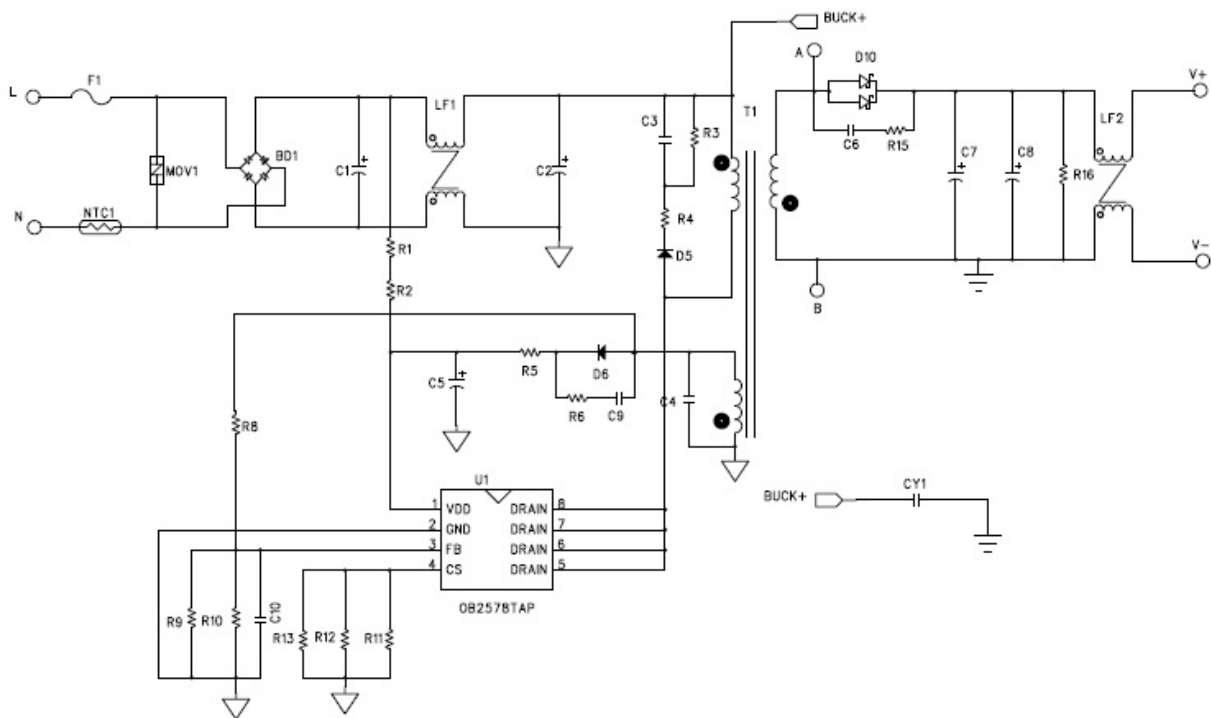


<p>Subject OB2578TAP Demo Board Manual</p>	<p>Board Model: CH12V2A2578TAP Doc. No.: OB_DOC_DBM_2578T00</p>
	<p>Key features:</p> <ul style="list-style-type: none"> • Standby power less than 75mW@264Vac • Precise CV/CC regulation • Primary-side sensing cc and cv regulation without TL431 and opto-coupler • Cost effective and simplified system design • Average efficiency meet DOE/COC • Audio noised free operation • Frequency shuffling technology to improve EMI performance • Meet EN55032 EMI & FCC Part 15

Schematic



Performance Evaluation

This session presents the test results of OB2578TAP module up to date. Results on inrush current and safety test are not included and will be added when they become available.

Overall, the module meets design specifications. All data was measured at the end of 162mohm output cable.

