Texas Instruments

PMP4347 Test Procedure

Power Reference Design

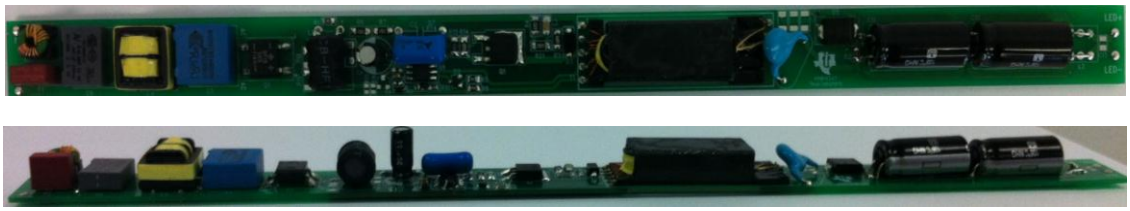
REV A

11/02/2012

GENERAL

1.1 PURPOSE

To provide detailed data for evaluating and verifying the PMP4347, which uses TI's new Primary Side Controller TPS92314 for T8 LED lighting standard form factor with 256mmx17.6mmx11mm. The below photo shows this demo board.



1.2 REFERENCE DOCUMENTATION

Schematic: PMP4347_SCH_RevA
Assembly: PMP4347_PCB_RevA
BOM

1.3 TEST EQUIPMENTS

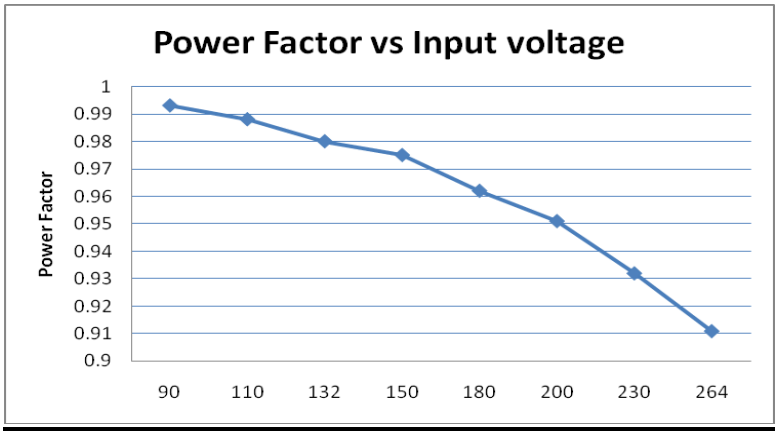
Power-meter: YOKOGAWA WT210
Multi-meter(current): Fluke 3345A
Multi-meter(voltage): Fluke 187
AC Source: Chroma 61530
LED load: Chroma 63110A module

2 INPUT CHARACTERISTICS

Otherwise Specified, the test is under the condition With LED electric Load (Chroma 63310A, 40V, 0.42A).

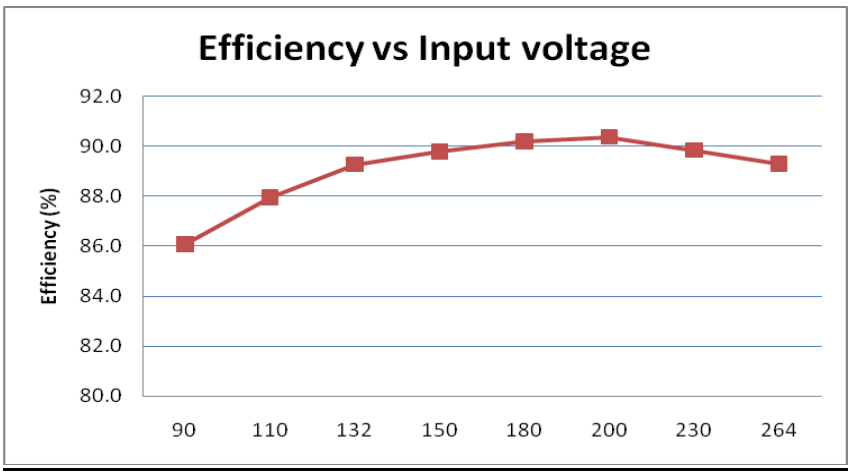
2.1 POWER FACTOR

Vin(Vac)	Freq(Hz)	PF	Io(Arms)	THD(%)
90	60	**0.993**	**0.411**	9.8
110	60	**0.988**	**0.413**	12.8
132	60	**0.980**	**0.415**	15.1
150	60	**0.975**	**0.417**	16.5
180	50	**0.962**	**0.420**	19.1
200	50	**0.951**	**0.423**	19.7
230	50	**0.932**	**0.425**	22.7
264	50	**0.911**	**0.428**	23.0



