**Texas Instruments**

# PMP4347 Test Procedure

**Power Reference Design**

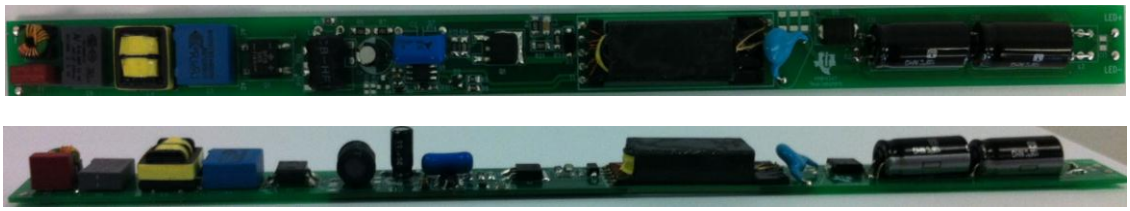
**REV A**

**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

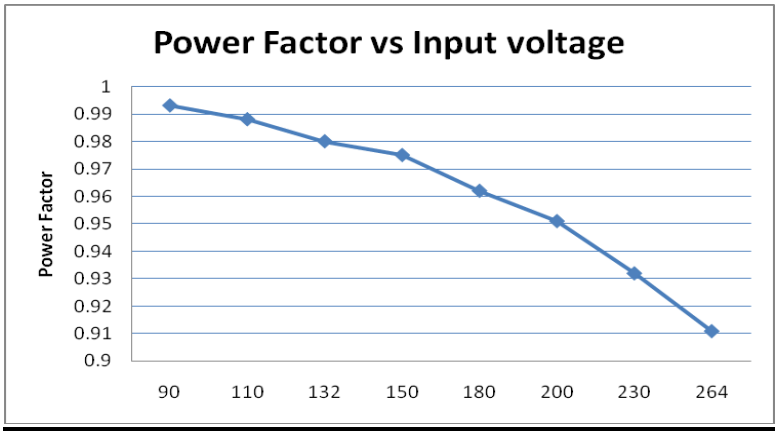
Power-meter: YOKOGAWA WT210
Multi-meter(current): Fluke 3345A
Multi-meter(voltage): Fluke 187
AC Source: Chroma 61530
LED load: Chroma 63110A module

