

**Subject**  
**OB6683 Demo Board Manual**

Board Model: AD19V4.73A6683 1924

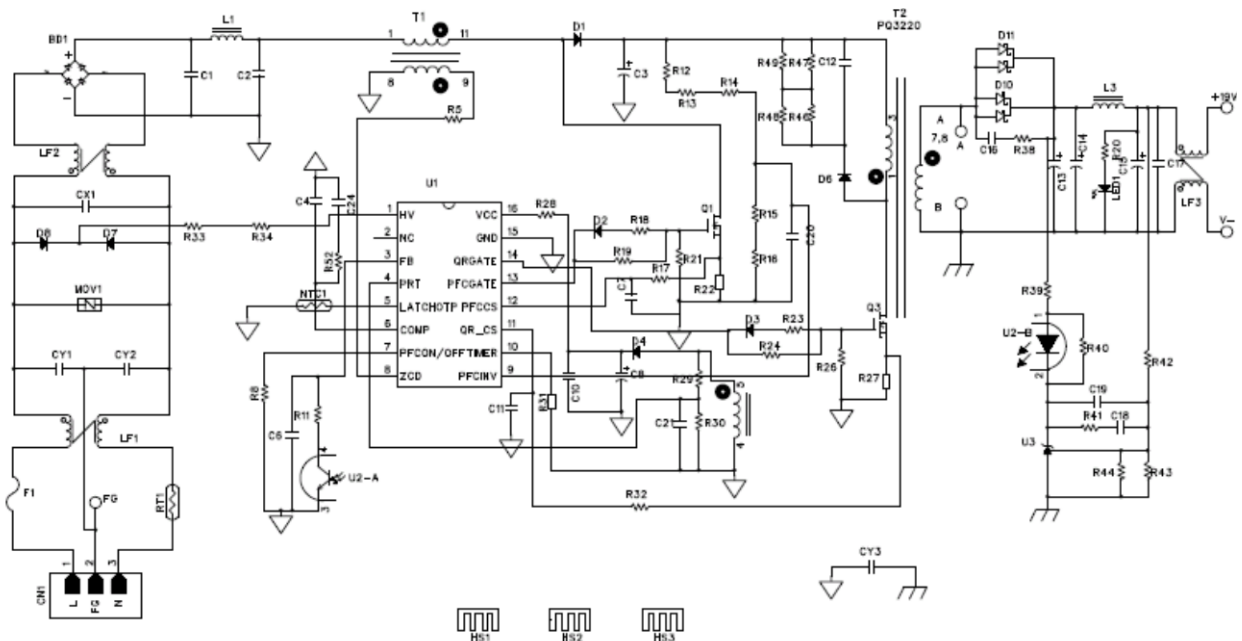
Doc. No.: OB\_DOC\_DBM\_668301



**Key features:**

- Single chip integrated Transition Mode (TM) PFC controller and Quasi-Resonant (QR) PWM controller
- Built-in dual output PFC control
- Adjustable PFC Go-to-Standby power level
- Average efficiency meet COC V tier2
- Standby power less than 75mW @230V input
- Quick startup and enhanced dynamic response for PFC stage
- High performance Quasi-Resonant control
- High precision OVP
- Meet EN55032 EMI

## Schematic



# Performance Evaluation

## 1. Input Characteristics

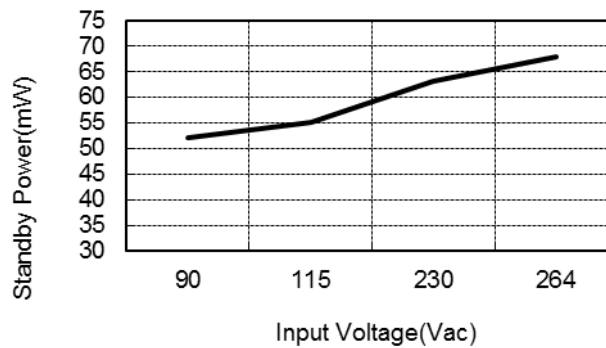
### 1.1 Standby Power/PF/THD

Table. 1 Standby Power(No load)

Input voltage	Standby power(mW)	Vo(V)
90Vac/60Hz	52	19.32
115Vac/60Hz	55	19.32
230Vac/50Hz	63	19.32
264Vac/50Hz	68	19.32

Table. 2 PF/THD(Full load)

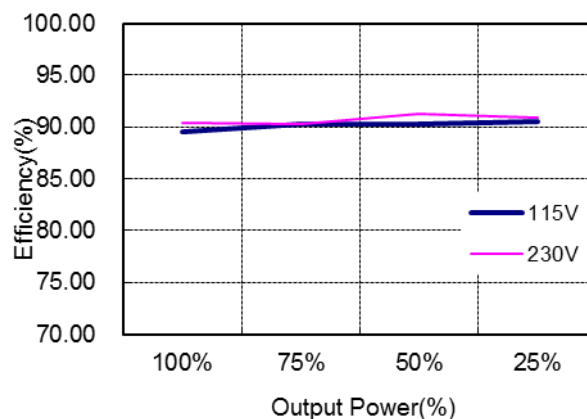
Input voltage	PF	THD(%)
90Vac/60Hz	0.98	12
115Vac/60Hz	0.98	12
230Vac/50Hz	0.97	13
264Vac/50Hz	0.96	14



