

EVALUATION DATA

MODEL NAME : OFI700A12

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Approved by : _____
Tomas Isaksson

P R

B X

POWERBOX
A Cosel Group Company

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Remark:

Unless specified the test condition shall be

Input voltage / Frequency: 230 [Vac] / 50 [Hz]

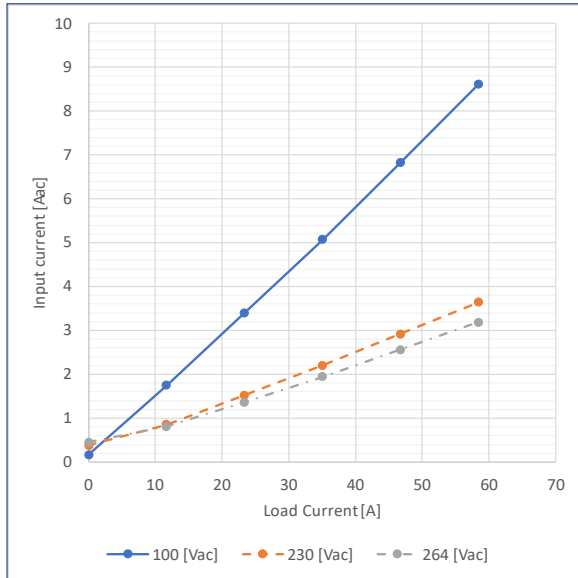
Load current: 58.4 [A]

Baseplate temperature: 25 [°C]

1. Input Current (by Load Current)

Test Circuitry : Figure A

Graph



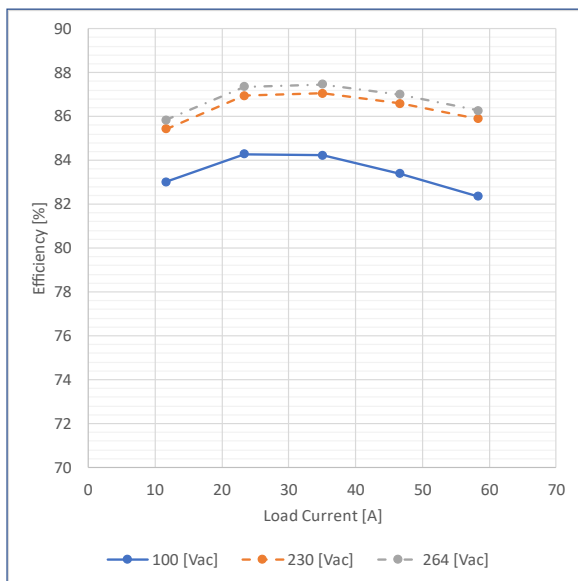
Value

Load Current [A]	Input Current [Aac]		
	Input Voltage		
	100 [Vac]	230 [Vac]	264 [Vac]
0.00	0.161	0.381	0.453
11.68	1.742	0.854	0.805
23.36	3.402	1.518	1.363
35.04	5.069	2.201	1.946
46.72	6.823	2.917	2.562
58.40	8.601	3.641	3.187

2. Efficiency (by Load Current)

Test Circuitry : Figure A

Graph



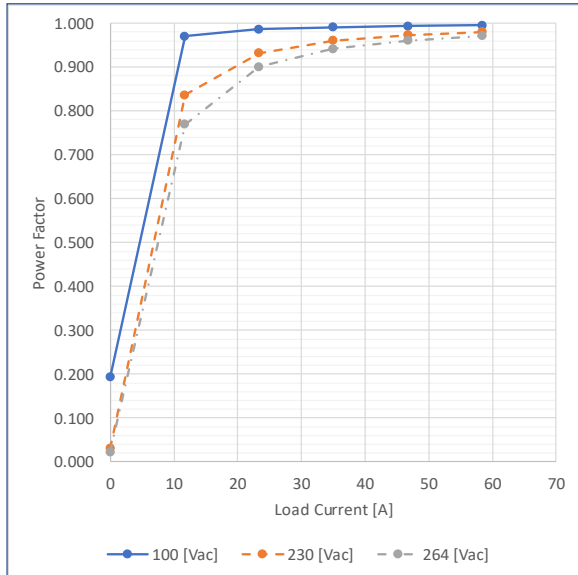
Value

Load Current [A]	Efficiency [%]		
	Input Voltage		
	100 [Vac]	230 [Vac]	264 [Vac]
0.00	-	-	-
11.68	83.022	85.432	85.833
23.36	84.289	86.944	87.347
35.04	84.231	87.055	87.469
46.72	83.394	86.588	86.988
58.40	82.346	85.892	86.270

3. Power Factor (by Load Current)

Test Circuitry : Figure A

Graph



Value

Load Current [A]	Power Factor		
	Input Voltage		
	100 [Vac]	230 [Vac]	264 [Vac]
0.00	0.193	0.031	0.023
11.68	0.970	0.837	0.770
23.36	0.987	0.932	0.900
35.04	0.991	0.960	0.942
46.72	0.993	0.973	0.961
58.40	0.995	0.980	0.971