2.2 EFFICIENCY

Vin(Vac)	Freq(Hz)	Pin(W)	Vo(Vrms)	Io(Arms)	Eff(%)
90	60	**19.20**	**40.12**	**0.412**	**86.1**
110	60	**18.84**	**40.12**	**0.413**	**87.9**
132	60	**18.66**	**40.14**	**0.415**	**89.3**
150	60	**18.65**	**40.16**	**0.417**	**89.8**
180	50	**18.72**	**40.20**	**0.420**	**90.2**
200	50	**18.82**	**40.21**	**0.423**	**90.4**
230	50	**19.04**	**40.25**	**0.425**	**89.8**
264	50	**19.35**	**40.28**	**0.429**	**89.3**



2.3 INPUT CURRENT

Vin(Vac)	Freq(Hz)	Iin(Arms)

110	60	**0.173**
230	5	**0.088**

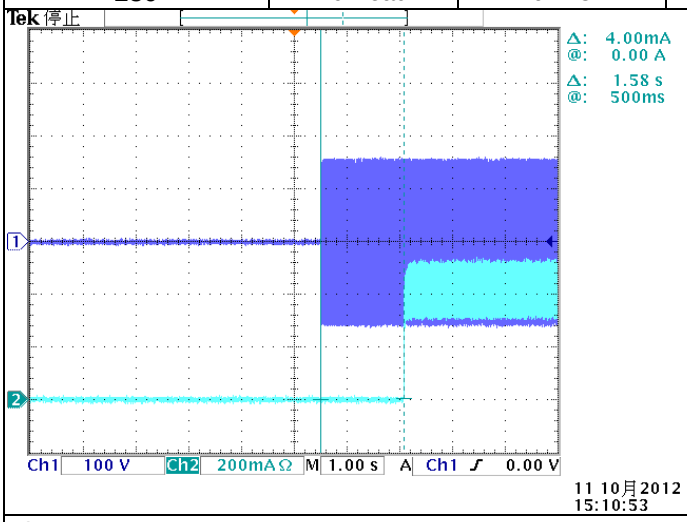
3 OUTPUT CHARACTERISTICS

3.1 OUTPUT VOLTAGE RANGE（38Vdc-42Vdc）

ITEM	Vout (V)	Iout(A)
Vin=110Vac	38	0.414
	42	0.413
Vin=230Vac	38	0.426
	42	0.423

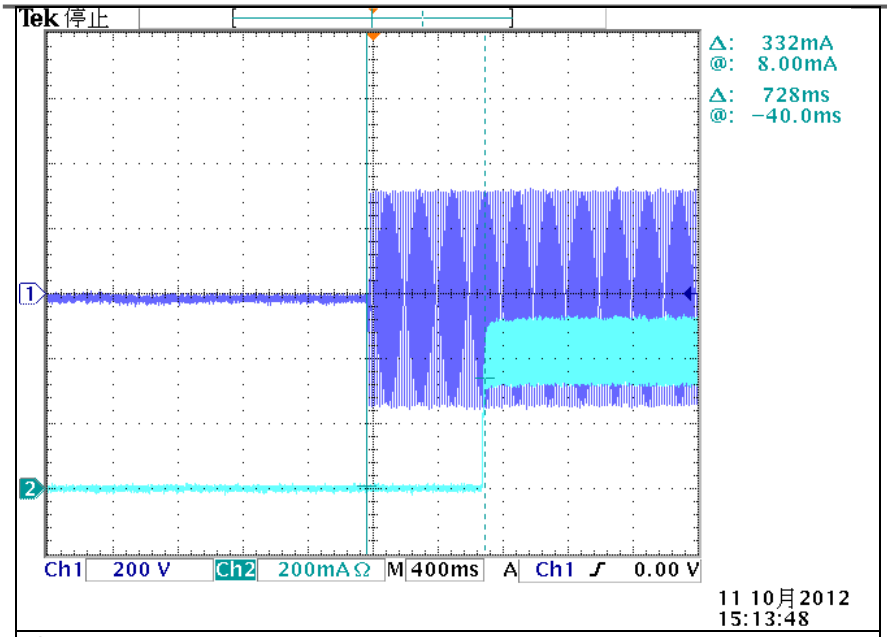
3.2 TURN ON DELAY AND RIPPLE CURRENT

CONDITIONS		Delay time (S)	Ripple current（mA）
Vin (Vac)	Load		
110	Full load	1.58	248mA, <+/-30%
230	Full load	0.728	232mA, <+/-30%