### 1.2 Efficiency

Table. 3 Efficiency

Input voltage	100%	75%	50%	25%	Aver. Eff.	DoE VI
115Vac/60Hz	89.52%	90.01%	90.17%	90.83%	90.13%	Ave Efficiency >89%
230Vac/50Hz	90.16%	89.85%	91.32%	90.37%	90.42%	



## 2. Output Characteristics

### 2.1 Line Regulation & Load Regulation

Table. 4 Line Regulation & Load Regulation

Input voltage	No load	Half load	Full load	Specification	Test result
90Vac/60Hz	19.16	19.01	18.86		
115Vac/60Hz	19.16	19.01	18.86		
230Vac/50Hz	19.16	19.00	18.86		
264Vac/50Hz	19.14	18.98	18.85		
Line Regulation	0.16%			2%	Pass
Load Regulation	1.63%			5%	Pass

### 2.2 Ripple & Noise

Table. 5 Ripple & Noise

Input voltage	R&N (mV)		
	No load	Full load	Remark
90Vac/60Hz	43mV	140mV	Fig. 3,4
115Vac/60Hz	43mV	125mV	
230Vac/50Hz	38mV	110mV	
264Vac/50Hz	38mV	100mV	Fig. 5,6

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

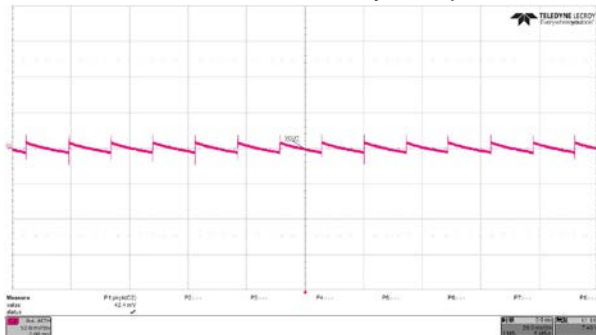


Fig. 1 Measured ripple& noise waveform@90Vac/60Hz, no load

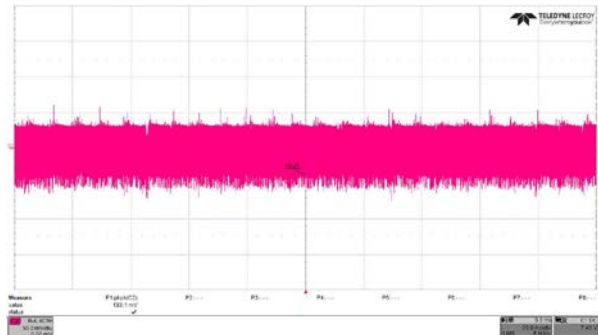


Fig. 2 Measured ripple& noise waveform@90Vac/60Hz, full load

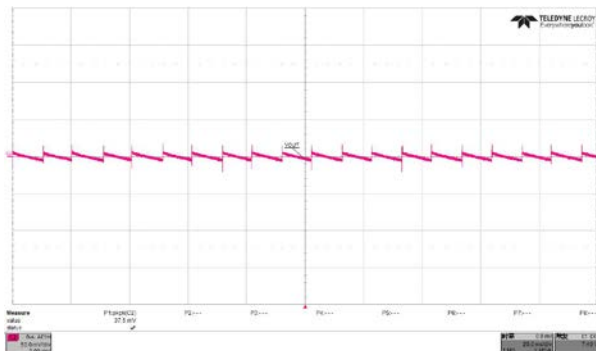


Fig. 3 Measured ripple& noise waveform@264Vac/50Hz, no load

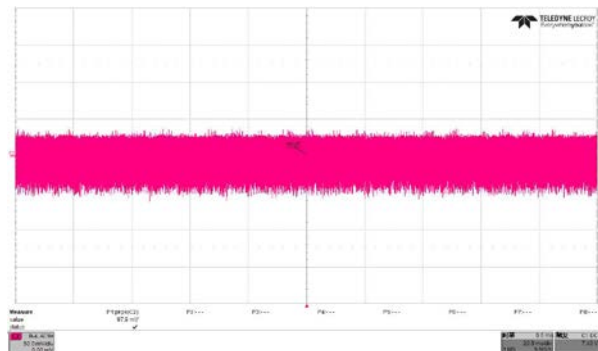


Fig. 4 Measured ripple& noise waveform@264Vac/50Hz, full load

### 2.3 Dynamic Test

A dynamic loading with low set at 10% load lasting for 10ms and high set at 100% load lasting for 10mS is added to output. The ramp is set at 0.25A/us at transient. Measurement was taken at CABLE end(Same as R&N measurement)

Table. 6 Output Voltage Under Dynamic Test

Input	Output (mV)	Remark
264V/50HZ	±350mV	Fig. 11
230V/50HZ	±350mV	
115V/60HZ	±360mV	
90V/60HZ	±360mV	Fig. 12