# 2 INPUT CHARACTERISTICS

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

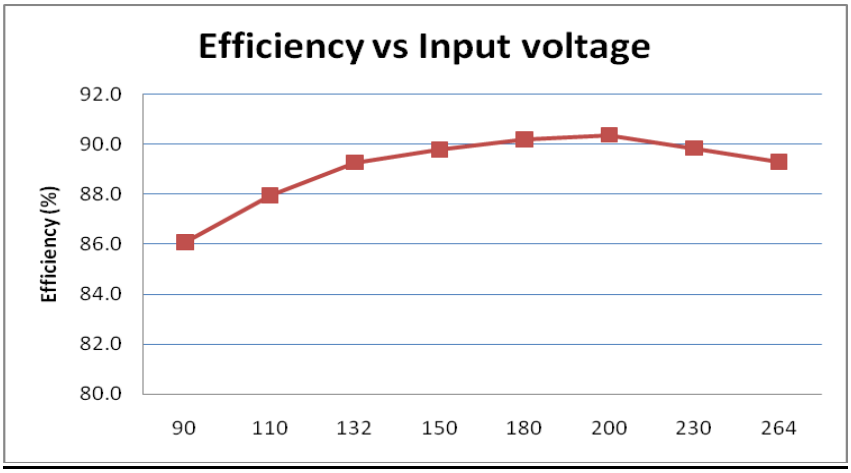
## 2.1 POWER FACTOR

| 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** |

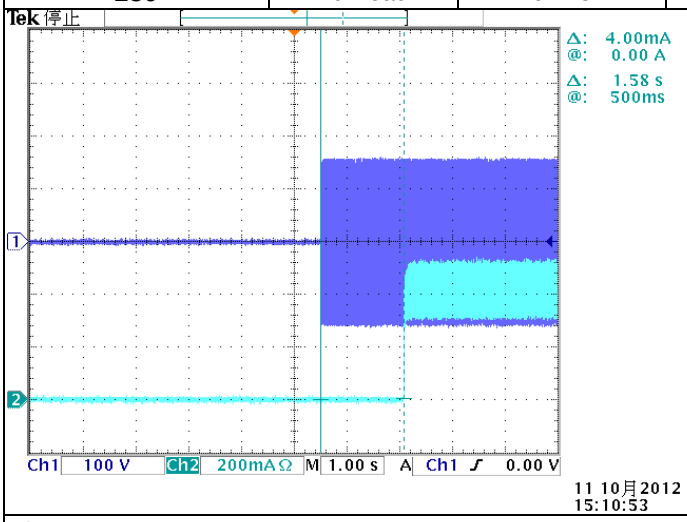
# 3 OUTPUT CHARACTERISTICS

## 