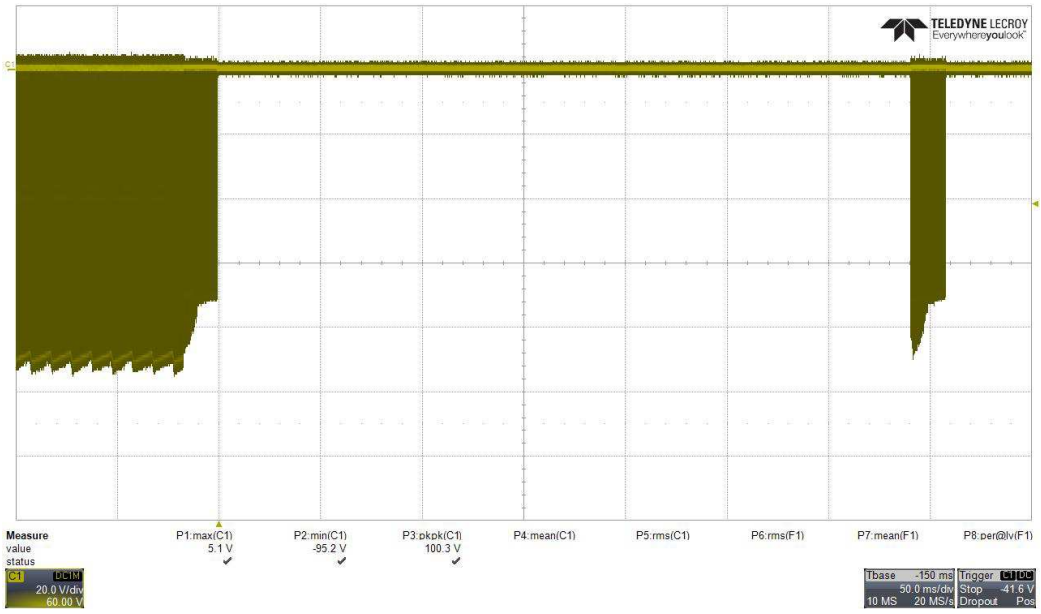
265Vac / Normal operation at full load ; CH1:VD



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



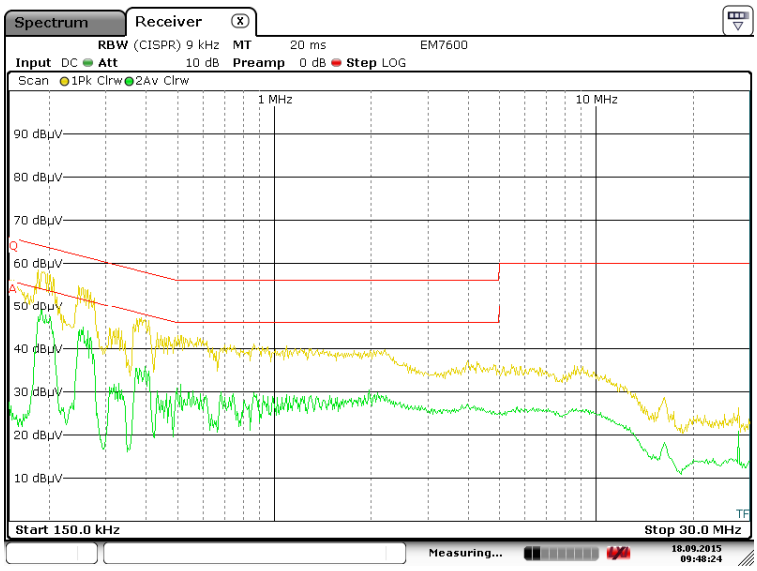
265Vac / Output short at full load ; CH1:VD