4. Leakage Current

Test Circuitry : See table

Test Equipment: Simpson 228

Value

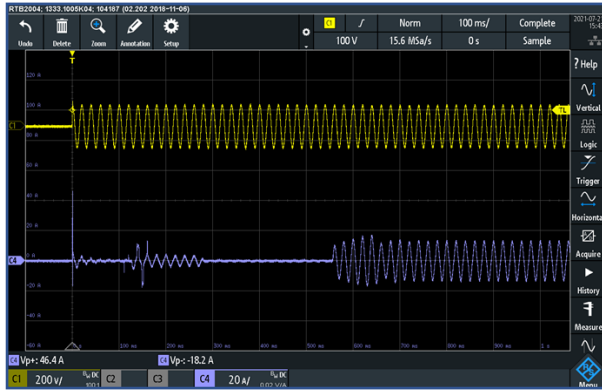
Standard	Testing Circuitry	Measuring Method	Leakage Current [mA]			Note
			Input Voltage			
			100 [Vac]	230 [Vac]	264 [Vac]	
IEC62368-1	Figure B-1	Both phases	0.18	0.45	0.52	Operation
		One of phases	0.34	0.80	0.93	Stand by
	Figure B-2	Both phases	0.18	0.45	0.52	Operation
		One of phases	0.34	0.80	0.93	Stand by

5. Inrush current

Test Circuitry : Figure A

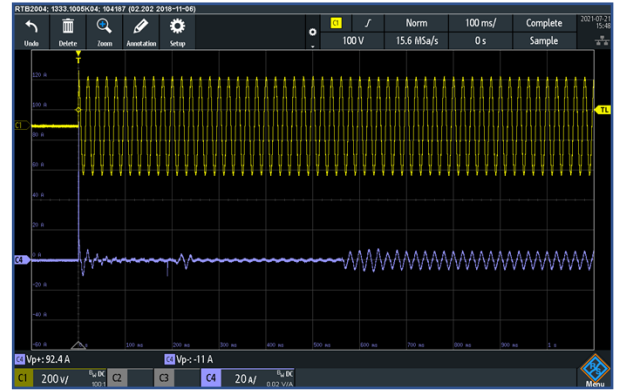
— C1: Input Voltage (200V/div)
 — C4: Input Current (20A/div)

Waveform



Input Voltage : 100 [Vac]
 (100ms/div)

- ① Primary Inrush Current : 6.3 [A]
- ② Secondary Inrush Current : 18.2 [A]

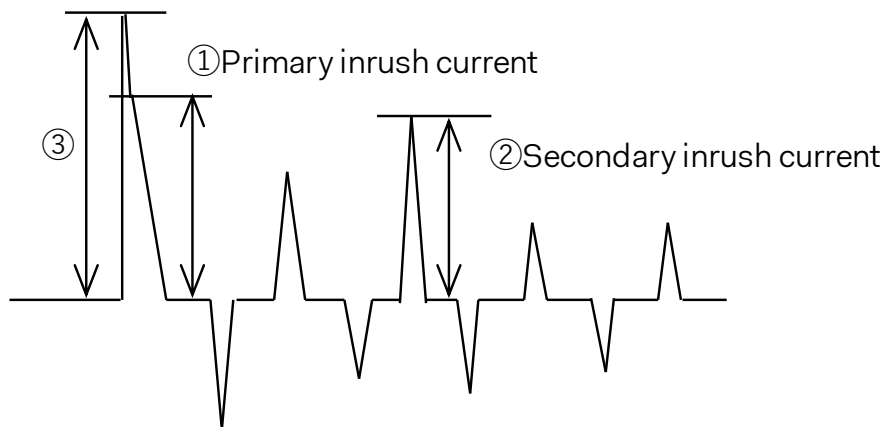


Input Voltage : 230 [Vac]
 (100ms/div)

- ① Primary Inrush Current : 15.0 [A]
- ② Secondary Inrush Current : 11.0 [A]

Remark:

A surge current flown into Line-to-Line capacitor (③) would be excluded as primary inrush current (①).

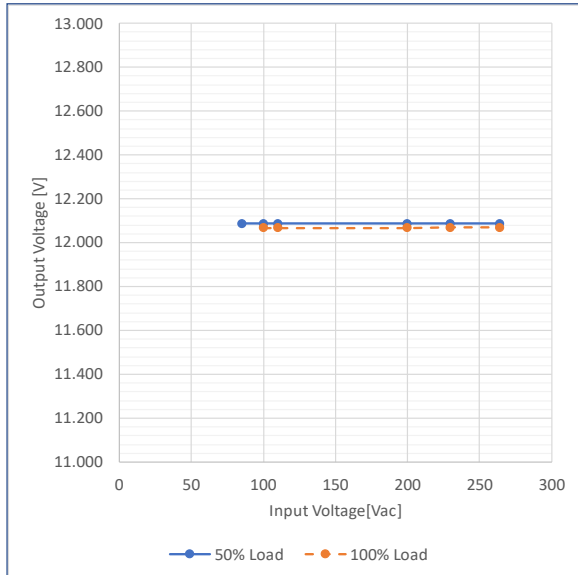


6. Line Regulation

Test Circuitry : Figure A

Change input voltage from 85 to 264[Vac]

Graph



Value

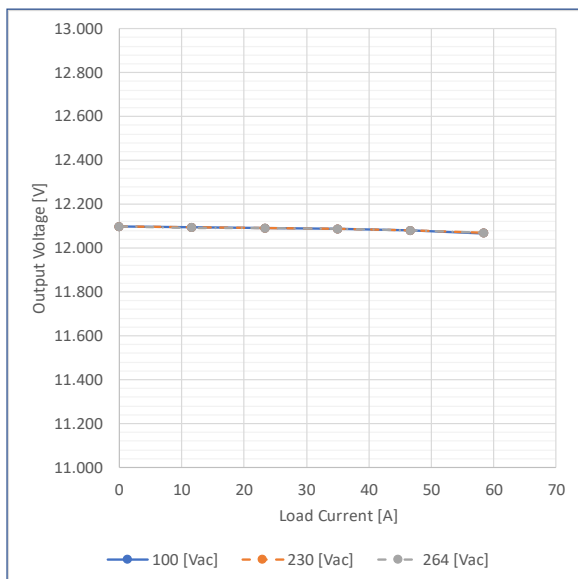
Input Voltage [Vac]	Output Voltage [V]	
	Load Factor	
	50% Load	100% Load
85	12.087	-
100	12.087	12.067
110	12.087	12.068
200	12.087	12.068
230	12.087	12.069
264	12.087	12.069

