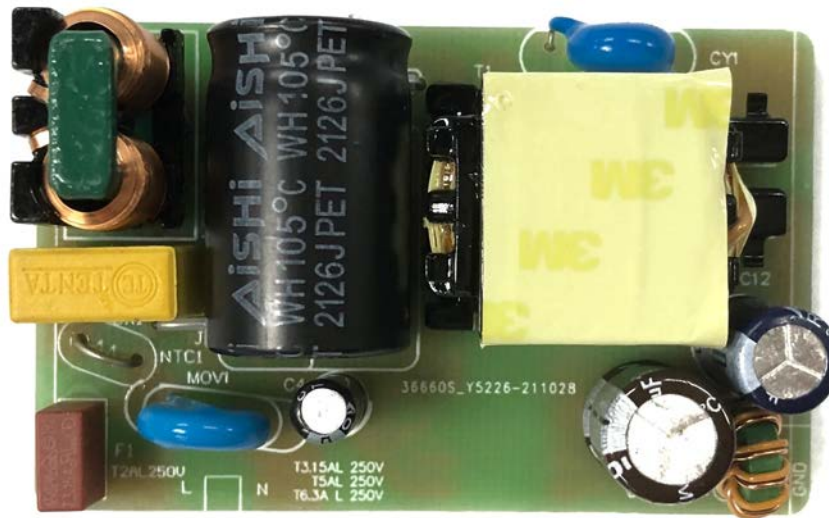


Subject

OB2365Ex Demo Board Manual

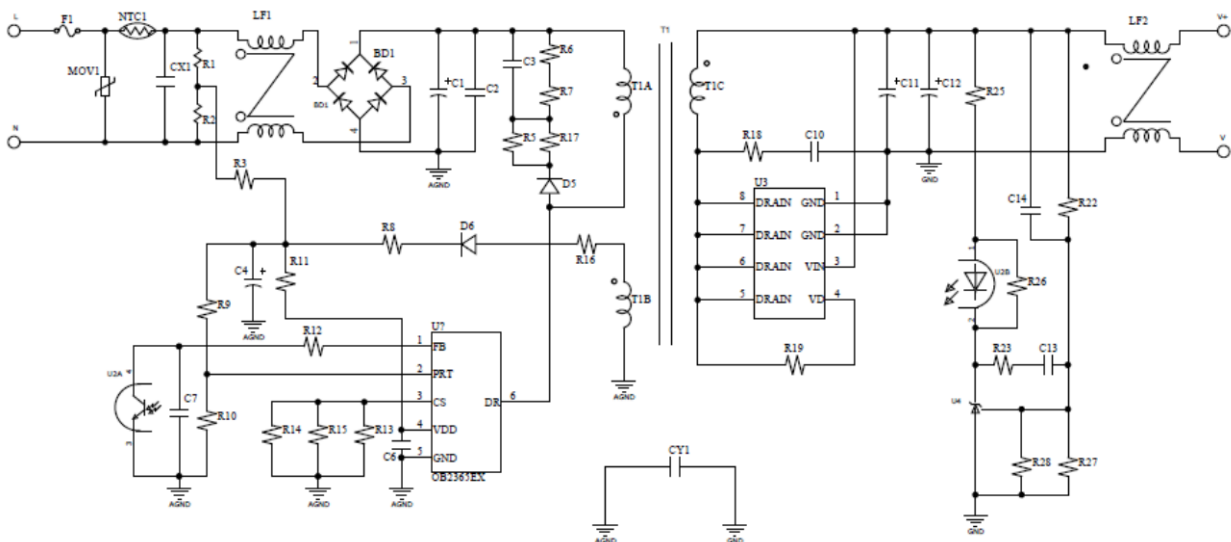
Board Model: AD12V3A 2365EVEIP-H 2131
Doc. No.: OB_DOC_DBM_2365Ex00