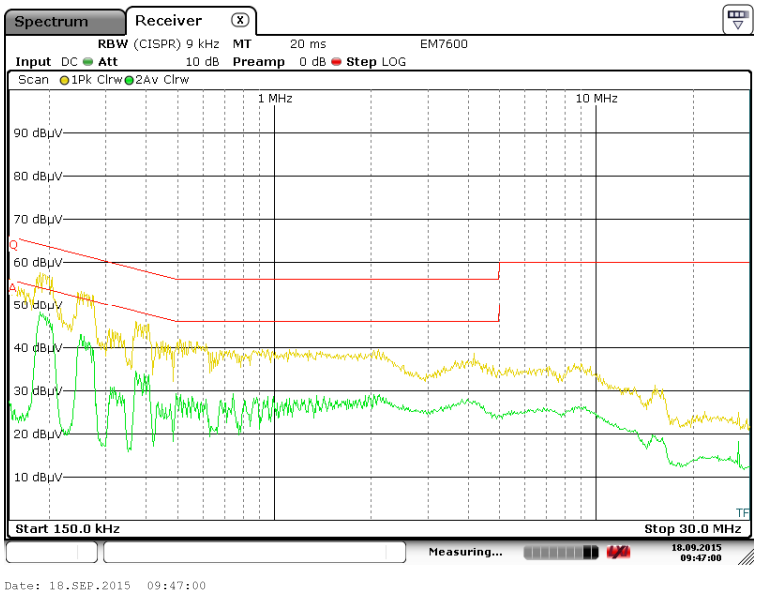
5.5 Standard and safety

5.5.1 EMI (Test result is peak & Output ground connector to safety ground)

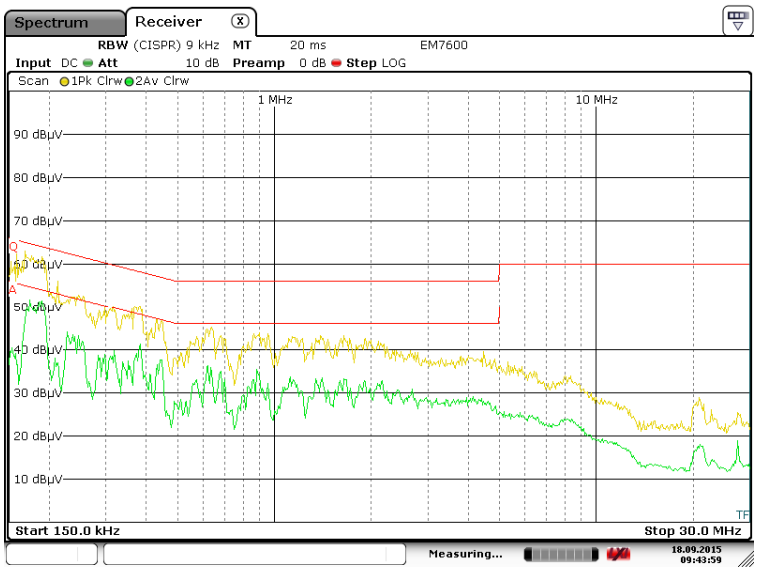
Conduction-Line @ Vin = 115Vac/60Hz；Vo=Full load



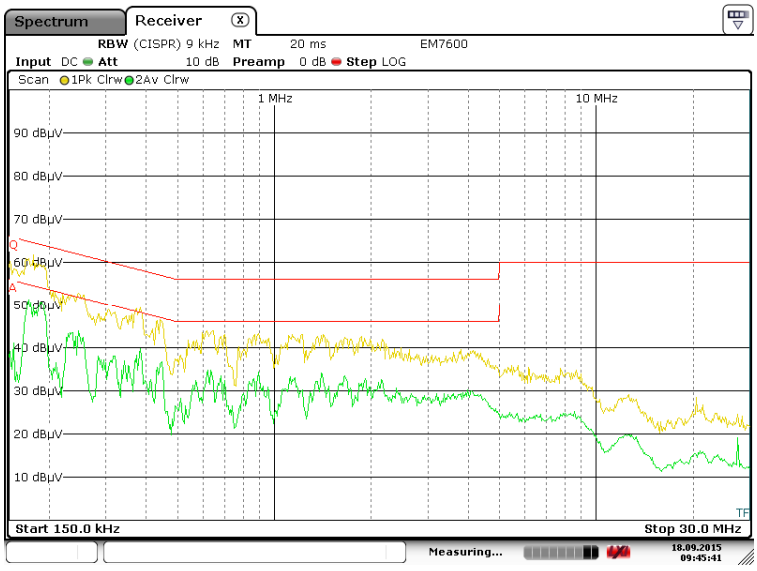
Conduction-Neutral @ Vin = 115Vac/60Hz；Vo=Full load



