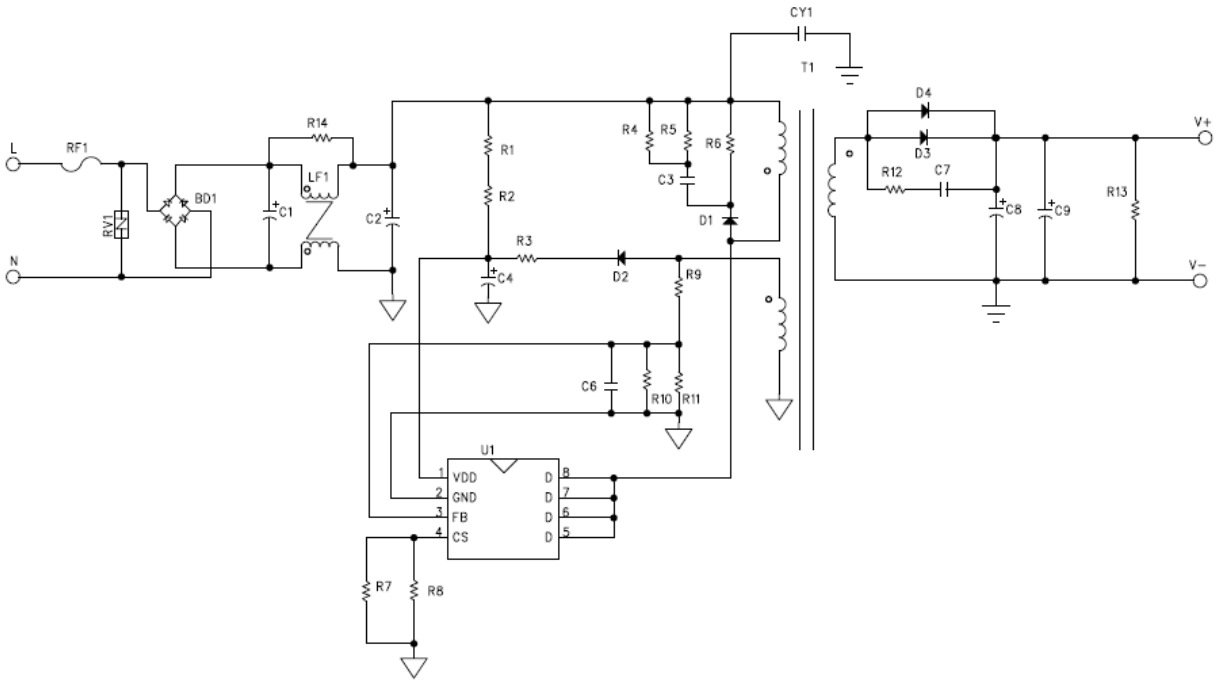
Subject **OB2579 Demo Board Manual**	Board Model: CH12V1.5A2579 Doc. No.: OB_DOC_DBM_2579T00
	**Key features:** • Standby power less than 75mW@264Vac • Precise CV/CC regulation • Primary-side sensing cc and cv regulation without TL431 and opto-coupler • Cost effective and simplified system design • Average efficiency meet DOE/COC • Audio noised free operation • Frequency shuffling technology to improve EMI performance • Meet EN55032 EMI & FCC Part 15 • Support 3A peak load

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		1.5	A	
CC Section	Output Voltage	V_{OUT_CC}	7.0			V	
	Output Current	I_{OUT_CC}	1.5		2.0	A	
Ripple & Noise		V_{RIPPLE}			150	mV_{P-P}	
Continuous Output Power		P_{OUT}		18		W	
Over Current Protection		I_{OUT_MAX}			2.0	A	
Active Mode Efficiency		η	85.54			%	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	48	12.002	<75mW	Pass
115V/60HZ	50	12.007		
230V/50HZ	62	11.931		
264V/50HZ	72	11.927		

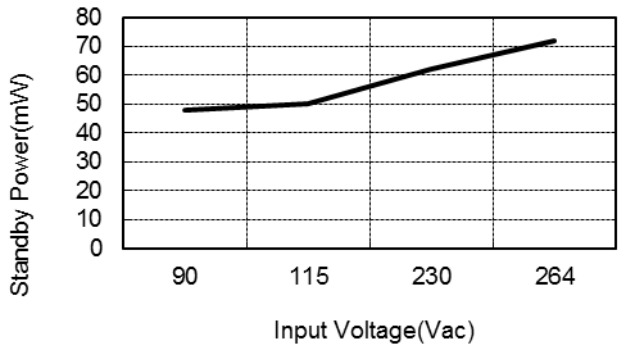


Fig. 1 Standby Power vs. Input Voltage

1.2 Efficiency

Table. 2 Efficiency PCB end.