Key Features

- Standby Power < 75mW(230Vac input, no load)
- Averaged efficiency more than 88.3% @115/230Vac at AWG18 1.5M cable end
- High performance OCP compensation
- Frequency shuffling technology for improved EMI performance
- EMI passed EN55022 and FCC Part15 Class B test with more than 6dB margin
- Average efficiency meet COC V tier2, 1% margin

Schematic



Performance Evaluation

1. Input Characteristics

1.1 Input current and Standby power

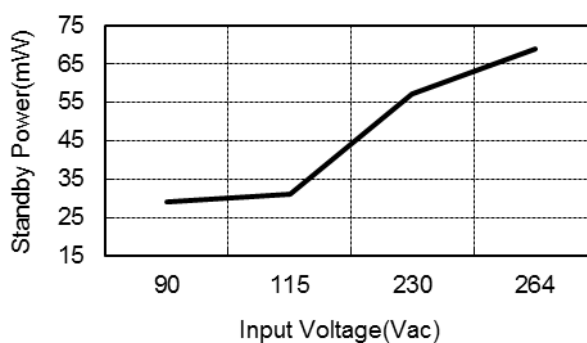
The module was tested at different input voltages (from 90Vac to 264Vac)

Table 1 Input current at full load

Input Voltage	90V/60Hz	115V/60Hz	230V/50Hz	264V/50Hz
Input Current(A)	0.835	0.725	0.501	0.459

Table 2 Standby power at no load

Input Voltage	90V/60Hz	115V/60Hz	230V/50Hz	264V/50Hz
Pin (mW)	29	30	58	68

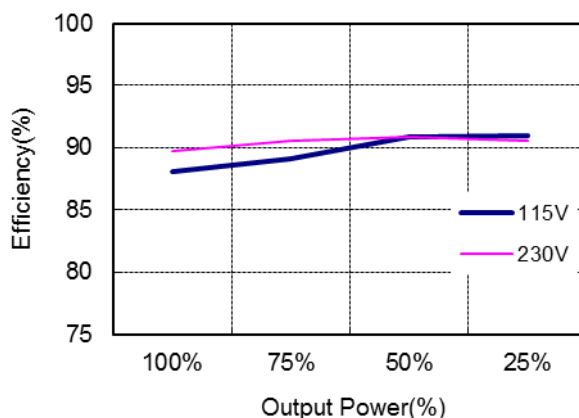


No-load Input Power vs. Input Line Voltage

1.2 Efficiency

Table 3 Efficiency (18AWG 1.5m Cable end, 75mΩ)

Input voltage	100%	75%	50%	25%	Aver. Eff.	Spec. COC V tier2
115Vac/60HZ	88.25	89.19	90.83	91.06	89.83	>88.3%
230Vac/50HZ	89.76	90.53	90.89	90.56	90.44	



Efficiency vs. Percent of Rated Output Power

2. Output Characteristics

2.1 Line Regulation & Load Regulation

Table 4 Line Regulation & Load Regulation

Input Voltage	Output Voltage (V)			Load Regulation ($\leq 5\%$)
	No Load	Half Load	Full Load	
90V/47Hz	12.16	11.99	11.87	2.0
115V/60Hz	12.14	11.97	11.87	2.0
230V/50Hz	12.14	11.96	11.88	2.0
264V/63Hz	12.14	11.96	11.89	2.0
Line Regulation ($\leq 2\%$)	0.02	0.02	0.02	

2.2 Ripple & Noise

Table 5 Ripple & Noise measure results

Input Voltage	R&N (mV)		Waveform
	No Load	Full Load	
90Vac/60HZ	26	105	Fig.1, Fig.2
115Vac/60HZ	28	100	
230Vac/50HZ	30	95	
264Vac/50HZ	31	97	Fig.3, Fig.4

Note: Ripple & noise were measured at AWG18 1.5M CABLE end with a 0.1uF/100V ceramic cap connected in parallel with a 10uF/50V Electrolytic cap. Bandwidth was limited to 20MHz.