Conduction-Line @ Vin = 230Vac/50Hz；Vo=Full load



Conduction-Neutral @ Vin = 230Vac/50Hz；Vo=Full load



6. Bill of Material

No.	Classification	Description	Ref.	Q'ty
1	Fuse	CQMST T5A/250V	F1	1
2	Varistor	14471	MOV1	1
3	Transformer	RM10 / 6-Pin	T1	1
4	L.F	Common choke / 5.5*11 / 150uH	LF1	1
5	L.F	Common choke / UU10.5 / 0.45*52Ts / 9mH min	LF2	1
6	Choke	Common choke / 7*11 / 380uH	L3	1
7	PCB	90mm * 40mm * 1.6mm	PCB	1
8	H's	For Q1	HS1	1
9	H's	For D2	HS2	1
10	X-CAP	0.22uF / 250V / X1 / 14mm*8mm*13mm (Pitch=13mm)	CX1	1
11	Electrolytic Capacitor	82uF / 400V / 16φ*25mm / 105℃ / L-tec TY serise	C1	1
12	CAP	1000pF / 1KV (Pitch=5mm)	C2	1
13	MLCC	Option / (0805)	C3	0
14	MLCC	X7R 1000pF / 50V (0805)	C4	1
15	MLCC	X7R 470pF / 50V (0805)	C5	1
16	MLCC	X7R 0.1uF / 50V (0805)	C6	1
17	Electrolytic Capacitor	4.7uF / 50V / 5φ*11mm / 105℃ / L-tec TH serise	C7	1
18	MLCC	X7R 1000pF / 1KV (1206)	C8	1
19	Electrolytic Capacitor	470uF / 25V / 10φ*16mm / 105℃/ L-tec LZG serise	C9	1
20	Electrolytic Capacitor	470uF / 25V / 10φ*16mm / 105℃/ L-tec LZG serise	C10	1

21	MLCC	Option / (1206)	C11	0
22	MLCC	X7R 0.1uF / 50V (1206)	C12	1
23	MLCC	X7R 47nF / 50V (0805)	C13	1
24	MLCC	Option / (0805)	C14	0
25	CAP	0.01uF / 500V / 8 ϕ (Pitch = 5mm)	C16	1
26	Y-CAP	1000pF / 250V 8 ϕ / X1Y1 (Pitch = 10mm)	CY1	1
27	RES-SMD	2.2MΩ (±5%) / 1206	R1	1
28	RES-SMD	2.2MΩ (±5%) / 1206	R2	1
29	RES-SMD	200KΩ (±5%) / 1206	R3	1
30	RES-SMD	200KΩ (±5%) / 1206	R3A	1
31	RES-SMD	0Ω (±5%) / 1206	R4	1
32	RES-SMD	Option / 0805	R7	0
33	RES-SMD	100Ω (±5%) / 0805	R8	1
34	RES-SMD	10Ω (±5%) / 0805	R8A	1
35	RES- SMD	536Ω (±1%) / 1206	R9	1
36	RES-MOF	0.25Ω (±1%) / 1W	R10	1
37	RES-SMD	20Ω (±1%) / 1206	R10A	1
38	RES-SMD	2.2Ω (±5%) / 1206	R11	1
39	RES-SMD	47Ω (±5%) / 1206	R12	1
40	RES-SMD	47Ω (±5%) / 1206	R12A	1
41	RES-SMD	2KΩ (±5%) / 0805	R13	1
42	RES-SMD	5.1KΩ (±5%) / 0805	R14	1