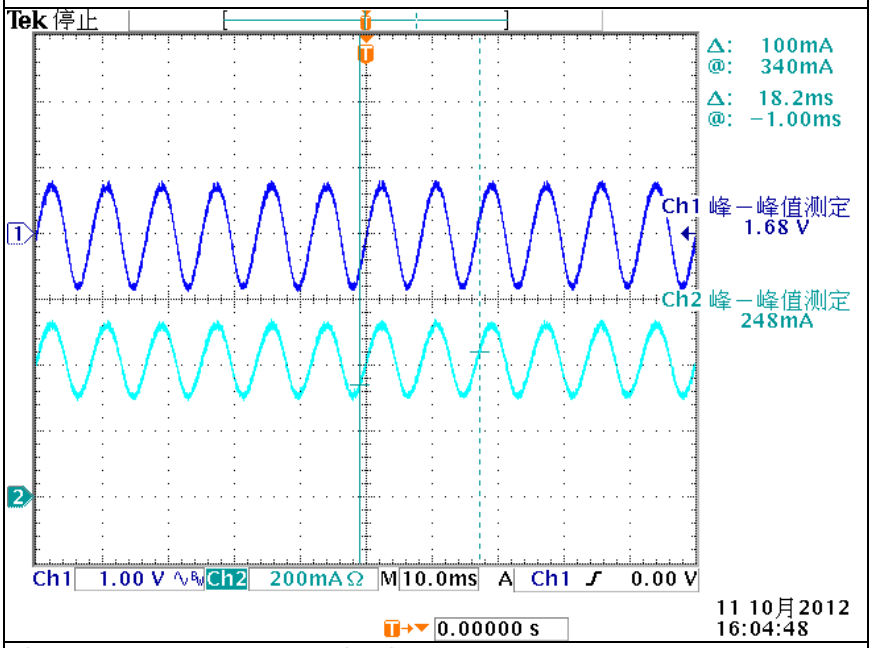


Vin:110Vac Io: full load
Ch1:Input voltage, 100Vac/div
Ch2: LED current 200mA/div

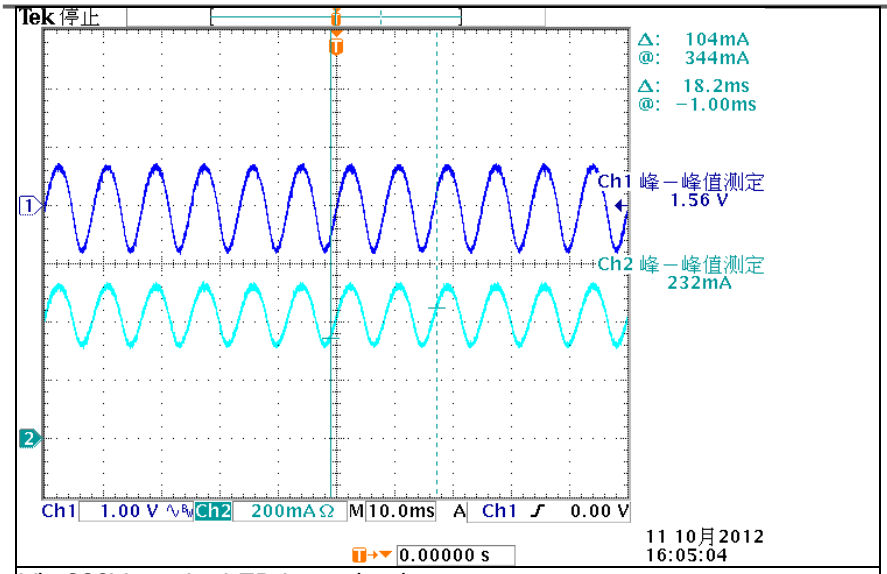
PMP4347 RevA Test Results



Vin:230Vac Io: full load
Ch1: Input voltage, 200Vac/div
Ch2: LED current, 200mA/div