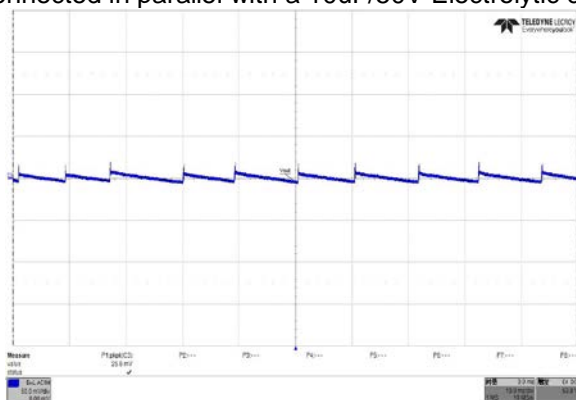


Fig. 1 R&N waveform@90Vac; no load

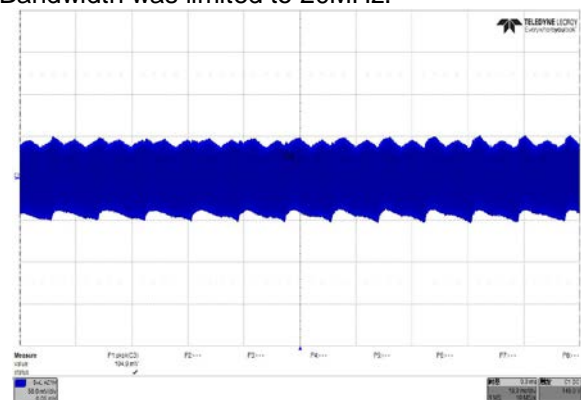


Fig. 2 R&N waveform@90Vac; full load

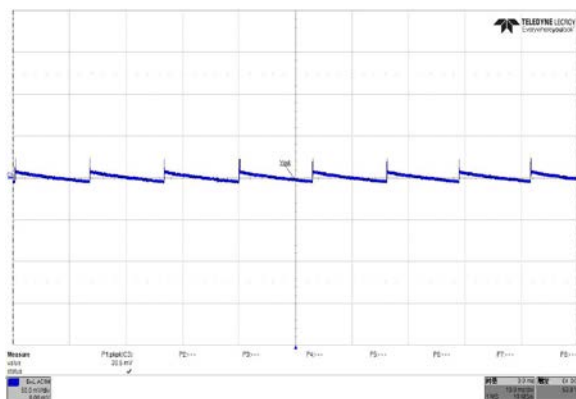


Fig. 3 R&N waveform@264Vac; no load

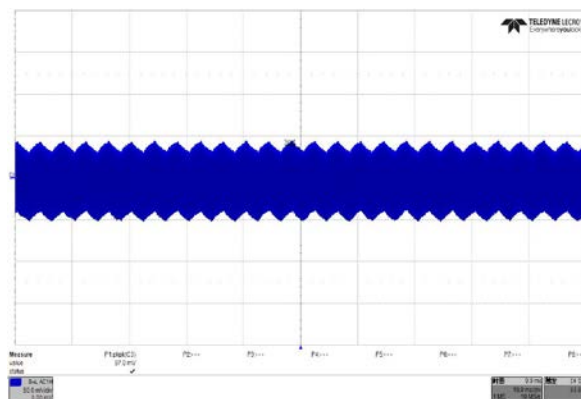


Fig. 4 R&N waveform@264Vac; full load

2.3 Dynamic Test

A dynamic loading with low set at 10.0% load lasting for 50mS and high set at 100% load lasting for 50mS is added to output. The ramp is set at 0.25A/uS at transient. All data was measurement at AWG18 1.5M CABLE end.

