

Subject  
**OB2365ETAP Demo Board Manual**

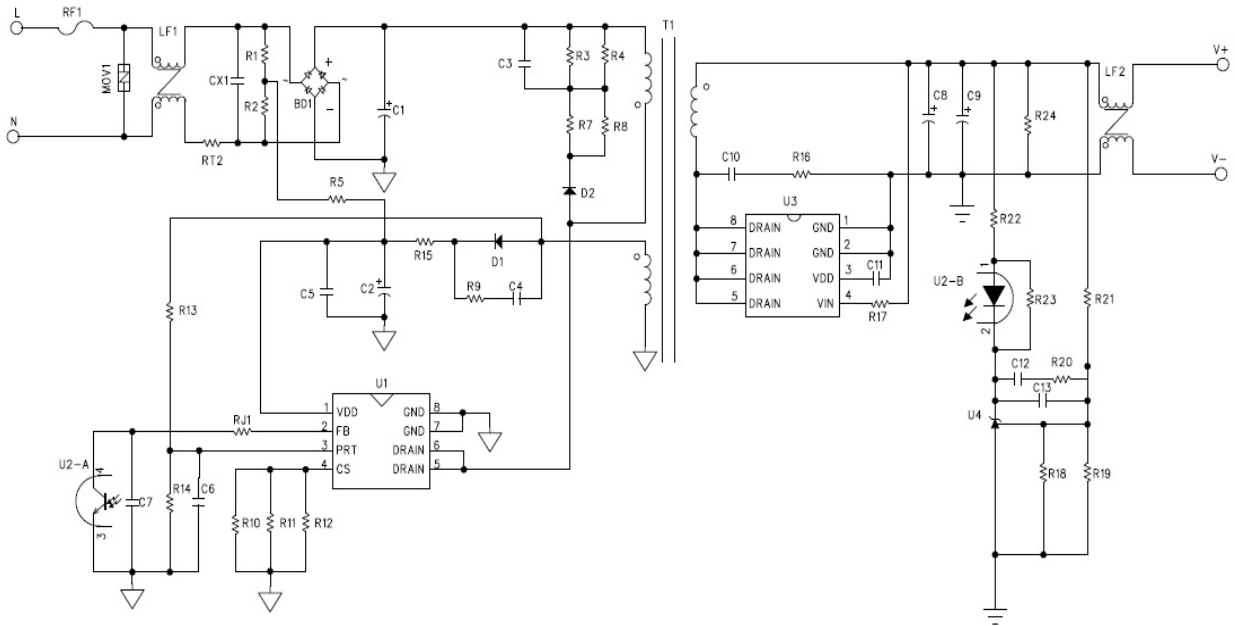
Board Model: AD12V2A 2365T 1811  
Doc. No.: OB\_DOC\_DBM\_2365ET00



## Key Features

- Standby Power < 75mW(230Vac input, no load)
- Averaged efficiency more than 86.8% @115/230Vac at AWG22 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
- OVP/OTP with auto recovery, and the OVP triggered voltage can be adjusted by the resistor connected between auxiliary winding and PRT pin

## Schematic



# Performance Evaluation

## 1. Input Characteristics

### 1.1 Input current and Standby power

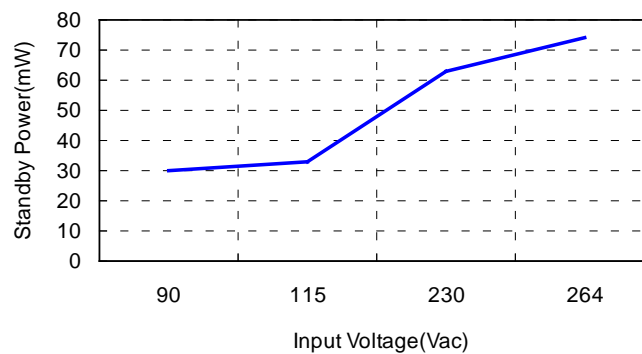
The module was tested at different input voltages (from 90Vac to 264Vac)

Table 1 Input current at full load

Input Voltage	90V/60Hz	115V/60Hz	230V/50Hz	264V/50Hz
Input Current(A)	0.499	0.406	0.246	0.221