7. Load Regulation

Test Circuitry : Figure A

Change Load Current from 0 to 58.4[A]

Graph



Value

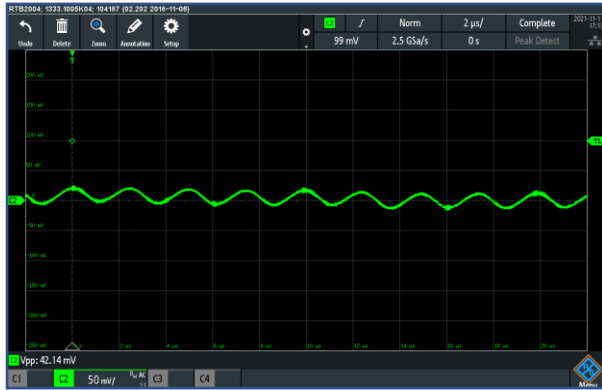
Load Current [A]	Output Voltage [V]		
	Input Voltage		
	100 [Vac]	230 [Vac]	264 [Vac]
0.00	12.098	12.097	12.097
11.68	12.094	12.094	12.093
23.36	12.090	12.090	12.090
35.04	12.087	12.087	12.087
46.72	12.079	12.079	12.079
58.40	12.067	12.069	12.069

8. Ripple Noise

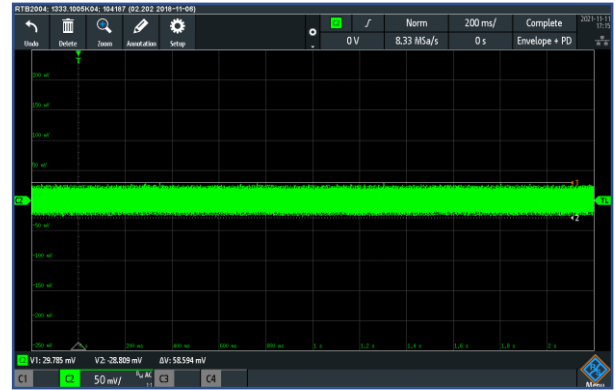
Test Circuitry : Figure C

— C2: Output voltage (50mV/div)
 BW: 20MHz

Waveform



(2μs/div)



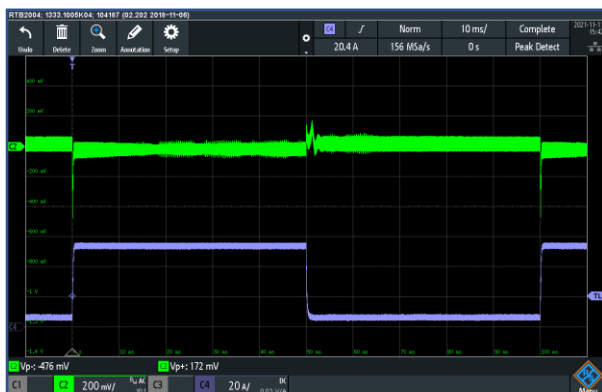
(200ms/div)

9. Dynamic Load Response

Test Circuitry : Figure A
 Load Current 5.8 [A] ↔ 52.6 [A]

— C2: Output voltage (200mV/div)
 — C4: Output current (20A/div)

Waveform



(10ms/div)

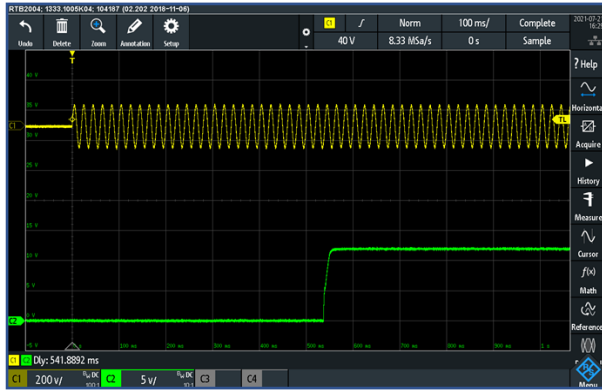
Load changes from 10% to 90% of rated current.

10. Rise Time Characteristics by AC ON

Test Circuitry : Figure A

— C1: Input voltage (200V/div)
— C2: Output voltage (5V/div)

Waveform



Input Voltage 100 [Vac]
Load Current 58.4 [A]
(100ms/div)



Input Voltage 230 [Vac]
Load Current 58.4 [A]
(100ms/div)

11. Rise Time Characteristics with RC signal

Test Circuitry : Figure D

— C2: Output voltage (5V/div)
— C3: RC signal (10V/div)

Waveform



Input Voltage 100 [Vac]
Load Current 58.4 [A]
(100ms/div)