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 |

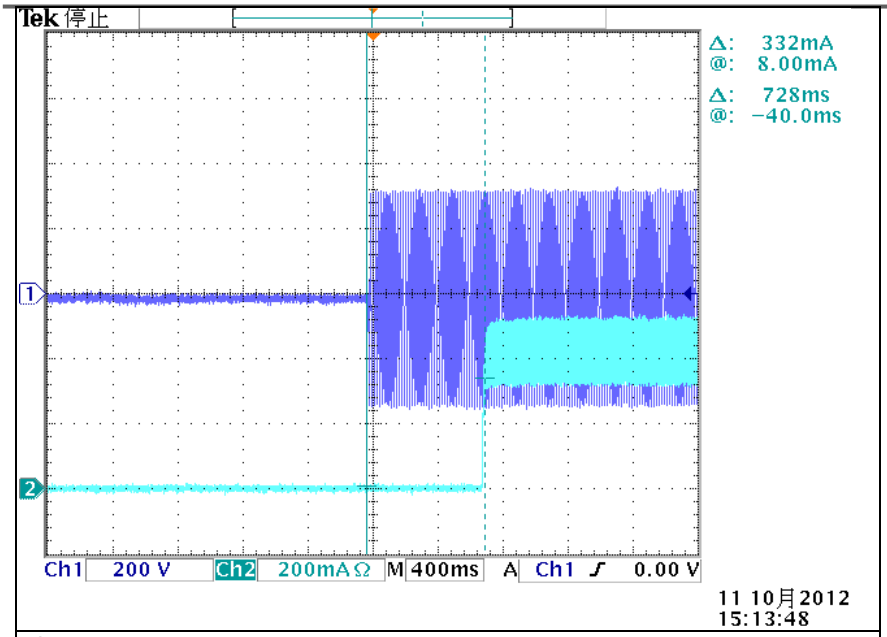
## 3.2 TURN ON DELAY AND RIPPLE CURRENT

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

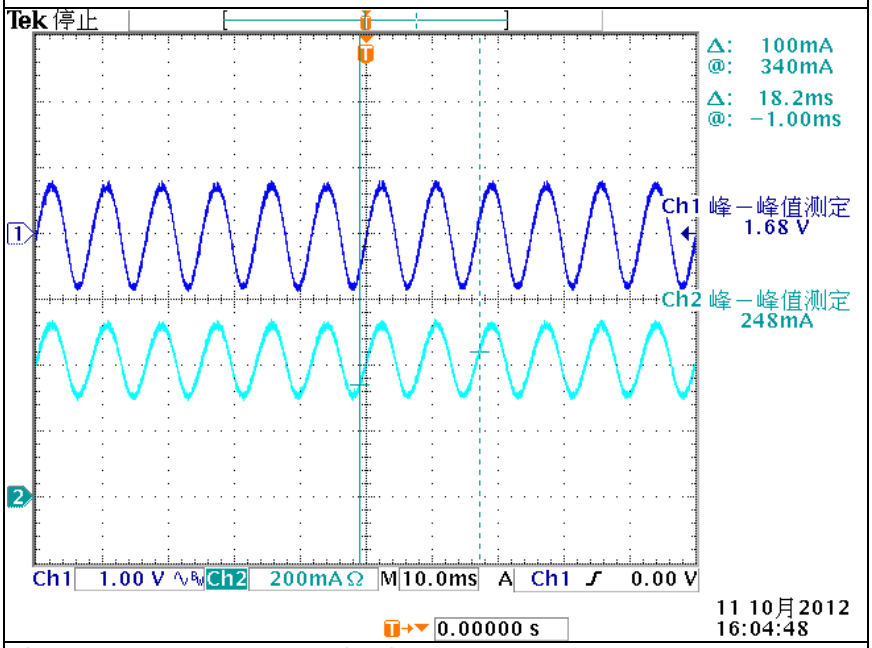



Vin:110Vac Io: full load
Ch1:Input voltage, 100Vac/div
Ch2: LED current 200mA/div