Performance Highlights

- Standby power less than 75mW @264V
- Precise CV/CC regulation
- The average efficiency meet DOE Level 6/COC
- EMI passed EN55032 and FCC part 15 Class B test with more than 6dB margin

System Electrical Specification

Description	Symbol	Min	Typ.	Max	Units	Comment
Input Section						
Input Voltage	V_{IN}	90		264	V	2 Wire
Line Frequency	f_{LINE}	47	50/60	63	Hz	
Standby Power				75	mW	230V
Output characteristics						
CV Section	Output Voltage	V_{OUT_CV}	12		V	
	Output Current	I_{OUT_CV}	0	2.0	A	
CC Section	Output Voltage	V_{OUT_CC}	7.0		V	
	Output Current	I_{OUT_CC}	2.2	2.6	A	
Ripple & Noise	V_{RIPPLE}			120	mV _{P-P}	
Continuous Output Power	P_{OUT}		24		W	
Over Current Protection	I_{OUT_MAX}			2.6	A	
Active Mode Efficiency	η	86.20			%	Measured at Line End, $V_{IN}=115V/230V(COC)$
Time sequence						
Turn on delay time				2	s	
Environmental						
Conducted/Radiation EMI	Meets EN55032\FCC 15					
Safety	Meets IEC950,UL1950,Class II					
ESD		18			kV	

Test Equipments

Item	Vender	Module
AC Source	WEST	WEW1010
Digital Power Meter	YOKOGAWA	WT210
Electrical Load	Chroma	63030
Oscilloscope	LeCroy	WS424
Multimeter	VICTORY	VC9807A

1. Input Characteristics

1.1 Standby power

Table. 1 Standby power

Input voltage	Pin(mW)	Vo(V)	Specification	Test result
90V/60HZ	32.30	12.303	<75mW	Pass
115V/60HZ	35.20	12.305		
230V/50HZ	58.30	12.288		
264V/50HZ	71.30	12.286		

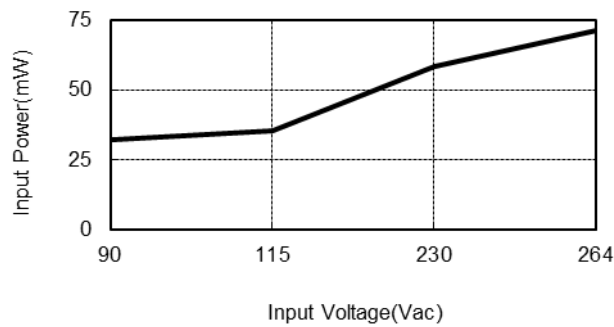


Fig. 1 Standby Power vs. Input Voltage

1.2 Efficiency

Table. 2 Efficiency Line end with 22# 1.5M (162mΩ) output line.

Input voltage	10%	25%	50%	75%	100%	25%~100% Load Aver. Eff.	Standards		Test Result
							DOE	COC	
115V/60Hz	87.61%	88.70%	88.46%	87.05%	85.98%	87.54%	86.20%	76.80% (10%Load)	Pass
230V/50Hz	84.93%	87.84%	88.15%	87.88%	87.04%	87.72%		86.80%	