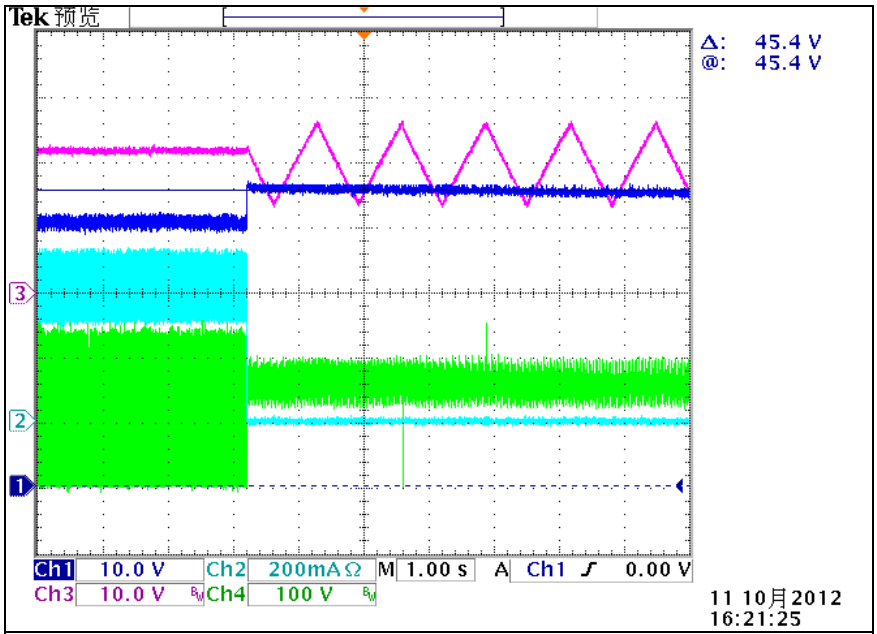
Vin:110Vac Io: LED Lamp load
Ch1: LED ripple voltage 1V/div
Ch2: LED current 200mA/div



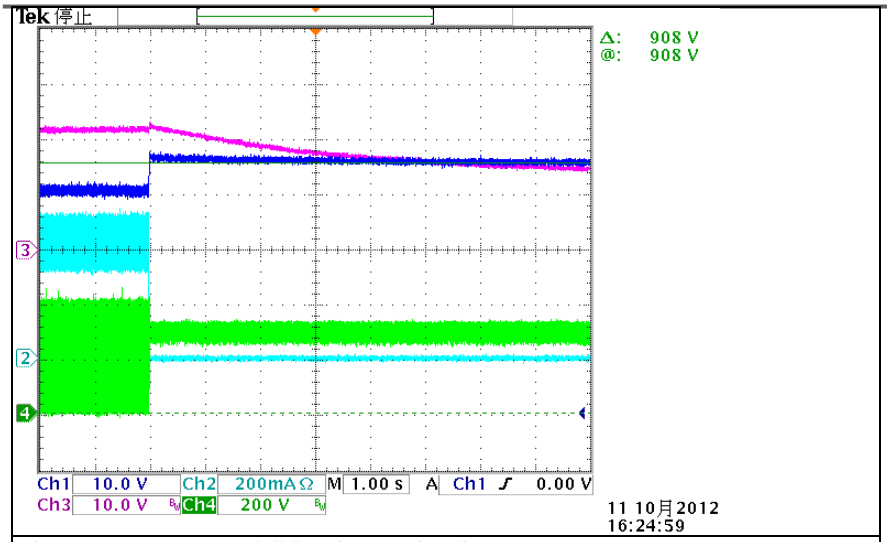
Vin:230Vac Io: LED Lamp load
Ch1: LED ripple voltage 1V/div
Ch2: LED current 200mA/div

