

DRV8308 Spin Test

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Mar13, 2018

Conditions:

DUT: DRV8308EVM

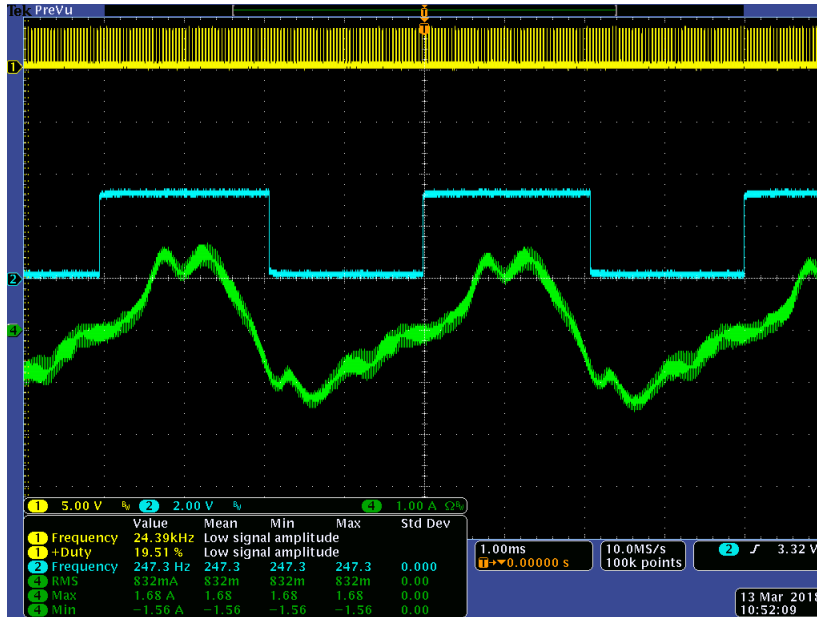
Input voltage: 12V

PWM Duty Cycle Mode

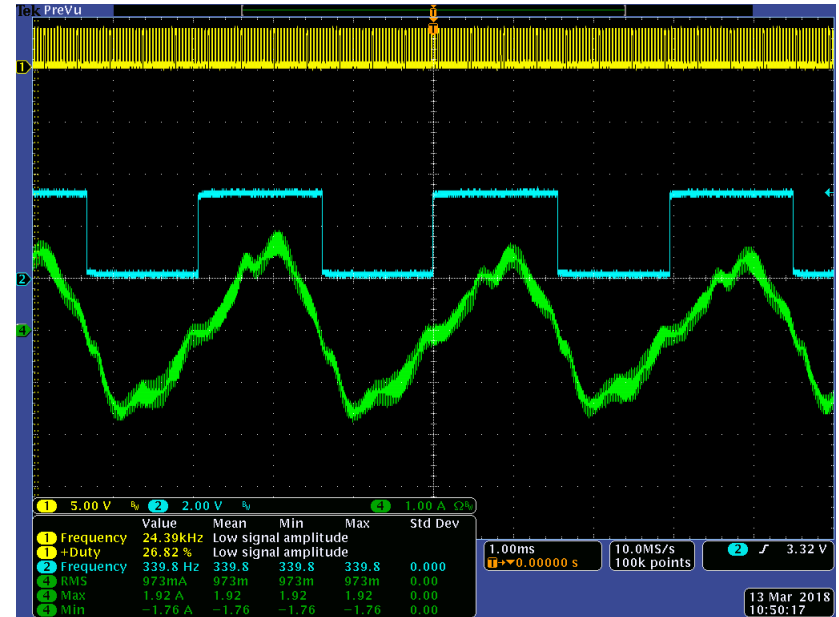
Probe Setting: Ch1: Clock input, Ch2: FG, Ch3: U Phase Current