Table 2 Standby power at no load

Input Voltage	90V/60Hz	115V/60Hz	230V/50Hz	264V/50Hz
Pin (mW)	30	33	63	74

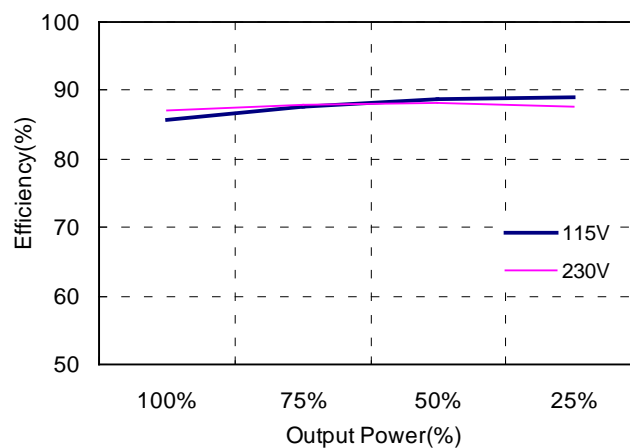


No-load Input Power vs. Input Line Voltage

### 1.2 Efficiency

Table 3 Efficiency

Input voltage	100%	75%	50%	25%	Aver. Eff.	Spec.COC V Tier2
115Vac/60HZ	85.59%	87.10%	88.75%	88.60%	87.51%	
230Vac/50HZ	87.80%	87.74%	88.10%	87.30%	87.73%	>86.8%



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 (%)
	No Load	Half Load	Full Load	
90V/47Hz	12.139	11.963	11.785	2.95
115V/60Hz	12.138	11.963	11.786	2.93
230V/50Hz	12.138	11.963	11.786	2.93
264V/63Hz	12.138	11.963	11.787	2.92
Line Regulation (%)	0.01	0.00	0.02	

### 2.2 Ripple & Noise

Table 5 Ripple & Noise measure results

Input Voltage	R&N (mV)		Waveform
	No Load	Full Load	
90Vac/60HZ	36.4	102.5	Fig.1, Fig.2
115Vac/60HZ	39.3	87.4	
230Vac/50HZ	45.8	91.7	
264Vac/50HZ	46.2	92.2	Fig.3, Fig.4

Note: Ripple & noise were measured at AWG22 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.

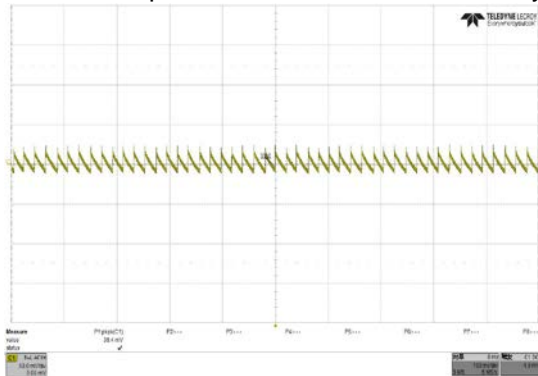


Fig. 1 R&N waveform@90Vac; no load

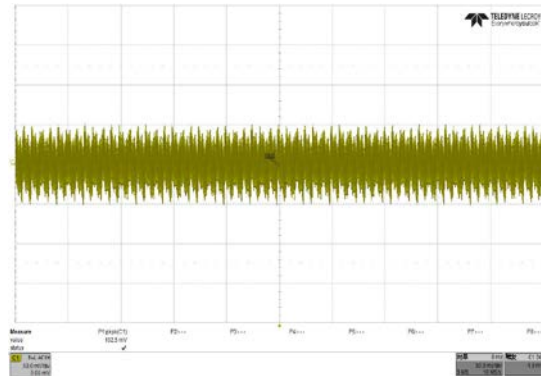


Fig. 2 R&N waveform@90Vac; full load

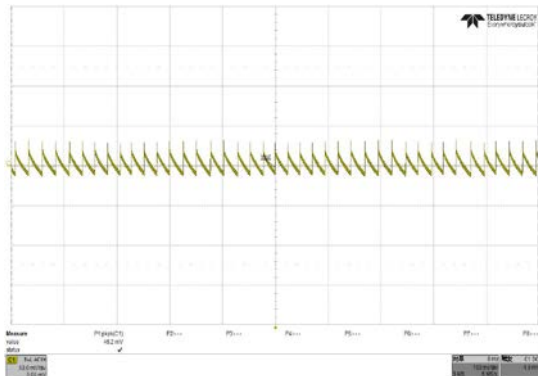


Fig. 3 R&N waveform@264Vac; no load

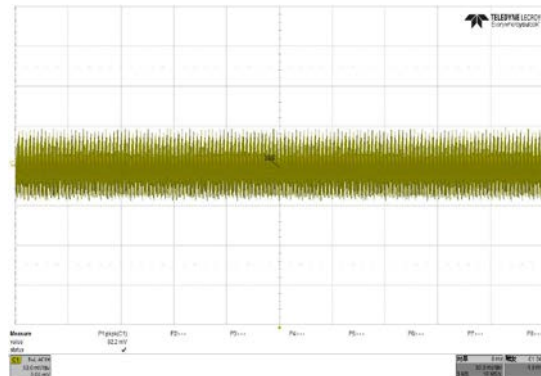


Fig. 4 R&N waveform@264Vac; full load

## 2.3 Dynamic Test

A dynamic loading with low set at 0.0% 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 AWG22 1.5M CABLE end.