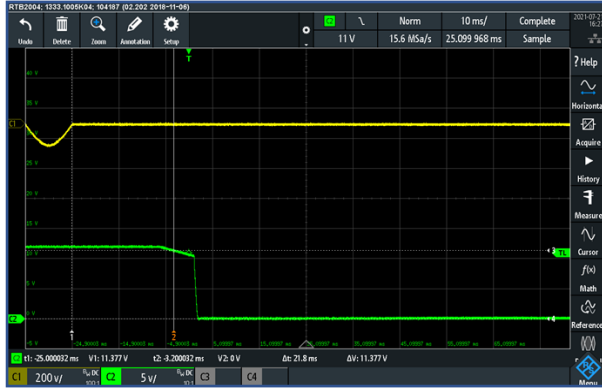
Input Voltage 230 [Vac]
Load Current 58.4 [A]
(100ms/div)

12. Fall time / Hold-up Time

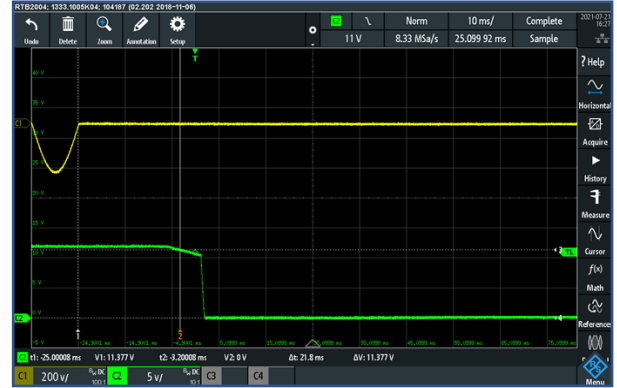
Test Circuitry : Figure A

— C1: Input voltage (200V/div)
— C2: Output voltage (5V/div)

Waveform

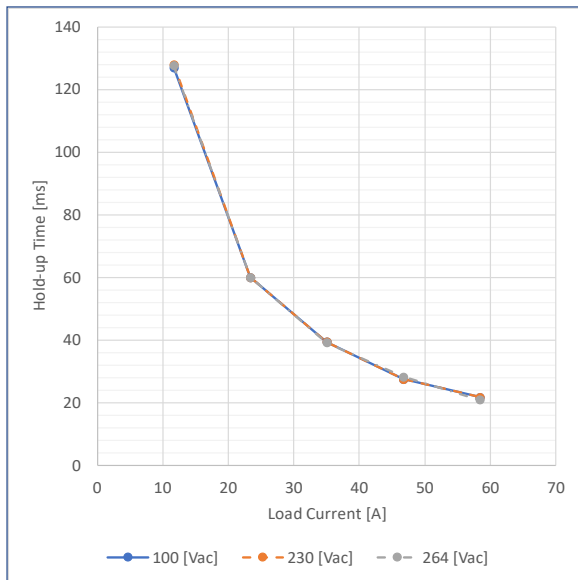


Input Voltage 100 [Vac]
 Load Current 58.4 [A]
 (10ms/div)



Input Voltage 230 [Vac]
 Load Current 58.4 [A]
 (10ms/div)

Graph



Value

Load Current [A]	Hold-up Time [ms]		
	Input Voltage		
	100 [Vac]	230 [Vac]	264 [Vac]
0.00	-	-	-
11.68	127.0	128.0	127.6
23.36	60.0	60.0	60.0
35.04	39.4	39.4	39.1
46.72	27.6	27.6	28.3
58.40	21.8	21.8	20.9

13. DC OK and IOG signal

Test Circuitry : Figure D

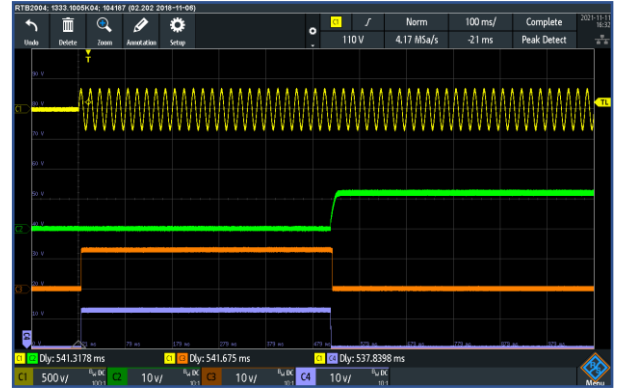
— C1: Input voltage (500V/div)
— C2: Output Voltage (10V/div)

— C3: DC OK (10V/div)
— C4: IOG (10V/div)

Waveform



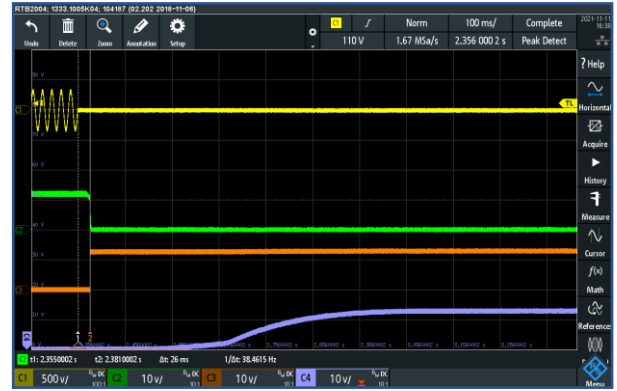
Turn ON AC input Load Current : 0A
(100ms/div)