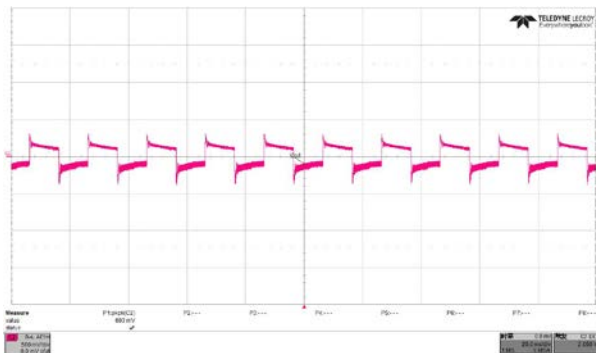


Fig. 5 Output voltage waveform under Dynamic test @264Vac/50Hz

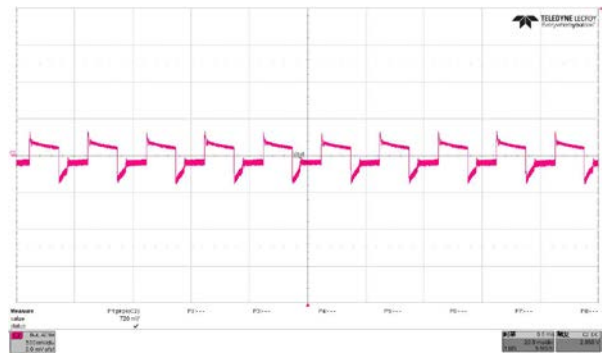
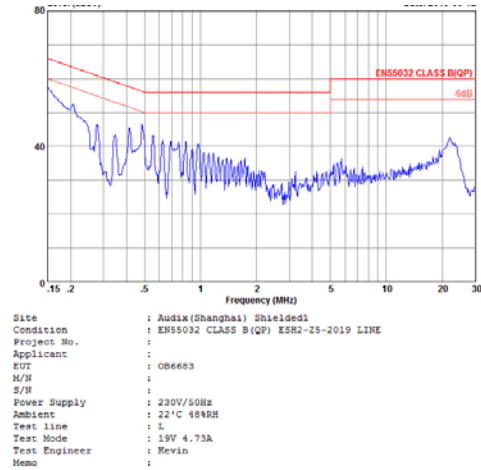
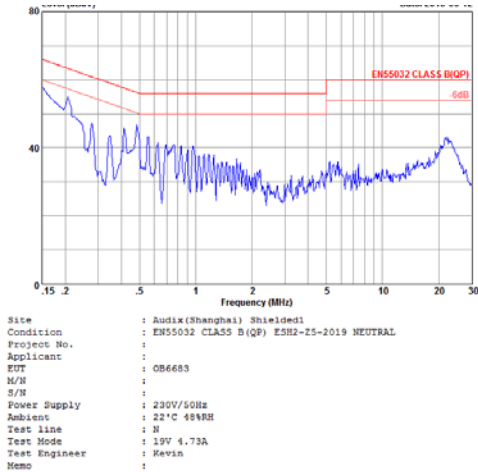


Fig. 6 Output voltage waveform under Dynamic test @90Vac/60Hz

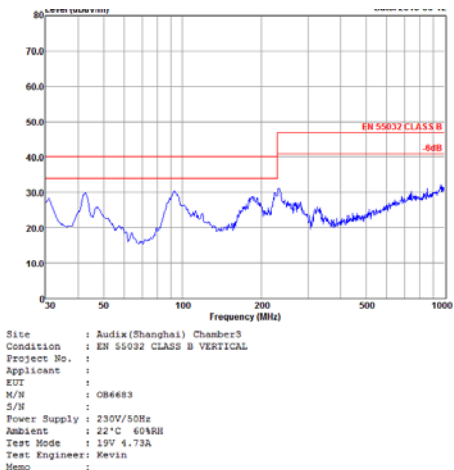
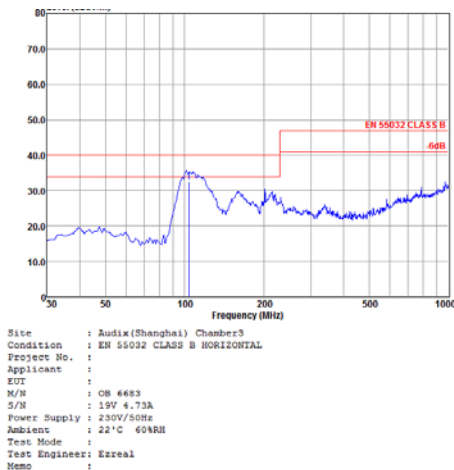
### 3. EMI Test

The Power supply passed EN55032 Class B & FCC class B EMI requirement with more than 6dB margin

#### 3.1 Conducted EMI Test



#### 3.2 Radiation EMI Test



1	Read		Cable	Antenna	Preamp	Limit	Over		
	Freq	Level					Loss	Factor	Line
	MHz	dBuV	dB	dB/m	dB	dBuV/m	dBuV/m	dB	
1	103.70	42.80	1.09	16.47	27.91	40.00	32.45	-7.55	QP

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