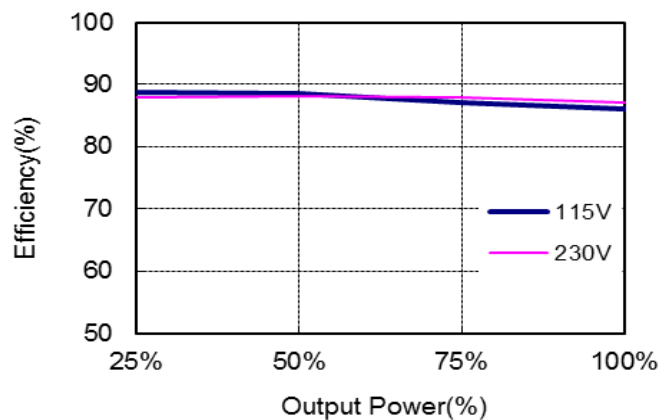


Fig. 2 Efficiency vs. Percent of Rated Output Power

2. Output Characteristics

2.1 Line Regulation & Load Regulation

Table. 3 Line Regulation & Load Regulation

Input voltage	No load(V)	Half load(V)	Full load(V)	Specification(V)	Test result
90V/60Hz	12.302	12.212	12.095	11.40-12.60	Pass
115V/60Hz	12.302	12.218	12.143	11.40-12.60	
230V/50Hz	12.289	12.064	12.037	11.40-12.60	
264V/50Hz	12.292	12.07	12.06	11.40-12.60	
Line Regulation	$\pm 0.68\%$			$< \pm 2\%$	Pass
Load Regulation	$\pm 1.6\%$			$< \pm 5\%$	Pass

2.2 Ripple & Noise

Table. 4 Ripple & Noise

Input voltage	R&N (mV)		
	No load	Full load	Remark
90V/60Hz	15	95	Fig. 4,5
115V/60Hz	17	93	
230V/50Hz	15	58	
264V/50Hz	15	53	Fig. 6,7

Note: Ripple&noise was measured at line end without probe cap and ground clip, meanwhile with ceramic cap 0.1uF/100V and electrolytic cap 10uF/50V. Measurement bandwidth was limited to 20MHz.