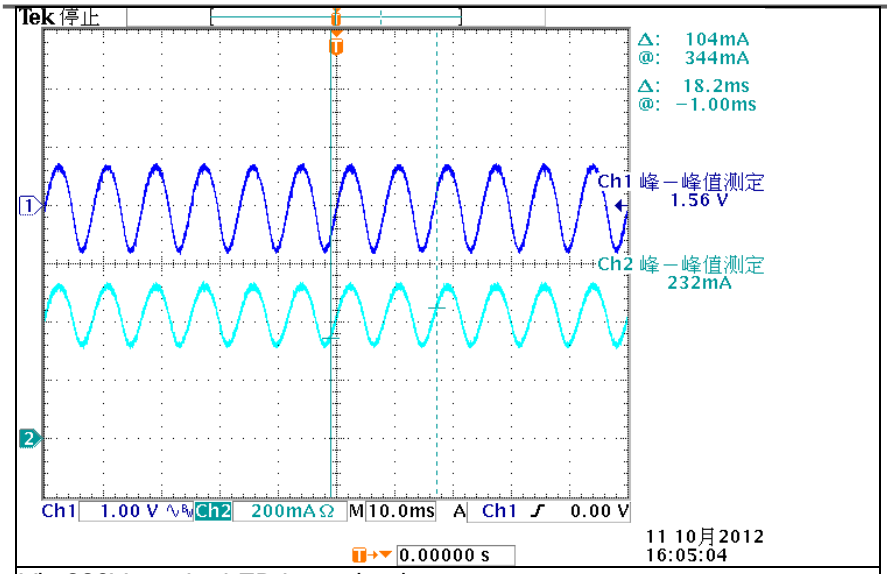
# PMP4347 RevA Test Results




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



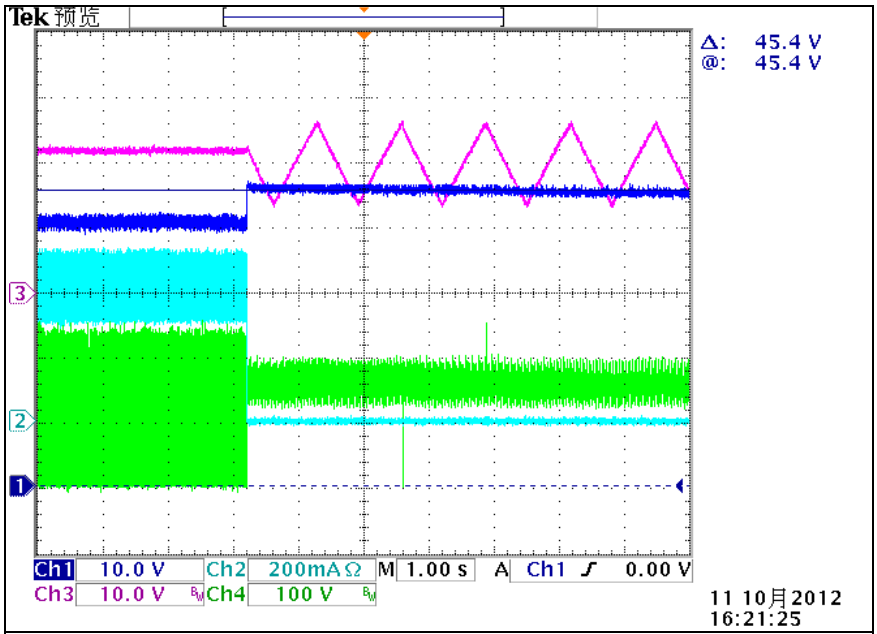

Vin:110Vac Io: LED Lamp load
Ch1: LED ripple voltage 1V/div
Ch2: LED current 200mA/div



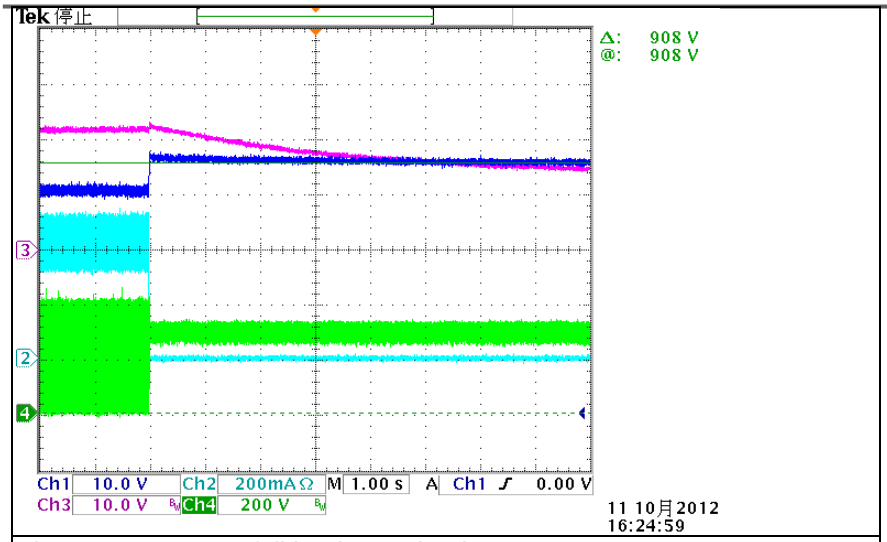

Vin:230Vac Io: LED Lamp load
Ch1: LED ripple voltage 1V/div
Ch2: LED current 200mA/div