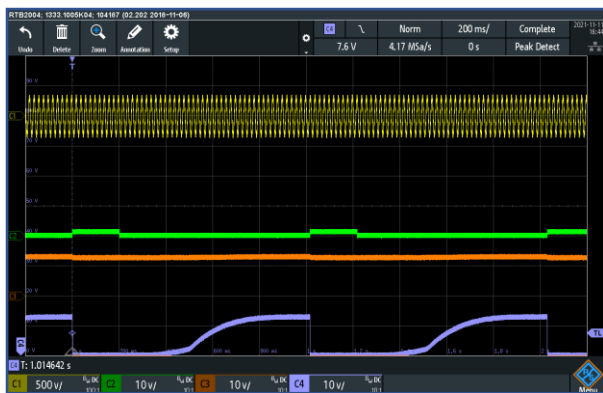
Turn ON AC input Load Current : 58.4A
(100ms/div)



Turn OFF AC input Load Current : 0A
(1s/div)



Turn OFF AC input Load Current : 58.4A
(100ms/div)

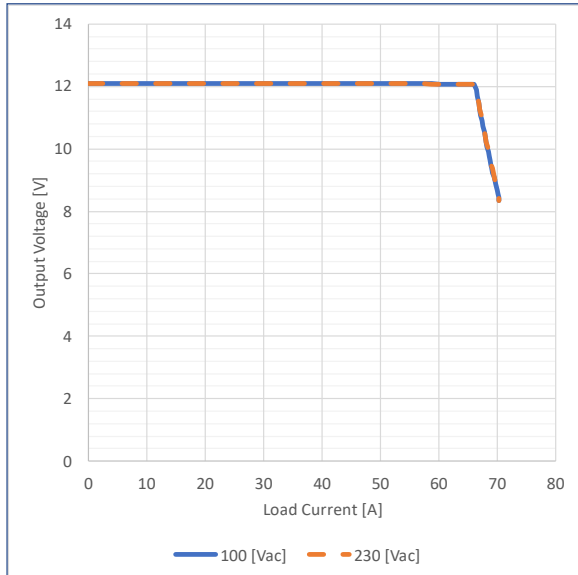


Output Short
(200ms/div)

14. Over Current Protection

Test Circuitry : Figure A

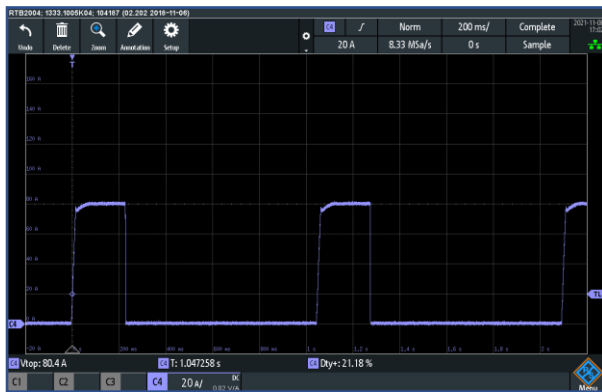
Graph



Value

Output Voltage [V]	Load Current [A]	
	Input Voltage	
	100 [Vac]	230 [Vac]
12.00	58.787	58.790
11.40	66.760	66.838
10.80	67.333	67.418
9.60	68.762	68.819
8.40	70.272	70.339

Waveform



— C4: Output Current (20A/div)

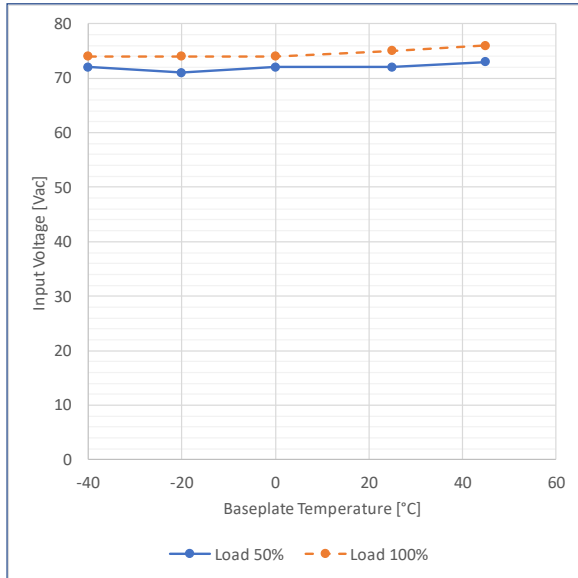
Intermittent operation occurs when the output voltage is from 8.4V to 0V.

Input Voltage 230 [Vac]
Output Short
(200ms/div)

15. Minimum Input Voltage for Regulated Output Voltage

Test Circuitry : Figure A

Graph



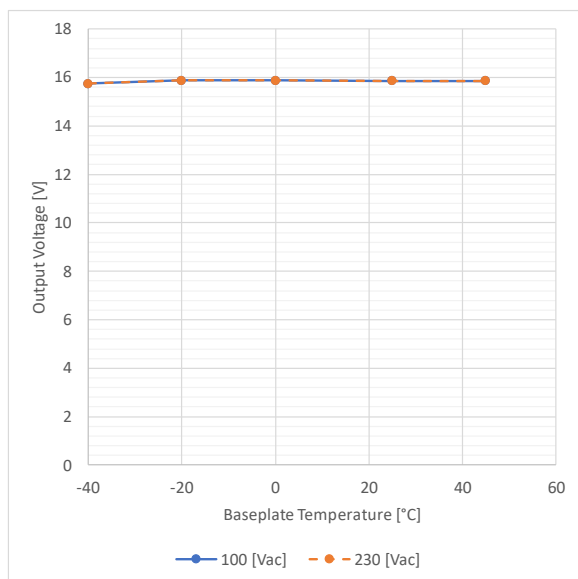
Value

Baseplate Temperature [°C]	Input Voltage [Vac]	
	Load Current	
	Load 50%	Load 100%
-40	72	74
-20	71	74
0	72	74
25	72	75
45	73	76