3.3 OUTPUT OVER VOLTAGE AND NO LOAD PROTECTION

CONDITIONS	Protection voltage（V）
Vin (Vac)	
110&230	45.4

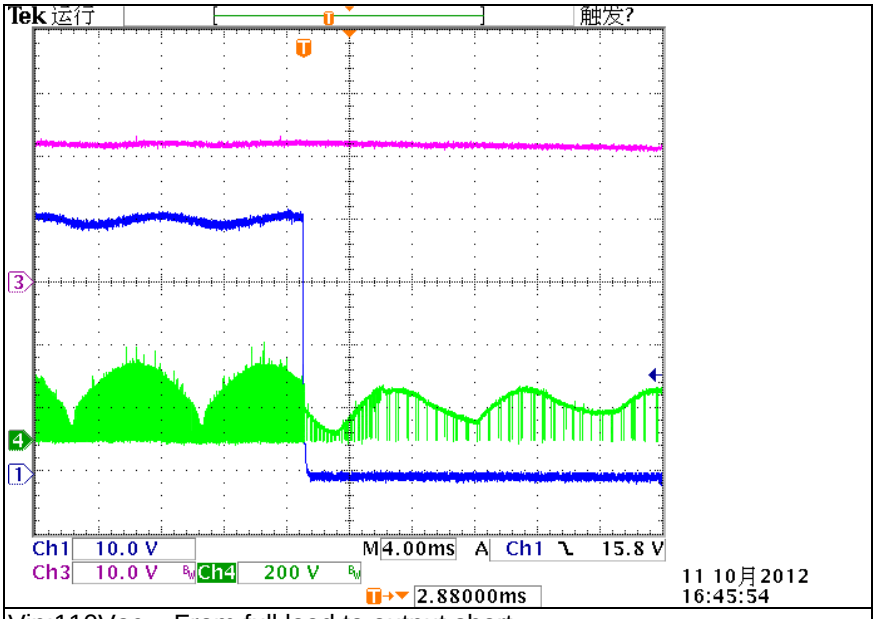


Vin:110Vac From full load to no load
Ch1: LED voltage, 10V/div
Ch2: LED current, 200mA/div
Ch3: VCC, 10V/div
Ch4: Mosfet Vds, 100V/div

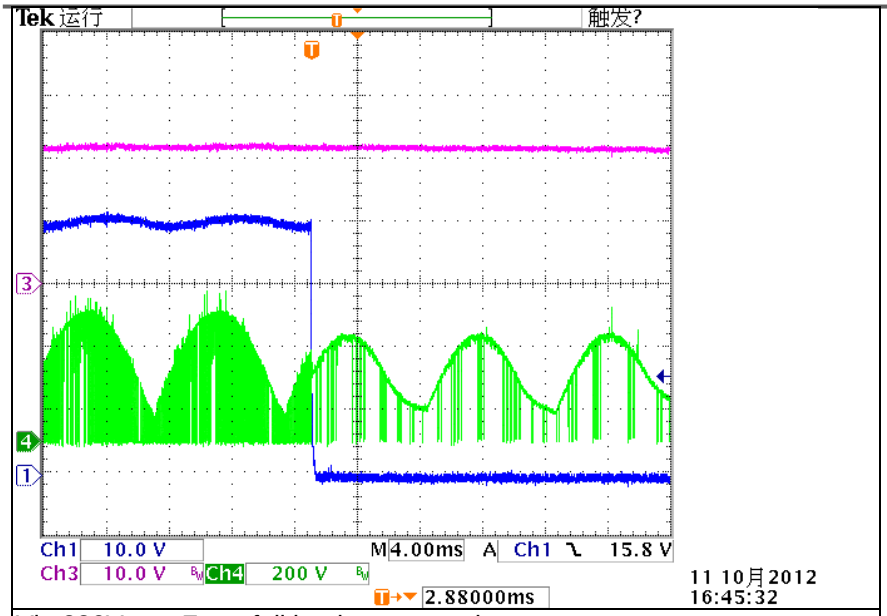


Vin:230Vac From full load to no load
Ch1: LED voltage, 10V/div
Ch2: LED current, 200mA/div
Ch3: VCC, 10V/div
Ch4: Mosfet Vds, 200V/div

3.4 OUTPUT SHORT PROTECTION



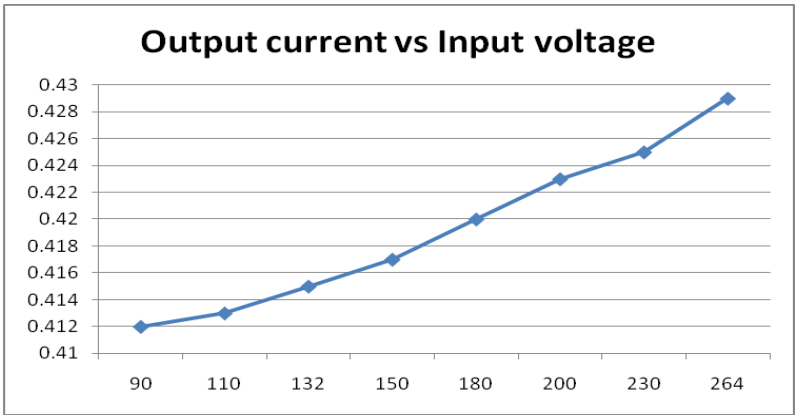
Vin:110Vac From full load to output short
Ch1: LED voltage, 10V/div
Ch3: VCC
Ch4: Mosfet Vds, 200V/div