43	RES-SMD	27KΩ (±5%) / 0805	R15	1
44	RES-SMD	68KΩ (±1%) / 0805	R16	1
45	RES-SMD	10KΩ (±1%) / 0805	R17	1
46	RES-SMD	750KΩ (±1%) / 0805	R17A	1
47	RES-SMD	105KΩ (±1%) / 0805	R20	1
48	RES-SMD	20KΩ (±1%) / 0805	R21	1
49	RES-SMD	0Ω (±5%) / 0805	R24	1
50	PWM	RT7739GGE / SOT-23-6	U1	1
51	Photo coupler	PC817 (C-Type) / DIP-4	U2	1
52	Shunt regulator	TL431 / SOT-23	U3	1
53	N-MOSFET	NDF10N60ZG / 10A--600V / TO220FP / Rds(on)=0.65Ω	Q1	1
54	Bridge Diode	FL406G / 4A--600V	BD1	1
55	Fast Diode	FR107 / 1000V--1A / DO-41 / VF=1.2V	D1	1
56	General Diode	1N4003 / 200V--1A / DO-41 / VF=1.0V	D2	1
57	Schottky Diode	V40120C / 120V—40A / TO-220 / VF=0.43V	D3	1
58	Fast Diode	1N4148 / 75V—200mA / SOD-323	D4	1
59	Fast Diode	Option / SOD-123	D5	0
60	LED	4ϕ LED	LED	1
61	NTC	SCK102R55 / 10ϕ	NTC1	1
62	NTC	Option / 5ϕ	NTC2	0
63	Jump	23mm / 0.6ϕ	JP1	1
64	Jump	12mm / 0.6ϕ	JP2	1