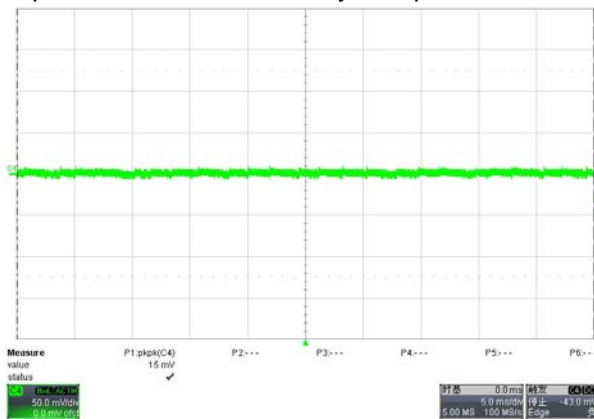


Fig. 3 Measured ripple& noise waveform@90V/60Hz, no load

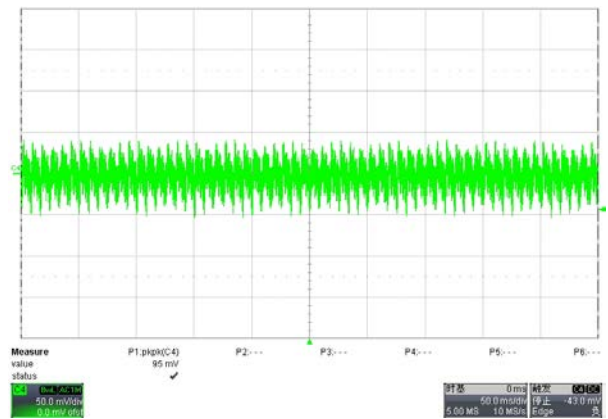


Fig. 4 Measured ripple& noise waveform@90V/60Hz, full load

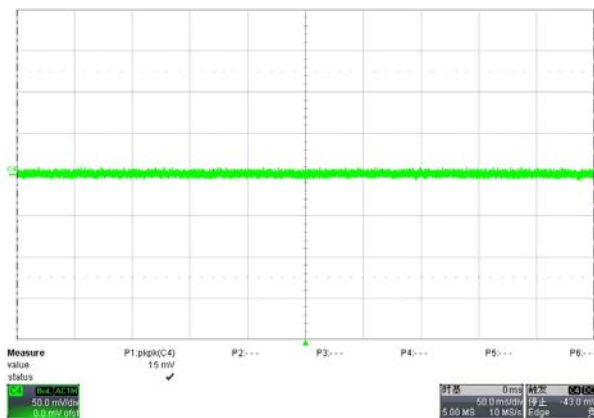


Fig. 5 Measured ripple& noise waveform@264V/50Hz, no load

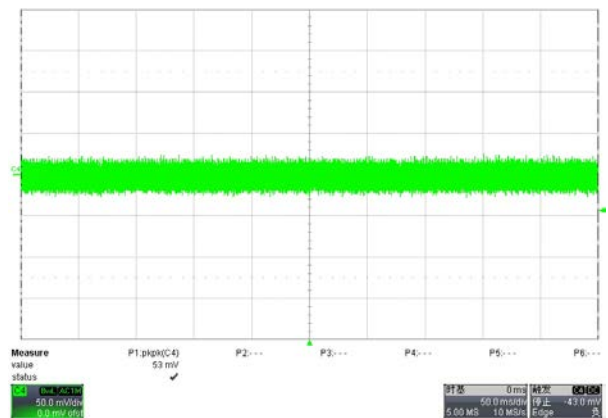


Fig. 6 Measured ripple& noise waveform@264V/50Hz, full load

2.3 Dynamic Test

A dynamic loading with low load lasting for 10ms/20ms and high load lasting for 10ms/20ms is added to output. The high load is 2.0A and the low load is 0A. The ramp is set at 0.125A/μs at transient. Measurement was taken at line end (Same as R&N measurement)

Table. 5 Output voltage under dynamic test(2.0A lasting for 10ms,0A lasting for 10ms)

Input	Vomin-Vomax(v)	Remark
90V/60Hz	11.60-12.86	
115V/60Hz	11.60-12.86	
230V/50Hz	11.60-12.66	
264V/50Hz	11.60-12.66	

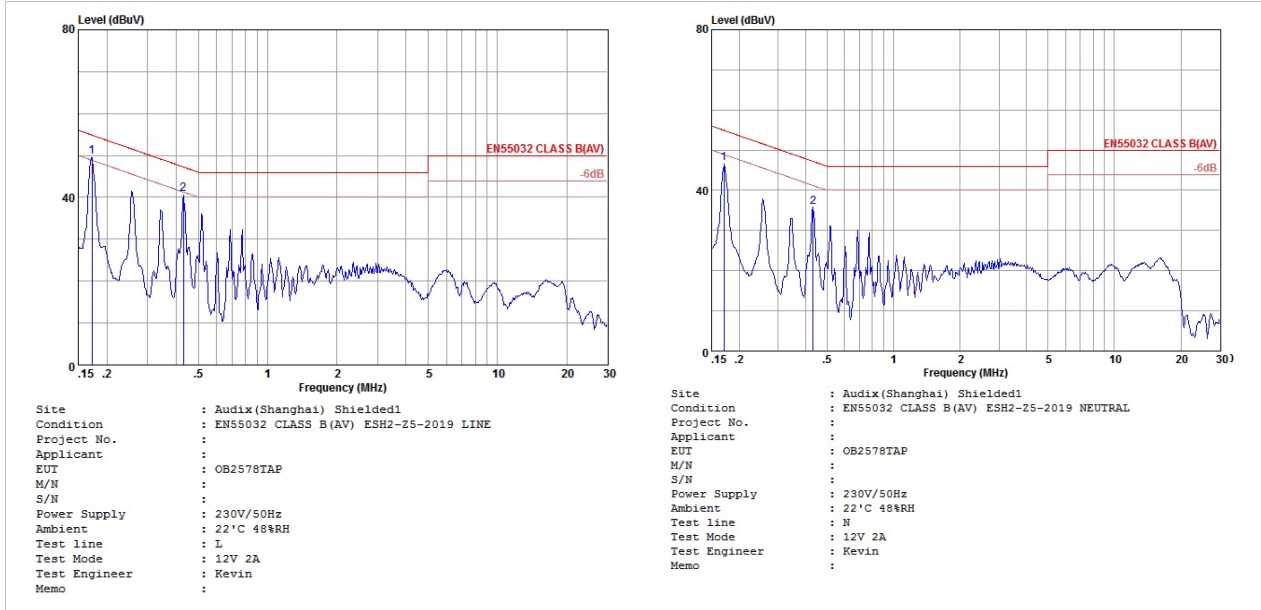
(2.0A lasting for 20ms,0A lasting for 20ms)