Rsense is changed from 0.05 Ohm to 0.025Ohm

Spin with PWM Duty Cycle with 180 Commutation

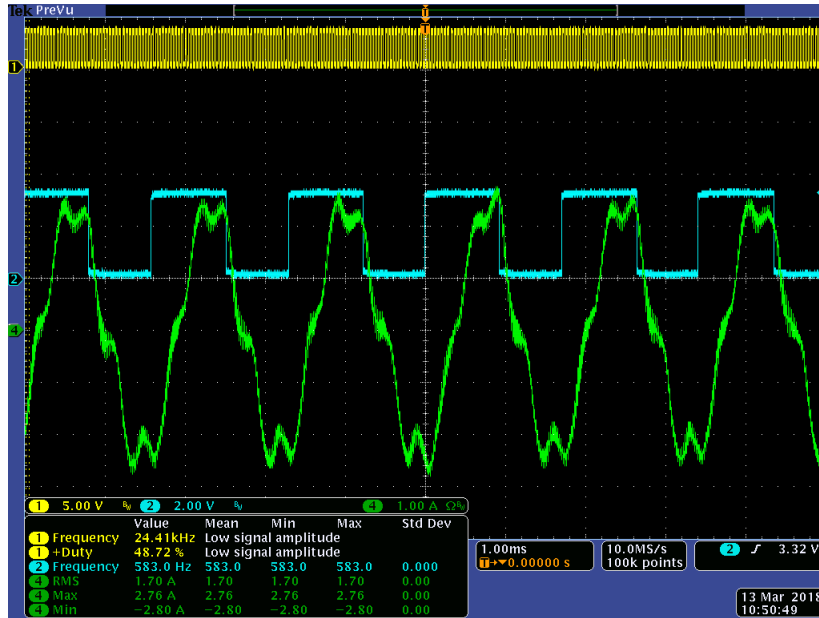


Duty Cycle: 19.51%

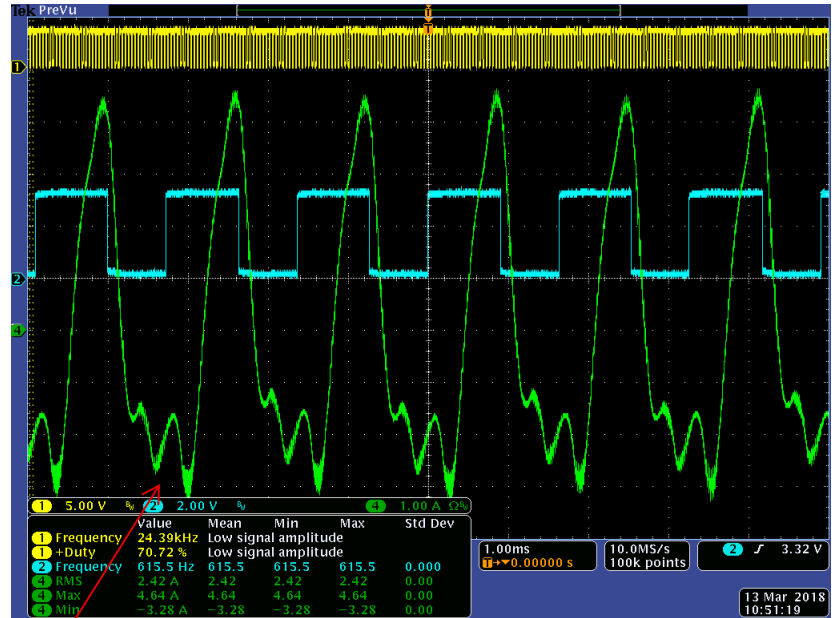


Duty Cycle: 26.82%

Spin with PWM Duty Cycle with 180 Commutation



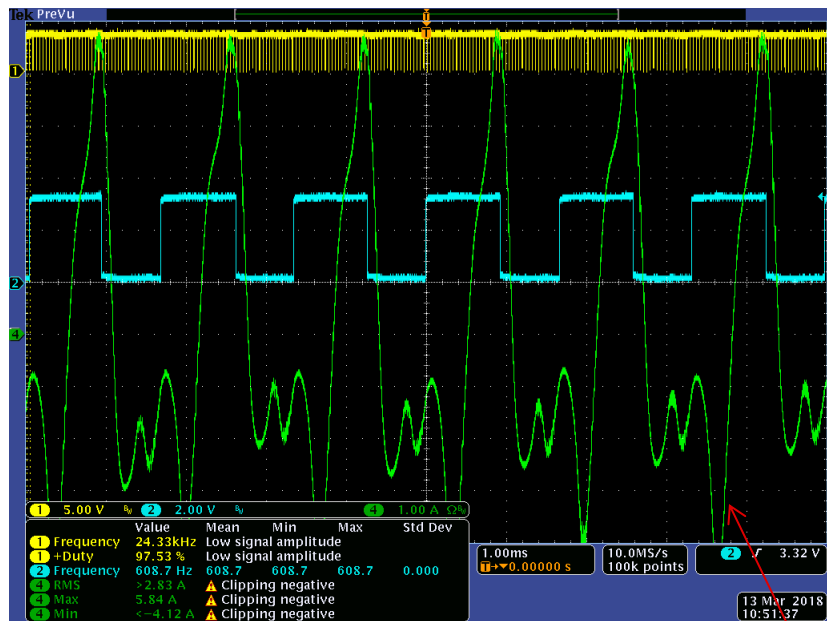
Duty Cycle: 48.72%



Duty Cycle: 70.72%

Current is unbalance and the speed is not significant increased

Spin with PWM Duty Cycle with 180 Commutation



Duty Cycle: 97.53%

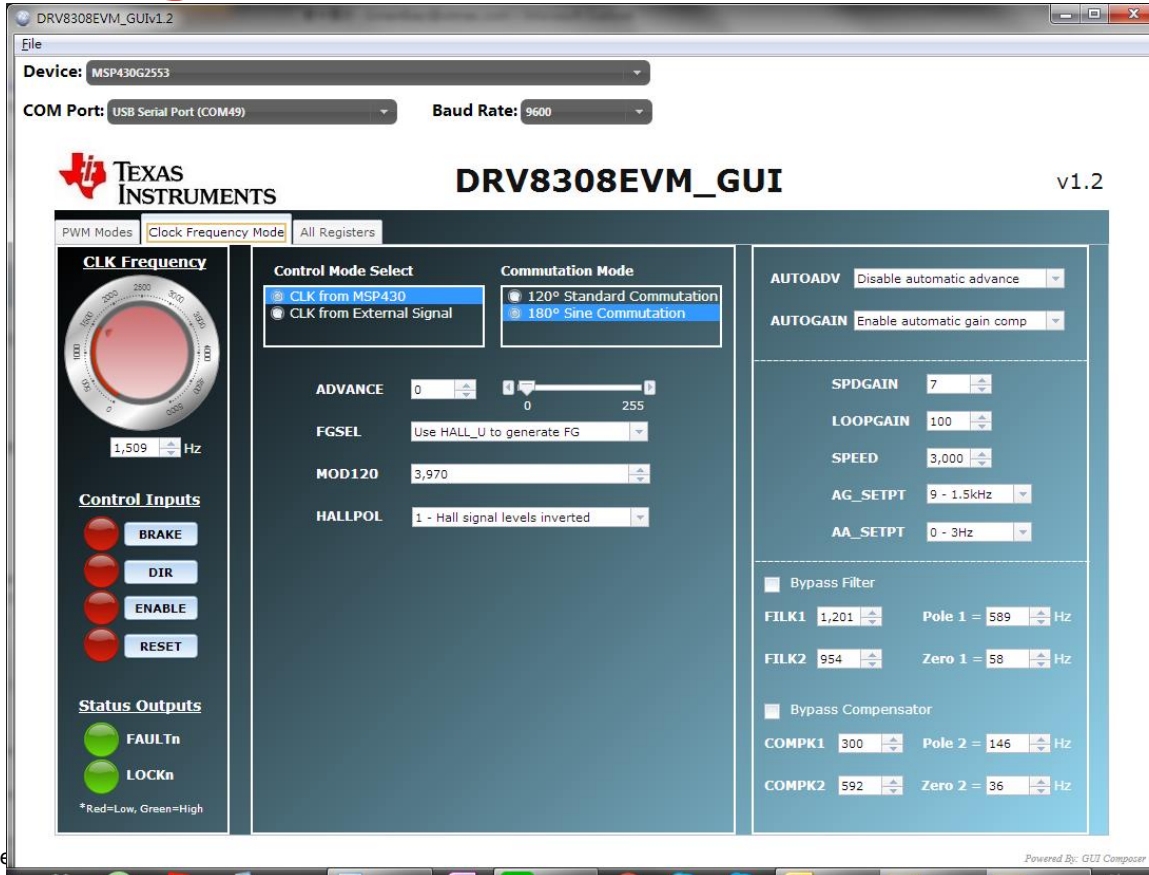
Current is unbalance and the speed is not significant increased

GUI Settings



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GUI Settings (1)



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GUI Settings (2)

DRV8308EVM_GUI v1.2

File

Device: MSP430G2553

COM Port: USB Serial Port (COM49) Baud Rate: 9600

TEXAS INSTRUMENTS **DRV8308EVM_GUI** v1.2

PWM Modes Clock Frequency Mode All Registers

CLK Frequency

1,509 Hz

☒ Enable MCU CLK

Control Inputs

BRAKE

DIR

ENABLE

RESET

Status Outputs

FAULTn

LOCKn

*Red=Low, Green=High

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
0x00	AG_SETPT	ENPOL	DIRPOL	BRKPOL	SYNREC	PWMF	SPDMODE	FGSEL	BRKMOD	RETRY						