65	Jump	15mm / 0.6 ϕ	JP3	1
66	Jump	8mm / 0.6 ϕ	JP4	1

7. Transformer Specification

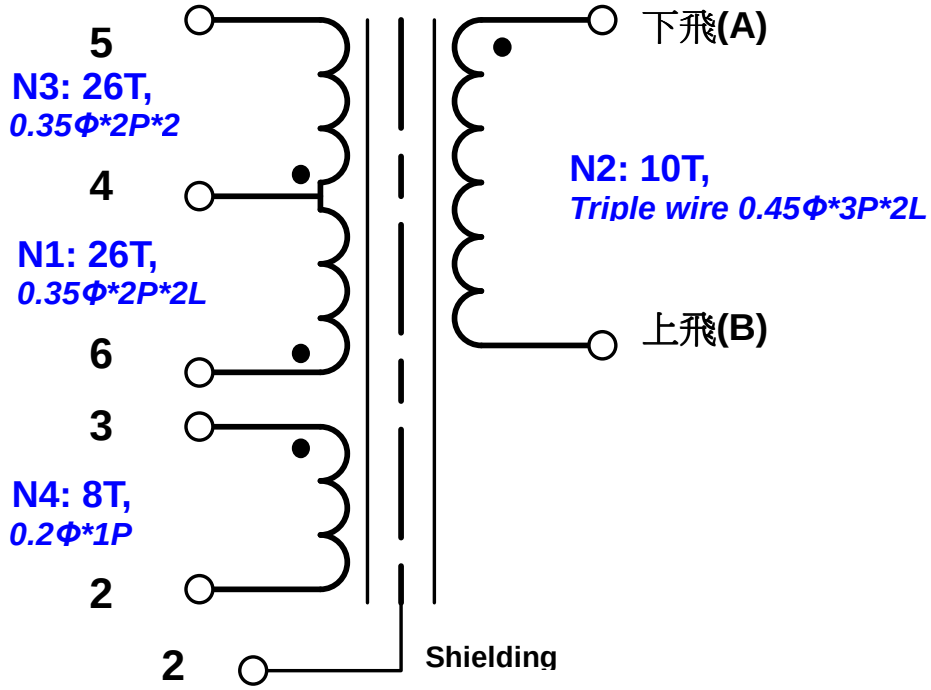
Core Size : RM-10 **Material :** PC40

Bobbin/PINs : Vertical / 6 pins

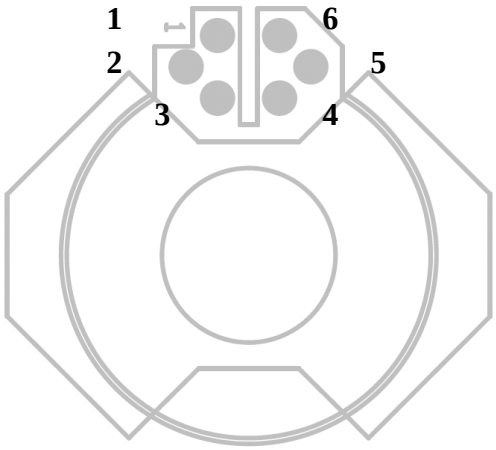
Primary Inductor (+-5%) : 950μH

Leakage Inductor : 40μH

Electrical :



Top View



Note1: Cut PIN1、4

Note2: Varnished

WINDING TABLE: (繞線結構)

Winding No. (組別)	PIN (腳位)	Wire & Wire Copper (線徑 x 股數 x 層數)	Turns (圈數)	Winding Tape (繞線方式)	Tape Layer (膠帶層次)
	Bobbin				
N1	6 → 4	0.35 x 2P x 2L	26Ts	密繞	1L
E1	1.2T 銅箔(開迴路)焊一條線於 PIN 2			背膠	3L
N2	A → B	Triple wire 0.45x3Px2L	10Ts	密繞	3L
E2	1.2T 銅箔(開迴路)焊一條線於 PIN 2			背膠	1L
N3	4 → 5	0.35 x 2P x 2L	26Ts	密繞	3L
N4	3 → 2	0.2 x 1P	8Ts	靠下邊密繞	1L
	Core – RM10			950uH	3L

Note1: Cut PIN1、PIN4

Note2: Varnished

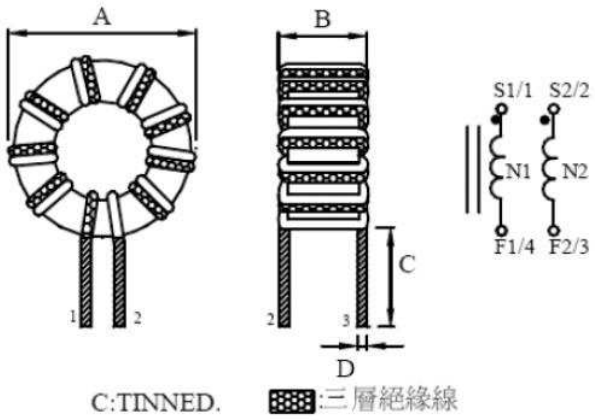
LF1 Specification

耕興股份有限公司
SPORTON INTERNATIONAL INC.
SPEC. FOR APPROVAL

OUR PART NO. : TCN0903-191

SIZE SPEC. (UNIT m/m)

A	11.5(Max)
B	5.5(Max)
C	10.0±1.0
D	0.4±0.05



C:TINNED. :三層絕緣線

ITEM	FREQUENCY	SPECIFICATION	REMARK
L(N1=N2)	100KHz/1V	190uH(Ref.)	TEST INSTRUMENT: ■ L: WK3260B ■ RDC: HP34401A
RDC(N1=N2)		0.034Ω(Max)	
CURRENT (N1=N2)		2.0A(Max)	※ No Varnish. ※ Weight: 1.00g

DRAWING BY	CHECKED BY	APPROVED BY	SAMPLE NO.
IVY	FENNY	MILLER	

DISCLAIMER