Table 6 Output voltage under dynamic test

Input voltage	Output voltage (mV)	Waveform
90V/60HZ	$\pm 387$	Fig.11
264V/50HZ	$\pm 415$	Fig.12

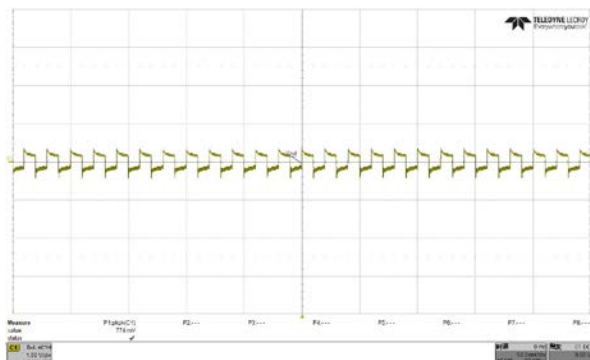


Fig. 5 Dynamic waveform@90Vac input

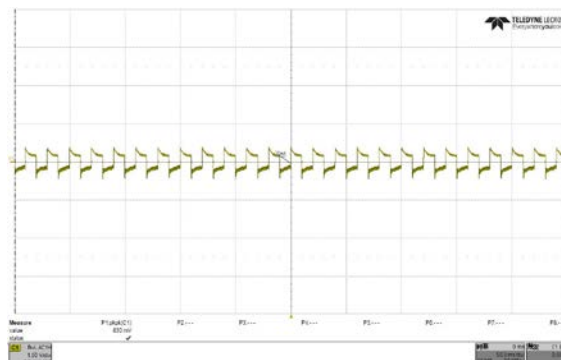
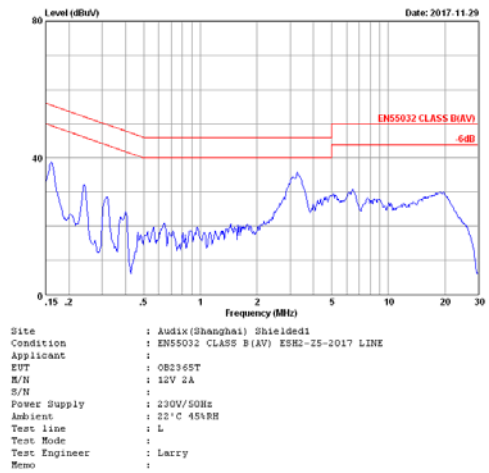
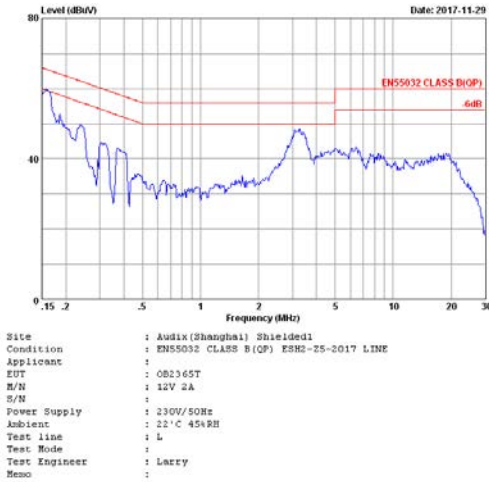


Fig. 6 Dynamic waveform@264Vac input

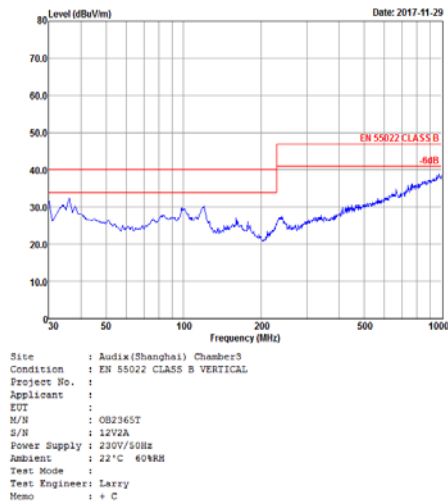
## 3. EMI Test

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

### 3.1 Conduction EMI Test



### 3.2 Radiation EMI Test



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