## 3.3 OUTPUT OVER VOLTAGE AND NO LOAD PROTECTION

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

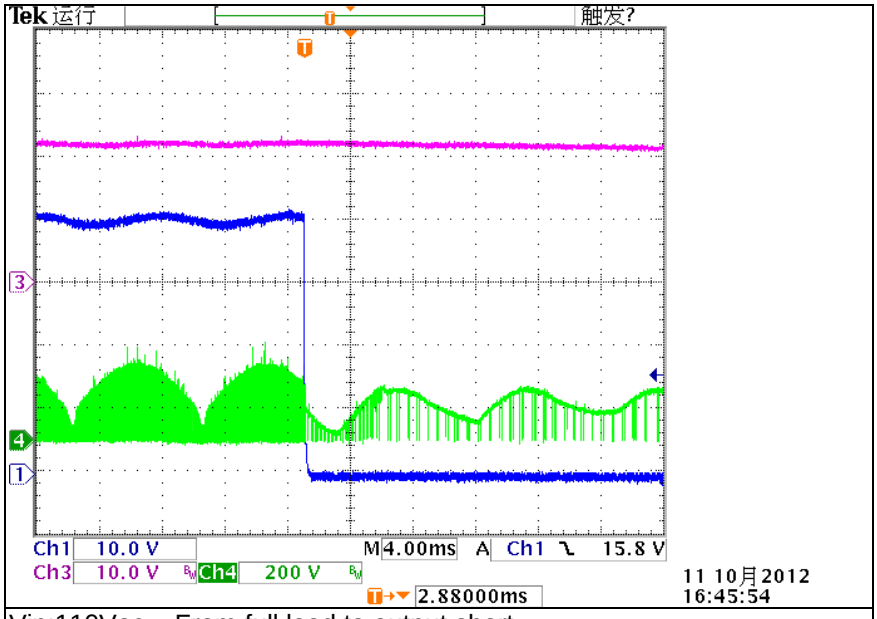



Vin:110Vac From full load to no load
Ch1: LED voltage, 10V/div
Ch2: LED current, 200mA/div
Ch3: VCC, 10V/div
Ch4: Mosfet Vds, 100V/div

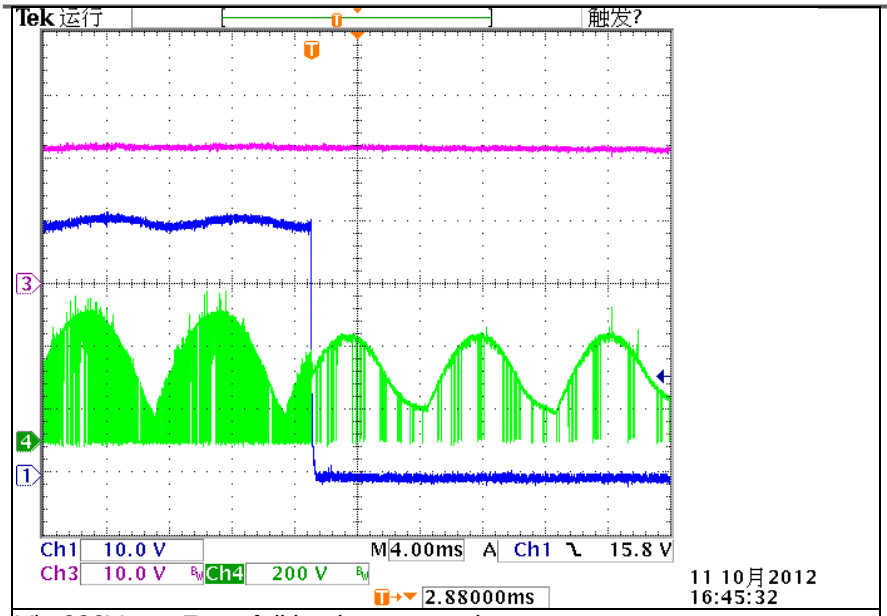



Vin:230Vac From full load to no load
Ch1: LED voltage, 10V/div
Ch2: LED current, 200mA/div
Ch3: VCC, 10V/div
Ch4: Mosfet Vds, 200V/div

## 3.4 OUTPUT SHORT PROTECTION



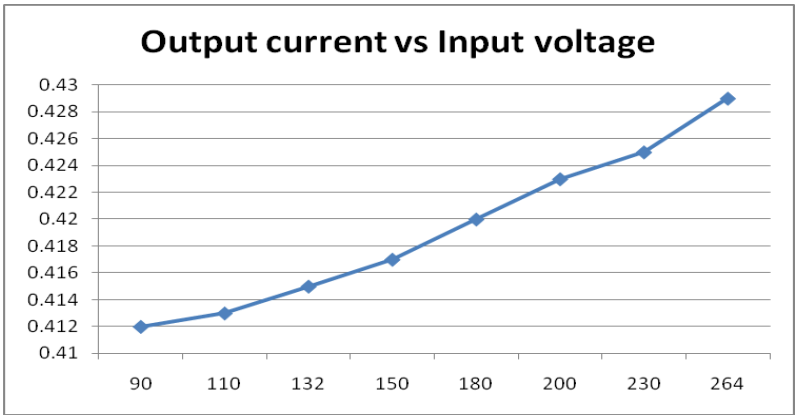

Vin:110Vac From full load to output short
Ch1: LED voltage, 10V/div
Ch3: VCC
Ch4: Mosfet Vds, 200V/div