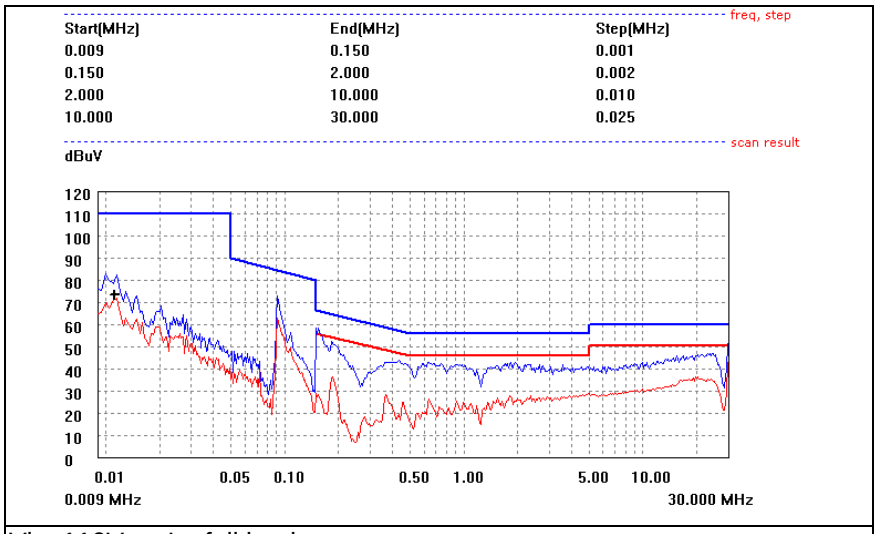
Vin:230Vac From full load to output short
Ch1: LED voltage, 10V/div
Ch3: VCC
Ch4: Mosfet Vds, 200V/div

3.5 LINE REGULATION CURVE

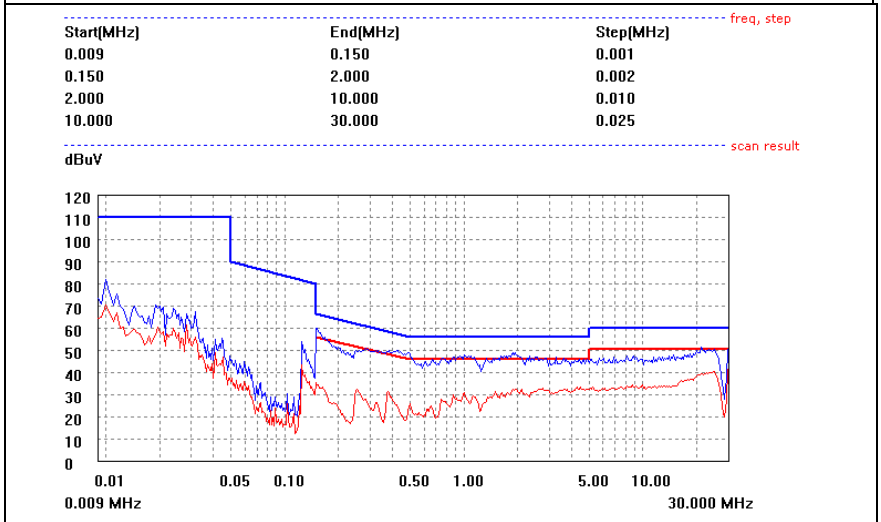
Vin(Vac)	Freq(Hz)	Io(Arms)	Current Regulation(± %)	Pass/Fail
90	60	**0.412**	**1.7**	
110	60	**0.413**	**1.5**	
132	60	**0.415**	**1.0**	
150	60	**0.417**	**0.5**	
180	50	**0.420**	**0.2**	
200	50	**0.423**	**0.9**	
230	50	**0.425**	**1.4**	
264	50	**0.429**	**2.3**	



4 EMI Test



Vin: 110Vac Io: full load



Vin:230Vac Io: full load

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