Input voltage	10%	25%	50%	75%	100%	25%~100% Load Aver. Eff.	Standards		Test Result
							DOE	COC	
115V/60Hz	80.79%	86.04%	87.16%	87.51%	87.03%	86.94%	**85.0%**	**85.45%**	**Pass**
230V/50Hz	78.31%	85.49%	87.13%	87.98%	88.43%	87.25%		**75.45% (10%Load)**	

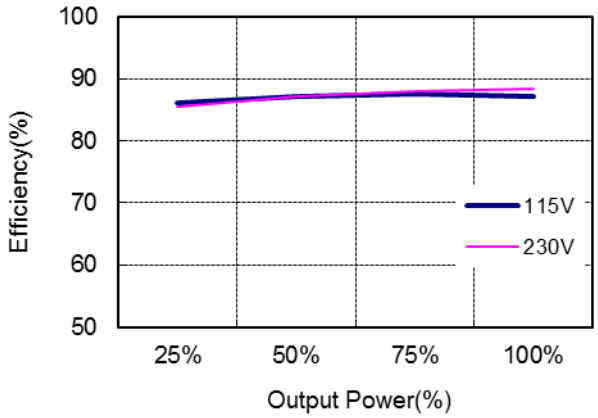


Fig. 2 Efficiency vs. Percent of Rated Output Power

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	12.002	11.948	11.923	11.40-12.60	Pass
115V/60Hz	12.007	11.964	12.005	11.40-12.60	
230V/50Hz	11.931	11.910	12.007	11.40-12.60	
264V/50Hz	11.927	11.893	12.017	11.40-12.60	
Line Regulation	±0.39%				
Load Regulation	±0.52%				

2.2 Ripple & Noise

Table. 4 Ripple & Noise

Input voltage	R&N (mV)		
	No load	Full load	Remark
90V/60Hz	18	142	Fig. 4,5
115V/60Hz	16	123	
230V/50Hz	17	88	
264V/50Hz	17	75	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.