Table 6 Output voltage under dynamic test

Input voltage	Output voltage (mV)	Waveform
90V/60HZ	± 392	Fig.11
264V/50HZ	± 360	Fig.12

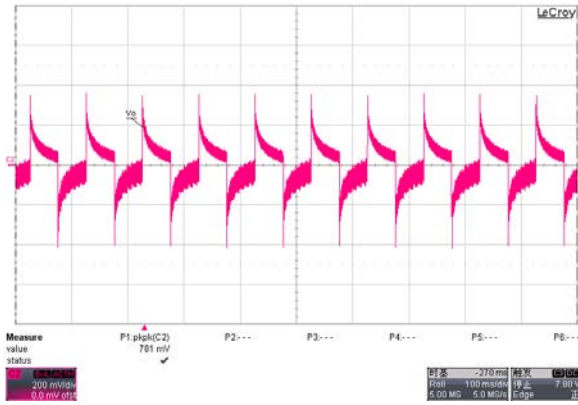


Fig. 5 Dynamic waveform @90Vac input

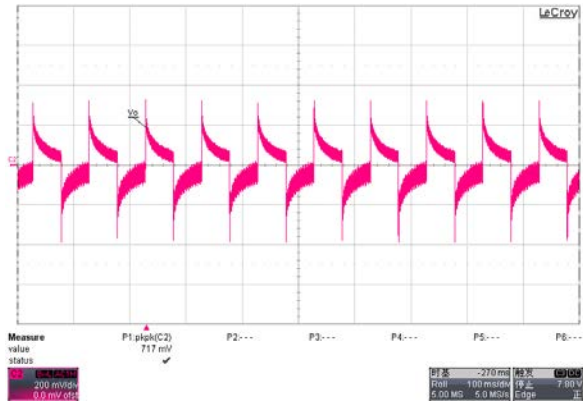


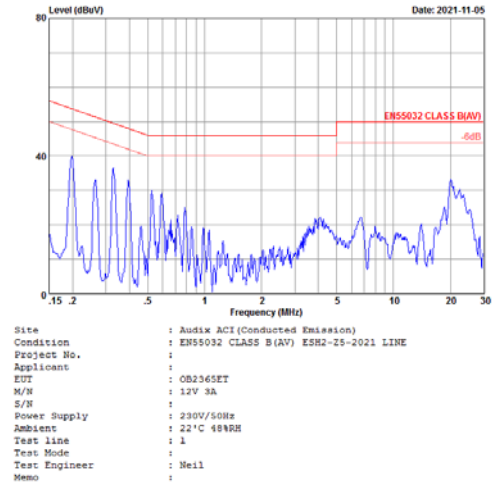
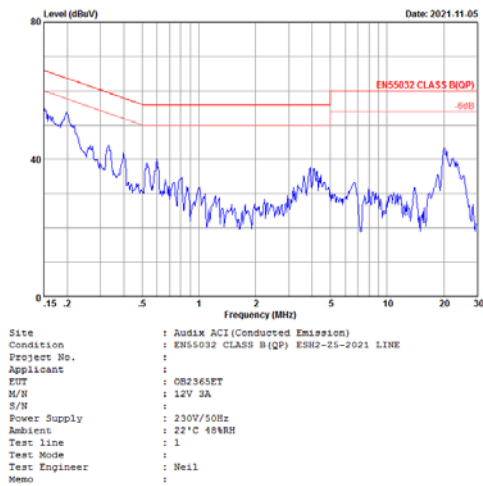
Fig. 6 Dynamic waveform @264Vac input

3. EMI Test

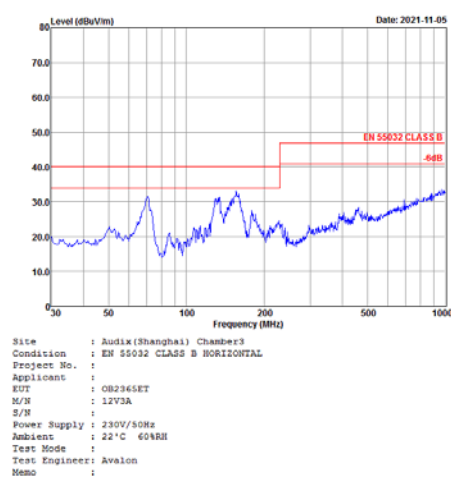
The Power supply passed EN55022 Class B & FCC class B EMI requirement with more than 6dB margin

3.1 Conduction EMI Test

EN55022 CLASS B @ full load report



3.2 Radiation EMI Test



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