16. Over Voltage Protection

Test Circuitry : Figure A

Graph

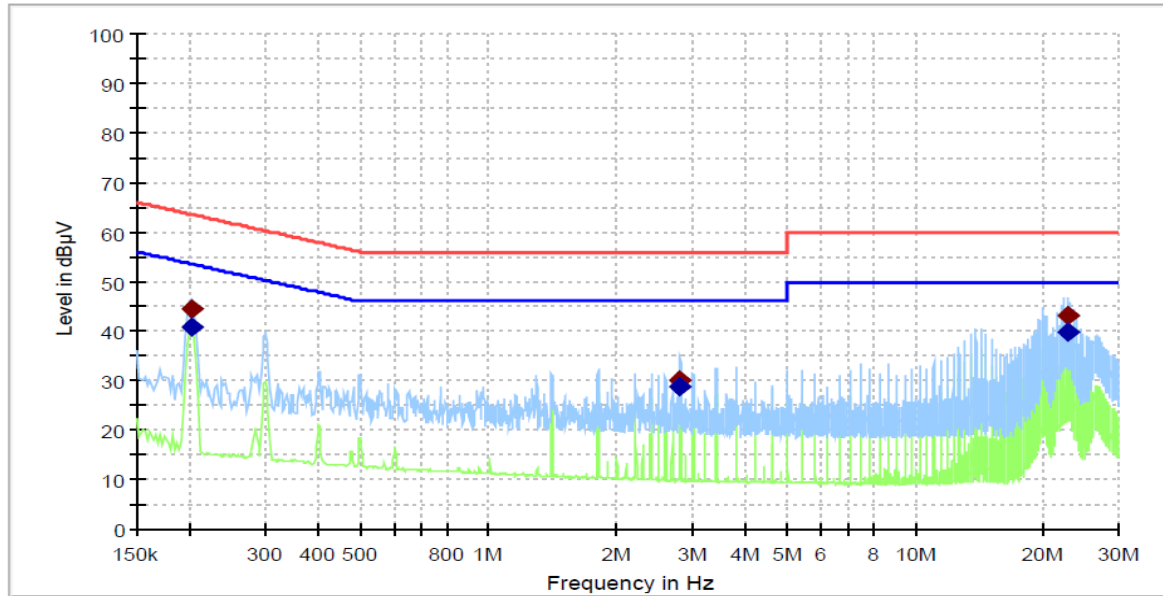


Value

Baseplate Temperature [°C]	Output Voltage [V]	
	Input Voltage	
	100 [Vac]	230 [Vac]
-40	15.750	15.750
-20	15.870	15.870
0	15.870	15.870
25	15.860	15.860
45	15.860	15.860

17. Conducted Emission

Input Voltage : 230Vac / 50Hz Load : 100 %



— Preview Result 2-AVG
— EN55032 AC Table A.10 Class B QP
◆ Final_Result QPK
— Preview Result 1-PK+
— EN55032 AC Table A.10 Class B AV
◆ Final_Result CAV

Table Conducted emission test result (230Vrms / 50Hz Line L)

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Line	PE	Corr. (dB)
0.201750	44.43	---	63.54	19.11	L1	GND	11.2
0.201750	---	40.89	53.54	12.64	L1	GND	11.2
2.818500	30.18	---	56.00	25.82	L1	GND	11.2
2.818500	---	28.69	46.00	17.31	L1	GND	11.2
22.749000	43.15	---	60.00	16.85	L1	GND	11.2
22.753500	---	39.72	50.00	10.28	L1	GND	11.2