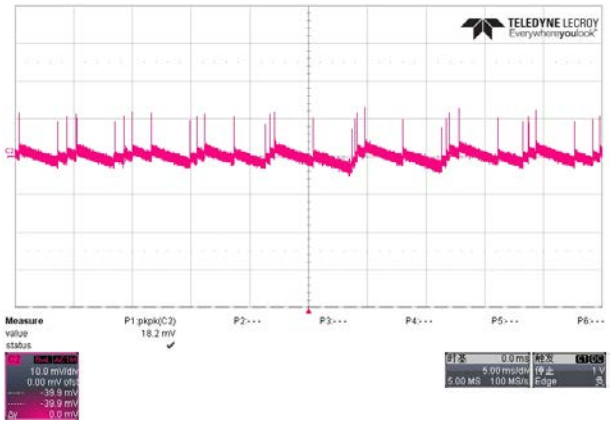


Fig. 3 Measured ripple& noise waveform@90V/60Hz, no load

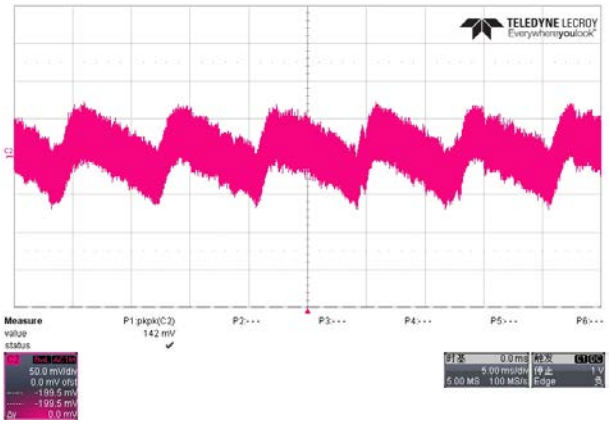


Fig. 4 Measured ripple& noise waveform@90V/60Hz, full load

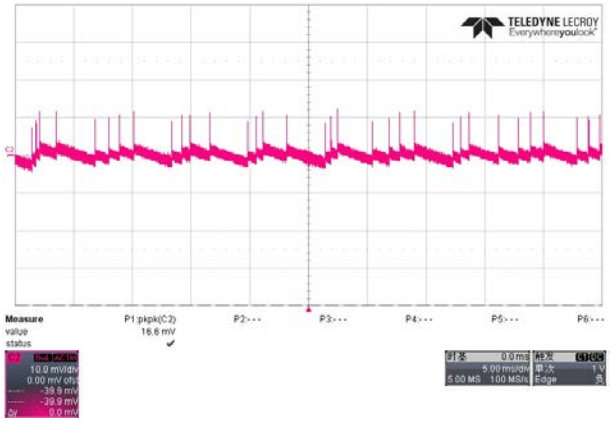


Fig. 5 Measured ripple& noise waveform@264V/50Hz, no load

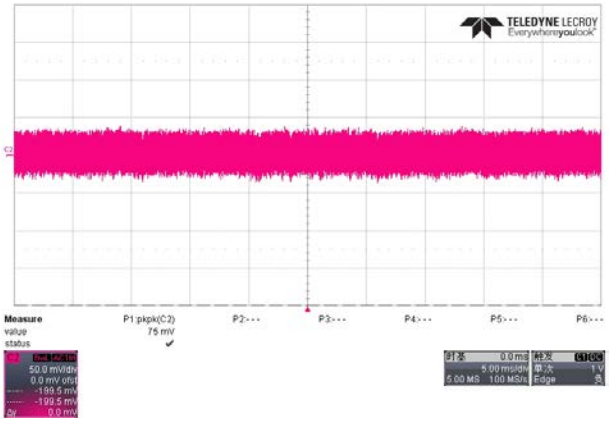


Fig. 6 Measured ripple& noise waveform@264V/50Hz, full load

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	11.33-12.61	
115V/60Hz	11.40-12.61	
230V/50Hz	11.46-12.61	
264V/50Hz	11.46-12.61	

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

Input	Vomin-Vomax(v)	Remark
90V/60Hz	11.33-12.68	
115V/60Hz	11.40-12.68	
230V/50Hz	11.46-12.68	
264V/50Hz	11.46-12.68	

3. Conducted EMI Test

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

EMI TEST REPORT

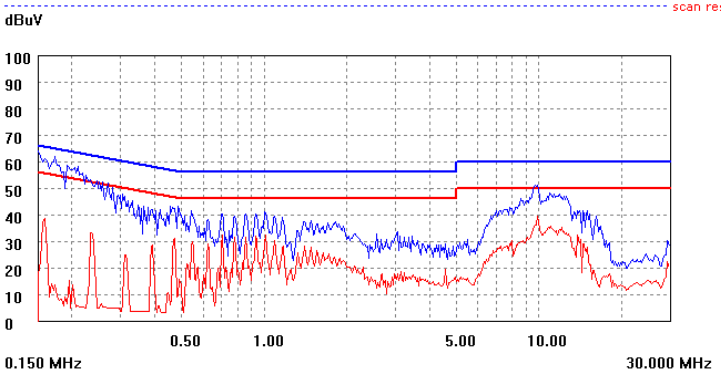
parameter

Organization:		Operator:		EUT:	
Place:		Time:	2021/12/14/15:28		
Detector:	PK+AV	Test-time(ms):	30		
Limit:	EN55022B	Transductor:	PK-1		
Remark:					

freq, step

Start(MHz)	End(MHz)	Step(MHz)
0.150	2.000	0.003
2.000	10.000	0.025
10.000	30.000	0.050

scan result



EMI TEST REPORT

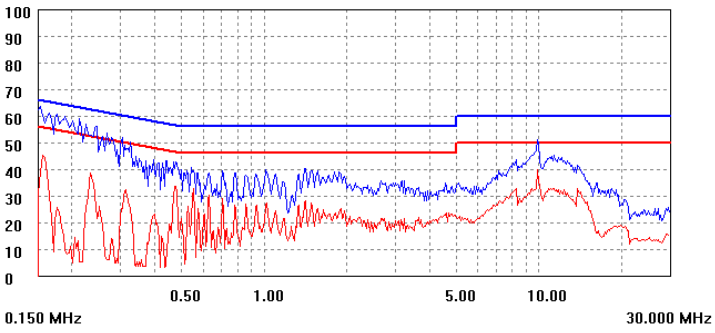
parameter

Organization:		Operator:		EUT:	
Place:		Time:	2021/12/14/15:24		
Detector:	PK+AV	Test-time(ms):	30		
Limit:	EN55022B	Transductor:	PK-1		
Remark:					

freq, step

Start(MHz)	End(MHz)	Step(MHz)
0.150	2.000	0.003
2.000	10.000	0.025
10.000	30.000	0.050

scan result



Disclaimer

On-Bright Electronics reserves the right to make corrections, modifications, enhancements, improvements, and other changes to its documents, products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete.