

ALLEGRO APM80950 Evaluation Board User Manual

[Home](#) » [ALLEGRO](#) » ALLEGRO APM80950 Evaluation Board User Manual 

Contents

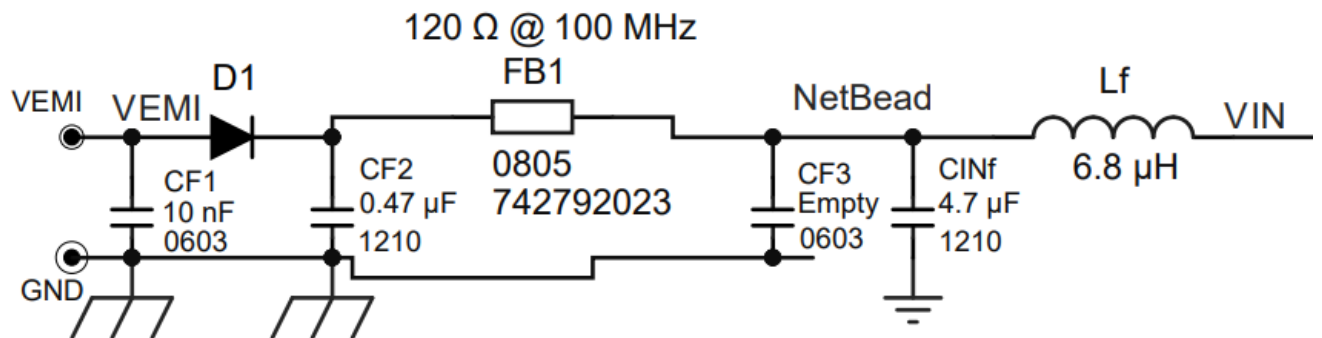
- [1 ALLEGRO APM80950 Evaluation Board](#)
- [2 GENERAL SPECIFICATIONS](#)
- [3 OPERATING INSTRUCTIONS](#)
- [4 EMI PERFORMANCE](#)
- [5 DEMO PCB LAYOUT](#)
- [6 Documents / Resources](#)
- [7 Related Posts](#)

ALLEGRO

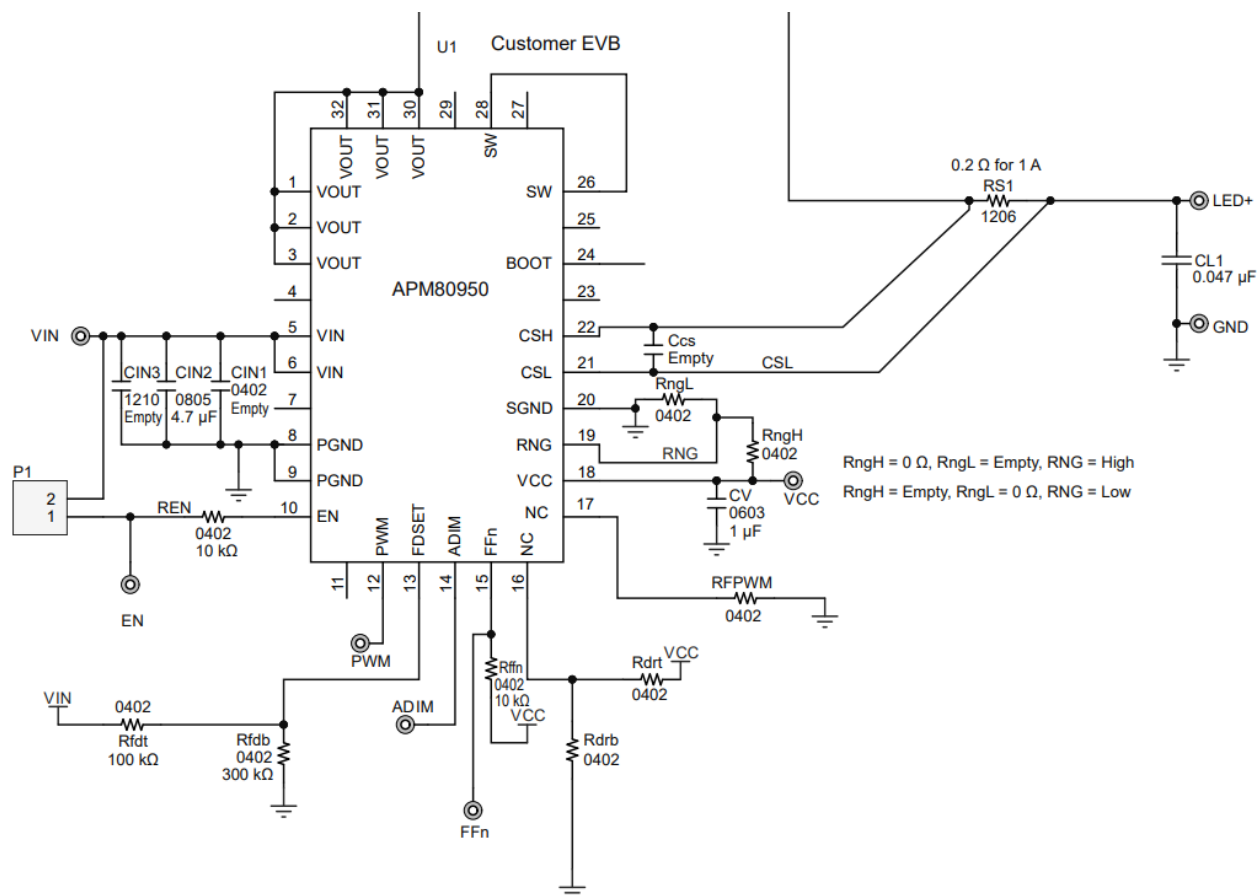
ALLEGRO APM80950 Evaluation Board



EMC filter configuration



Schematic for APM80950



GENERAL SPECIFICATIONS

GENERAL SPECIFICATIONS				
Specification	Min	Nom.	Max.	Units
Absolute Maximum Input Voltage	−0.3	–	40	V
Operating Input Voltage Range	4.5	–	36	V
VVIN START Threshold, VVIN rising	–	–	4.3	V
VVIN UVLO Hysteresis	100	–	300	mV
LED Regulation Current	–	–	1.5	A
Enable Input	−0.3	–	VVIN + 0.3	V
VCC, ADIM, RNG, FDSET, FFn, PWM Terminal Voltages	−0.3	–	7	V

BILL OF MATERIALS

Designator	Description	Footprint	Quantity	Manufacturer	Manufacturer P/N	Source	Purchase P/N
PCB	TED-0003126-PCB (APM80900/04/50/51 PCB)	N/A	1	Allegro Micro Systems			

U1	APM80950 IC	QFN-32	1	Allegro Micro Systems	APM80950KNBATR		
RS1	Resistor, 0.2 Ω , 1/2 W, 1%	1206	1	Susumu	RL1632R-R200-F	Digike y	RL16R.20FCT-ND
Rfdt	Resistor, 100 k Ω , 1/16 W, 1%	0402	1	Panasonic Electronic	ERA-2AED104X	Digike y	P100KDECT-ND
Rfdb	Resistor, 300 k Ω , 1/16 W, 1%	0402	1	Panasonic Electronic	ERJ-2RKF3003X	Digike y	P300KLCT-ND
REN, Rffn	Resistor, 10 k Ω , 1/16 W, 1%	0402	2	Panasonic Electronic	ERA-2AED103X	Digike y	P10KDECT-ND
Rdrb, RngH, RFPWM	Resistor, 0 k Ω , JUMPER 1/16 W	0402	3	Vishay Dale	CRCW04020000Z0ED	Digike y	541-0.0JCT-ND
Rdrt, RngL	Empty	0402	0				
CV	Capacitor, Ceramic, 1.0 μ F, 50 V, 10%, X7R	0603	1	Taiyo Yuden	UMK107AB7105KA-T	Digike y	587-3247-1-ND
CL1	Capacitor, Ceramic, 0.047 μ F, 100 V, X7R 0805	0805	1	Murata TDK	GCM21BR72A473KA37L C2012X7R2A473K125AA	Digike y	490-4969-1-ND 445-2276-1-ND
Cin1, Cin3, CF3, Ccs	Empty	Various	0				
Cin2	Capacitor, Ceramic, 4.7 μ F, 50 V, X7S	0805	1	Murata	GRM21BC71H475KE11L	Digike y	490-12757-1-ND
FB1	0805 SMT FERRITE BEAD, 120 Ω @ 100 MHz, 3 A	0805	1	Würth Electronics	742792023	Digike y	732-1613-1-ND
D1	DIODE SCHOTTKY 100 V 2 A DO220AA	DO-220AA (SMP)	1	Vishay	SS2PH10HM3/84A	Digike y	SS2PH10HM3/84AGITR-ND
Lf	FIXED IND 6.8 μ H 3 A 74 m Ω SMD	4.1 $\times$ 4.1 mm 3.1 mm thick	1	Würth Electronics	74438357068	Digike y	732-11204-1-ND

CF1	Capacitor, Ceramic, 10 nF, 100 V, 10%, X7R	0603	1	TDK	C1608X7R2A103 K080AA	Digikey	445-1304-1- ND
CF2	Capacitor, Ceramic, 0.47 μ F, 100 V, X 7R	1210	1	TDK	CGA6M3X8R2A4 74K200AB	Digikey	445-13052-1 -ND
Cinf	Capacitor, Ceramic, 4.7 μ F, 100 V, X7 R	1210	1	TDK	CGA6M3X7S2A4 75K200AB	Digikey	445-7005-1- ND
VIN, LED+	Test Points, Red, 0.063" diameter	0.063"	2	Keystone	5010	Digikey	5010K-ND
EN, PWM, ADIM, FF _n , VCC	Test Points, White , 0.063" diameter	0.063"	5	Keystone	5012	Digikey	5012K-ND
GND	Test Points, Black , 0.063" diameter	0.063"	4	Keystone	5011	Digikey	5011K-ND
P1	Header, Male, 2 p osition (open)	0.1" pitch	1	Sullins	PEC02SAAN	Digikey	S1012E-02- ND
PL1, PL2	CONN TERM BL OCK 2 POS 5.08 MM PCB		2	Phoenix Cont act	1715721	Digikey	277-1263-N D
Rubber Feet	Self stick rubber feet	Clear	4	3M	SJ-5303 (CLEAR)	Digikey	SJ5303-7-N D

CONFIGURATIONS (Refer to Datasheet)

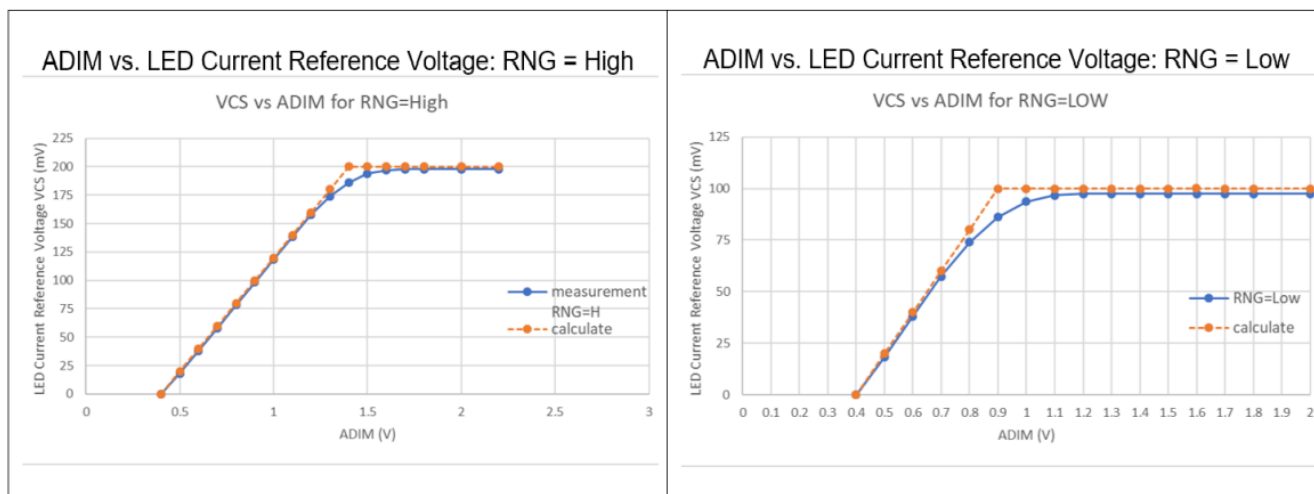
The customer APM80950 EVB is configured for external PWM dimming operation mode only, so an external PWM dimming signal at test point PWM must be applied because the PWM pin is pulled down to GND through an internal resistor. Put jumper on P1 connector to connect EN to VIN through a resistor to enable the unit. RngH or RngL resistors determine the LED current range high or low:

RNG = VCC by making RngH = 0 Ω and RngL = Open	Full rated voltage VCSREG across current sensing resistor Rs1 = 200 mV	iLED = 0.2 / Rs1
RNG = GND by making RngH = Open and RngL = 0 Ω	Full rated voltage VCSREG across current sensing resistor Rs1 = 100 mV	iLED = 0.1 / Rs1

- The regulation LED current level is determined by the current sensing resistor on board: $iLED = 0.2 / R_{sense}$

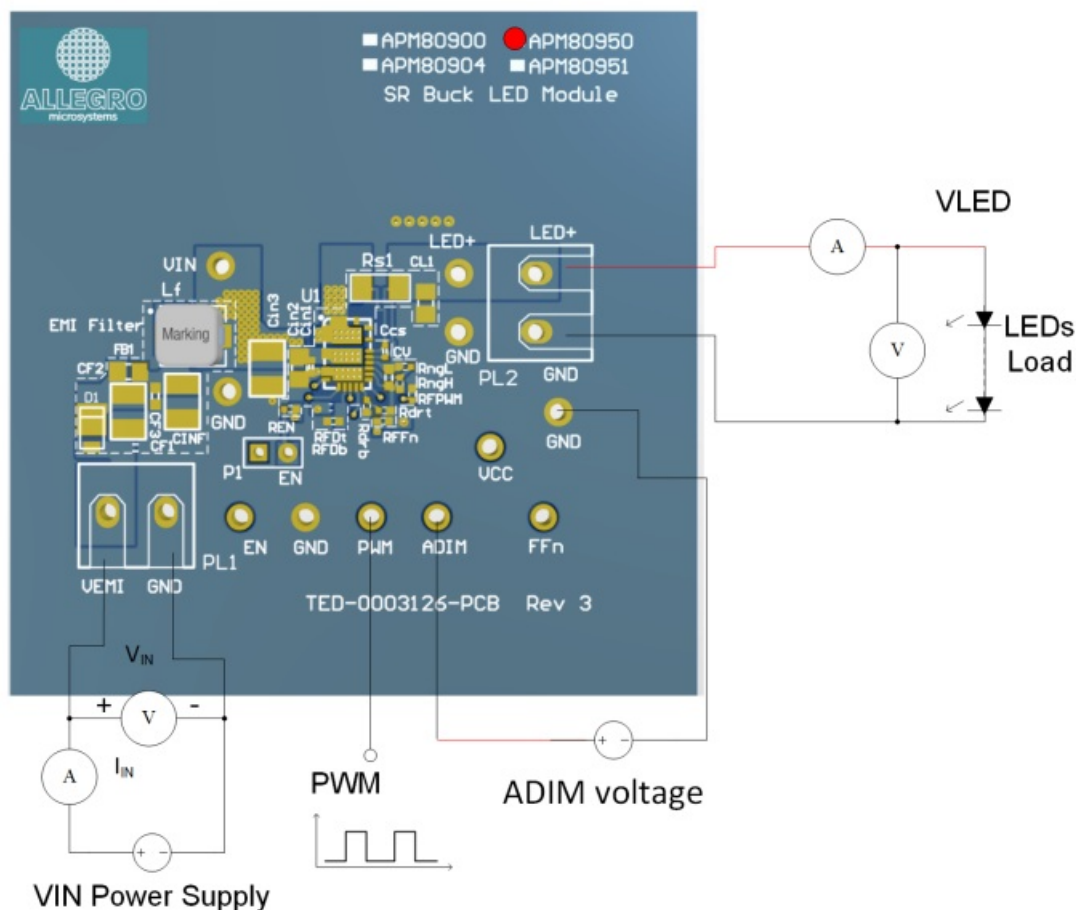
(A) On EVB, there is one current sensing resistor, $R_{s1} = 0.2 \Omega$. Because $R_{NG} = V_{CC}$, the full LED current is 1 A.

- Apply external analog dimming signal at test point ADIM. Do not leave ADIM floating. ADIM pin voltage controls the LED current reference voltage across Rs1 according to the equation below $V_{CSREG} = (V_{ADIM} - 0.4) / 5$ (V) The calculation and actual test results are shown below as reference to select the desired ADIM voltage.

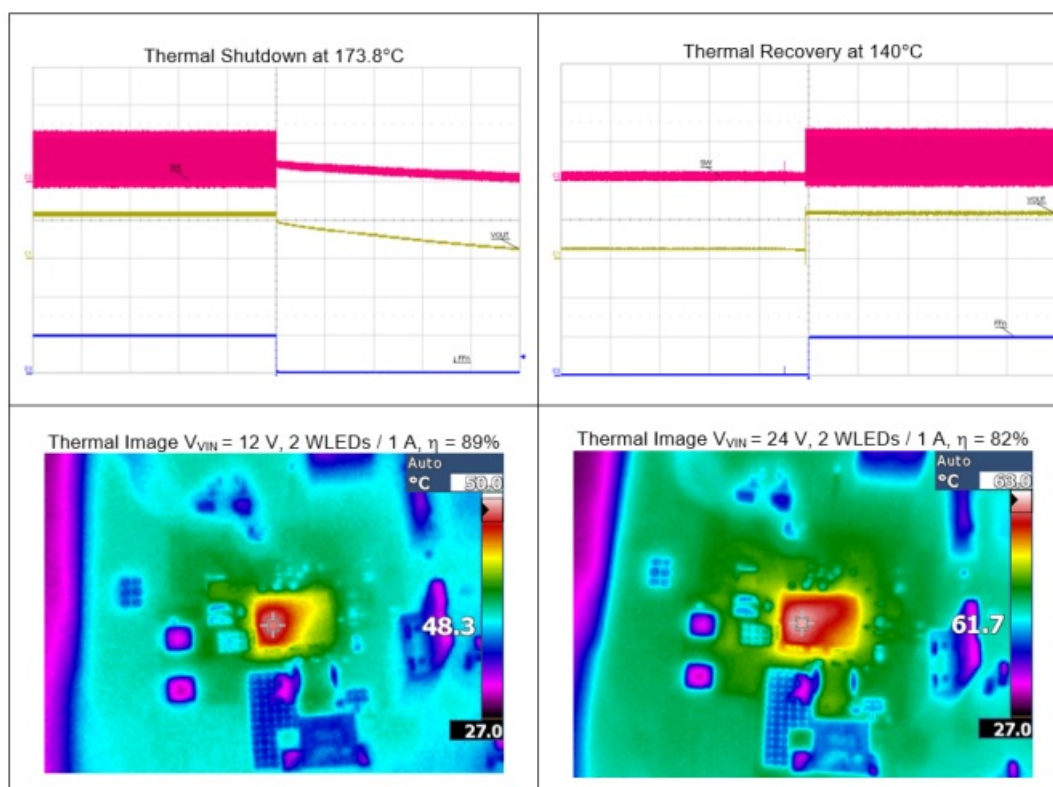
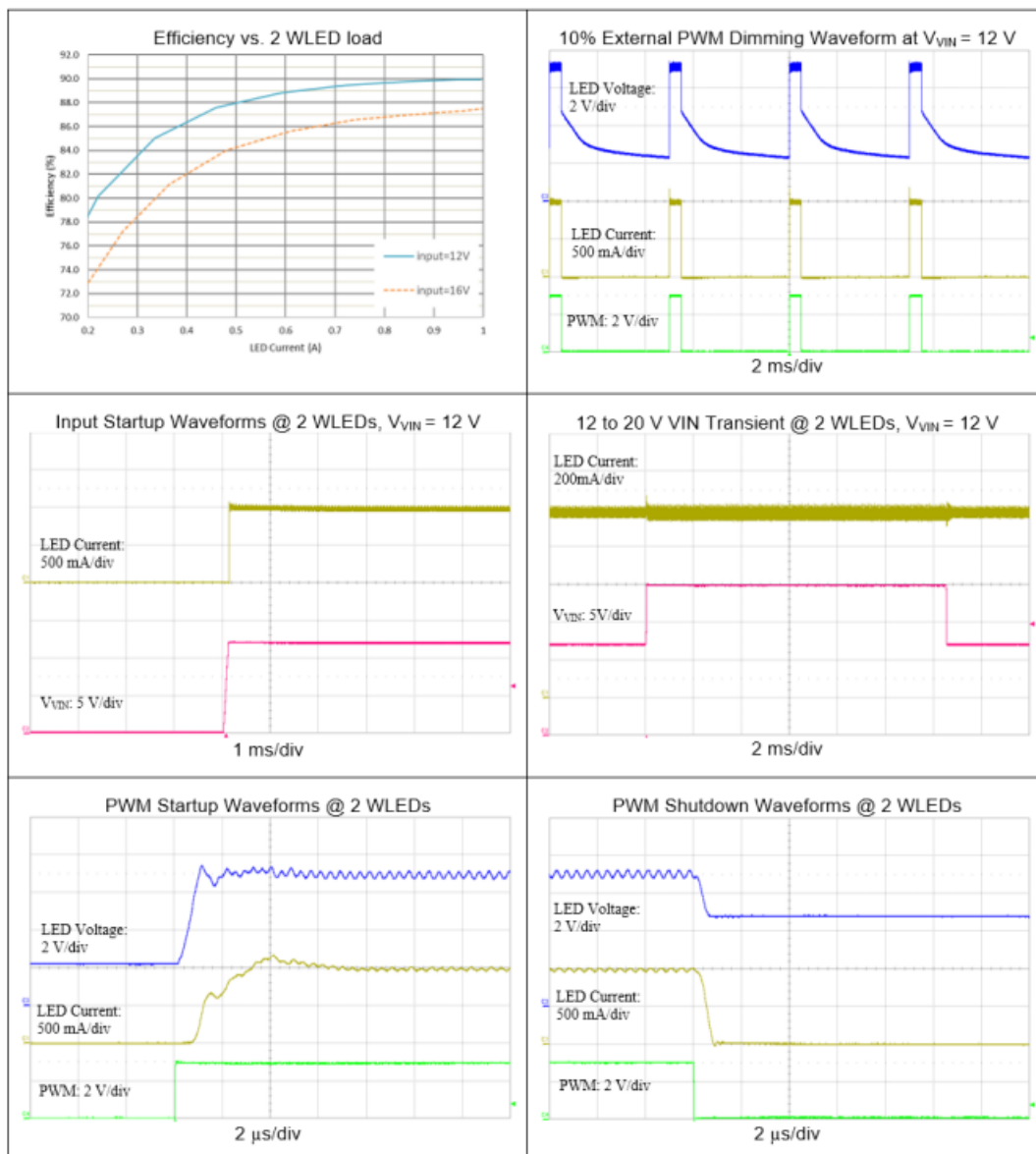


OPERATING INSTRUCTIONS

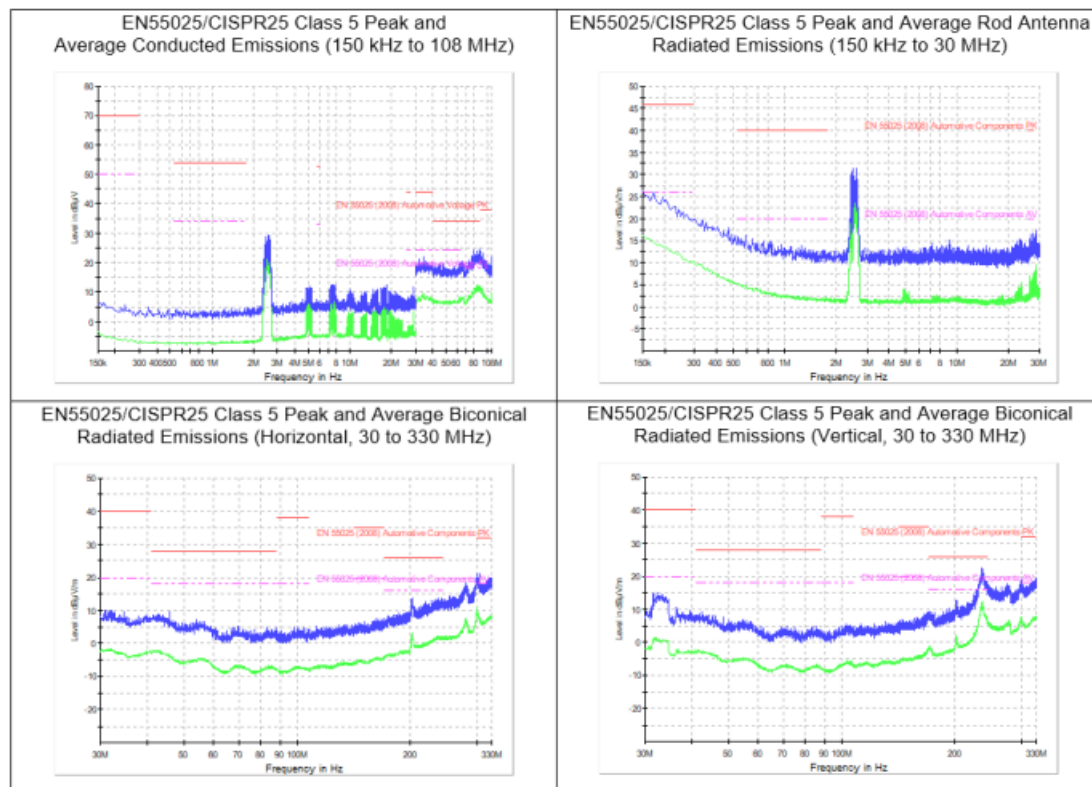
Refer to figure below for demo board setup. In order to enable the EVB, use the attached jumper to short the connector P1 so that EN is connected to VIN, or apply a voltage level above 1.8 V to the test point EN if the jumper is not used. Apply the desired ADIM voltage at ADIM test point. Apply PWM signal at PWM test point. Connect LED load between LED+ to GND; apply input power supply.



DEMO BOARD PERFORMANCE

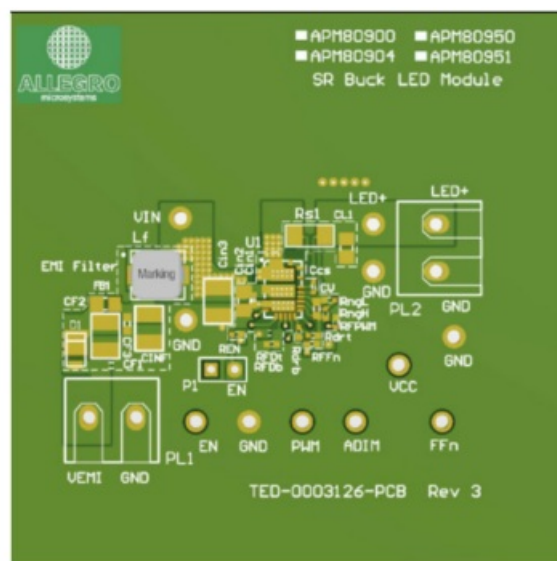


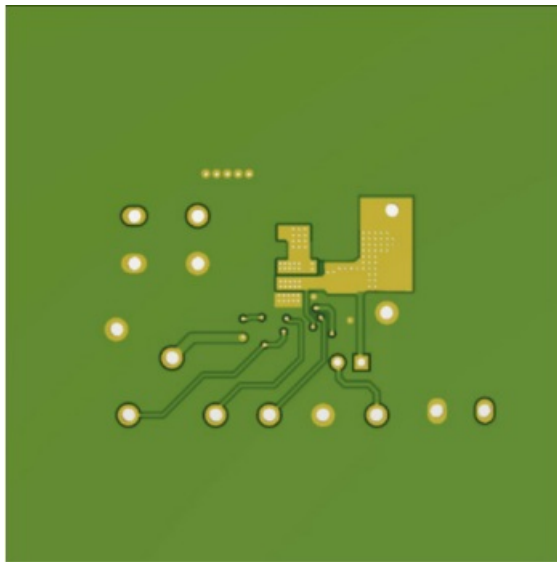
EMI PERFORMANCE



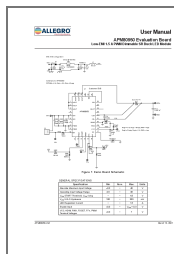
DEMO PCB LAYOUT

TOP LAYER





Documents / Resources



[ALLEGRO APM80950 Evaluation Board](#) [pdf] User Manual
APM80950 Evaluation Board, APM80950, Evaluation Board

[Manuals+](#).