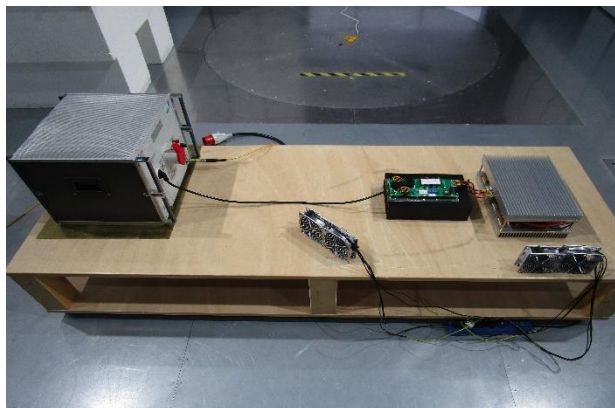


Fig. Conducted emission test environment

18. Figure of Test Circuitry

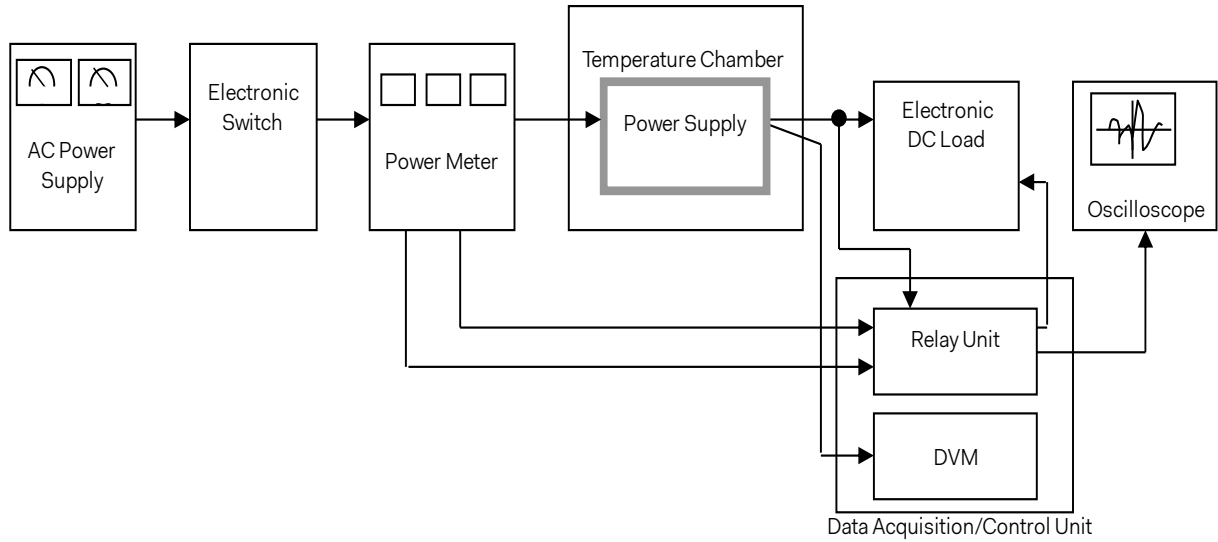


Figure A Test circuitry for general performance measurement

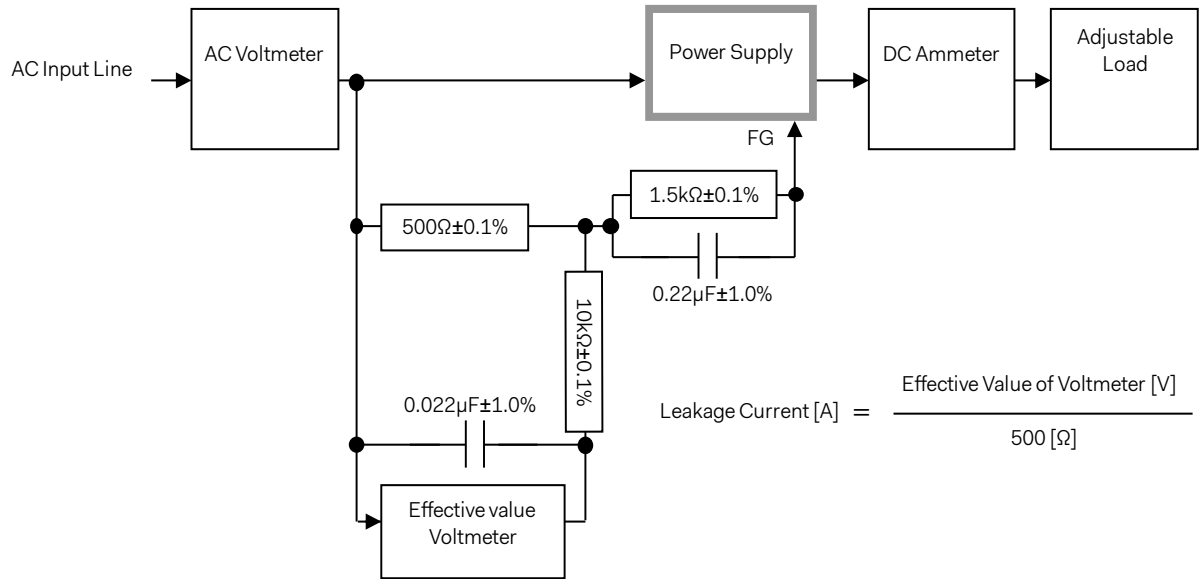


Figure B-1 Leakage current measurement (IEC62368-1, refer to IEC60990 Fig.4)

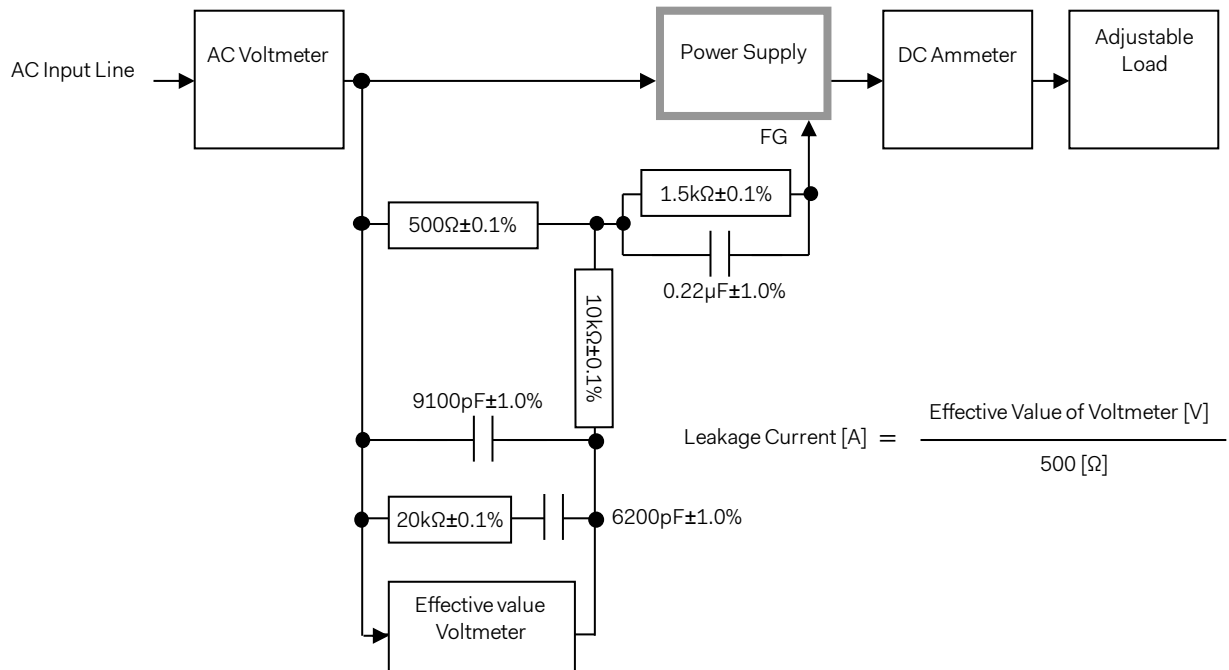


Figure B-2 Leakage current measurement (IEC62368-1, refer to IEC60990 Fig.5)