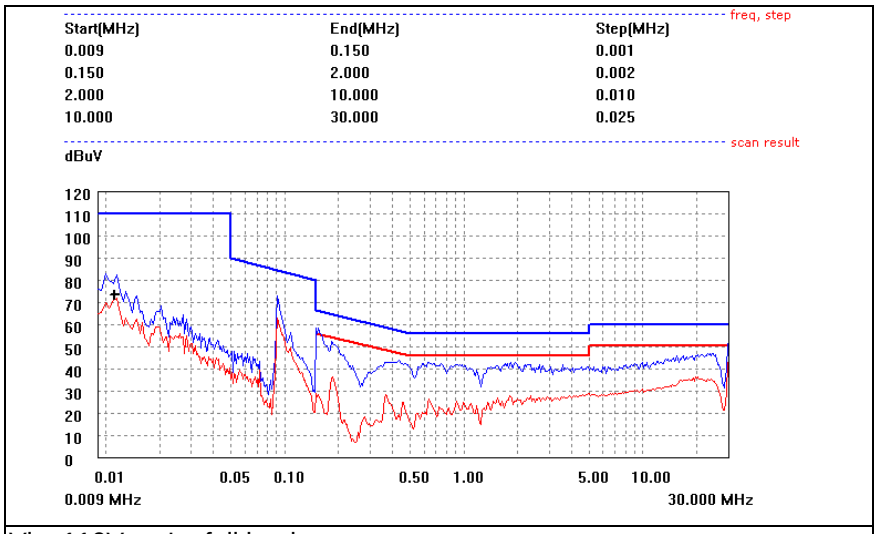

Vin:230Vac From full load to output short
Ch1: LED voltage, 10V/div
Ch3: VCC
Ch4: Mosfet Vds, 200V/div

## 3.5 LINE REGULATION CURVE

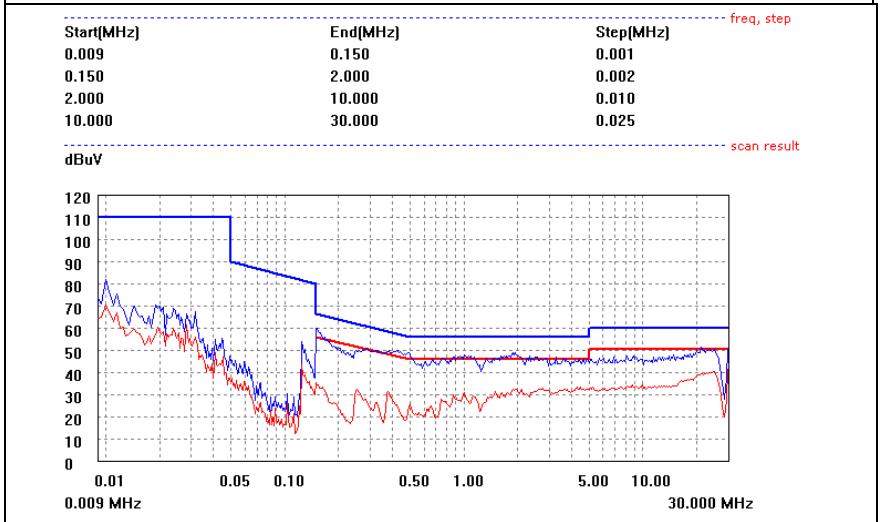
| Vin(Vac) | Freq(Hz) | Io(Arms) | Current Regulation(± %) | Pass/Fail |
|---|---|---|---|---|
| 90 | 60 | **0.412** | **1.7** | |
| 110 | 60 | **0.413** | **1.5** | |
| 132 | 60 | **0.415** | **1.0** | |
| 150 | 60 | **0.417** | **0.5** | |
| 180 | 50 | **0.420** | **0.2** | |
| 200 | 50 | **0.423** | **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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