Input	Vomin-Vomax(v)	Remark
90V/60Hz	11.53-12.93	
115V/60Hz	11.60-12.93	
230V/50Hz	11.60-12.73	
264V/50Hz	11.60-12.73	

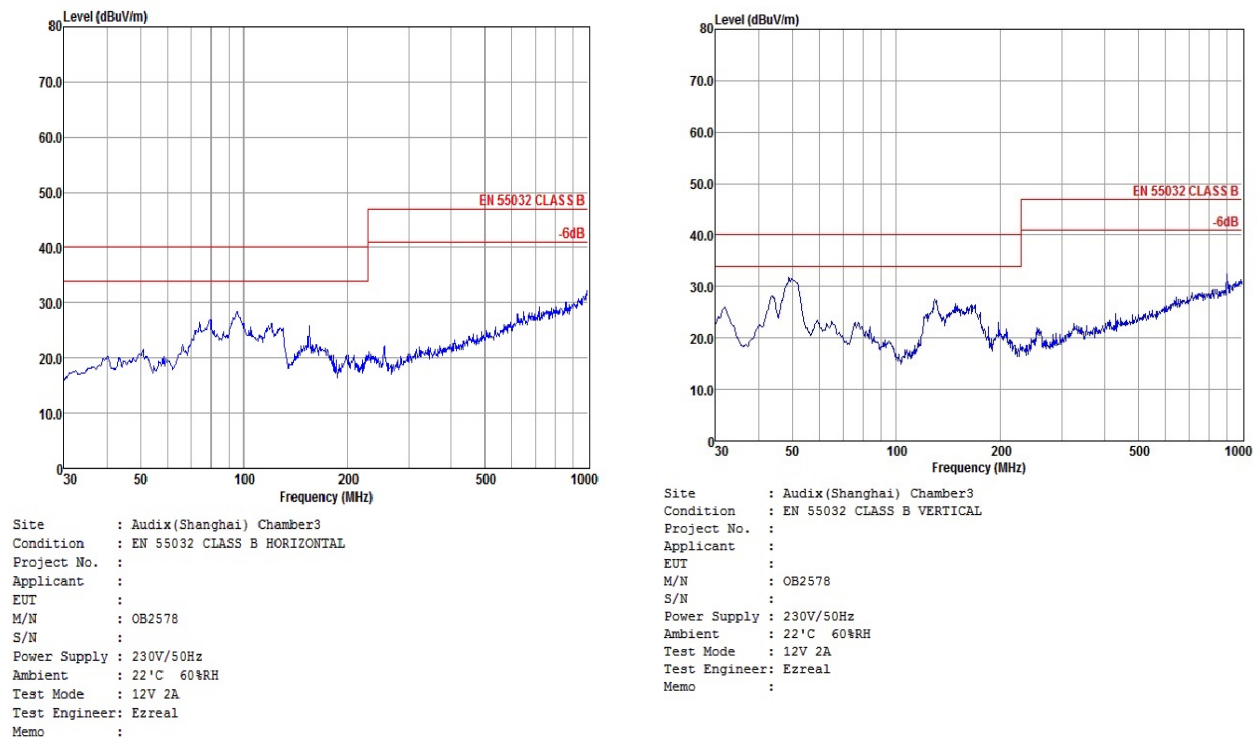
3. EMI Test

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

3.1 Conducted EMI Test



3.2 Radiation EMI Test



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