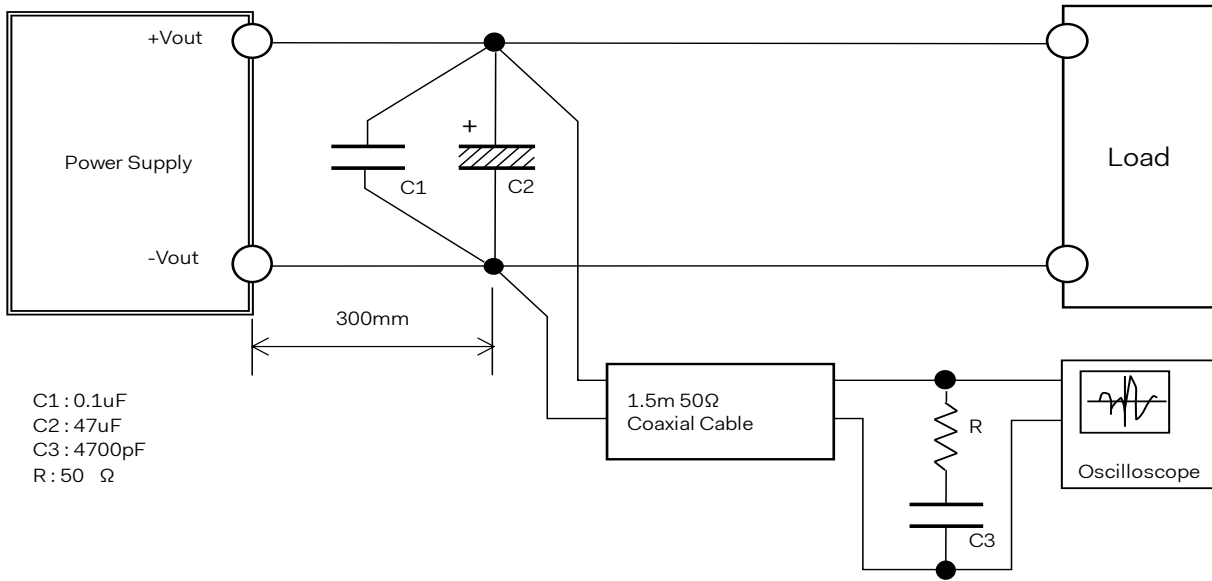


Figure C Ripple voltage measurement (JEITA RC-9131D)

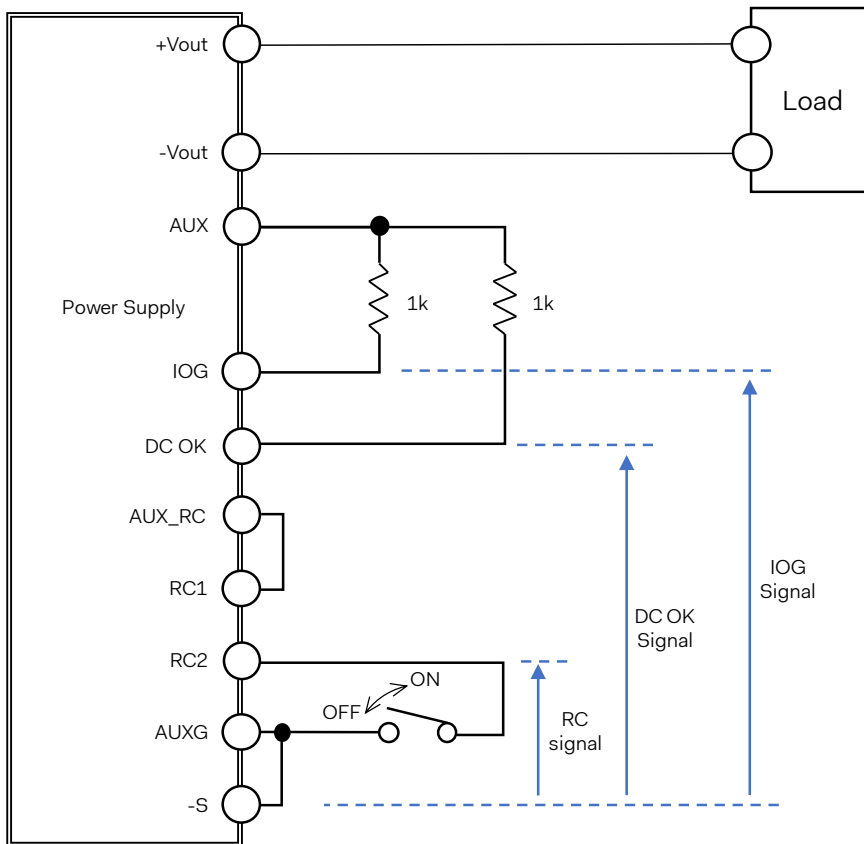


Figure D Alarm signal measurement