	9 - 1.5kHz	0	0	0	1	1 - 50kHz	0 - FREQ	0 - HALL_U	0	1						
0x01	ADVANCE															
	n/a										0					
0x02	SPDREVS										MINSPD					
	3										180					
0x03	BASIC		SPEEDTH		MOD120											
	0		6 - 12.5%		3,970											
0x04	LRTIME	HALLRST	DELAY	A-ADV	A-GN	ENSLINE	TORIVE	DTIME	IDRIVE							
	0 - 1s	0 - 1st	0	0	1	1	1 - 5us	0 - 60ns	0 - 10mA							
0x05	INTCLK		SPDGAIN													
	n/a		3 - 6.4MHz		7											
0x06	HALLPOL	BYPFLT		FILK1												
	1	n/a		0		1,201										
0x07	FILK2															
	n/a		954													
0x08	BYPCOM		COMPK1													
	n/a		0		300											
0x09	AA_SETPT		COMPK2													
	0 - 3Hz		592													
0x0A	OCPCDEG	OCPTH	OVTN	VREGEN	LOOPGAIN											
	3 - 5.0us	3 - 1V	0	0	100											
0x0B	SPEED															
	n/a		3,000													

Internal Memory One Time Program

Burn OTP Memory

Manual SPI Read/Write

ADDR DATA

0x 0 0x 0 Write Write All

0x 0 0x 0 Read Read All

☒ Auto Write

Powered By: GUI Composer

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Summary

When we tried to spin the fan with 180 SINE Commutation and PWM duty cycle On DRV8308EVM. We found the U phase current is unbalancing and speed is not significant increased(The speed is limited 610Hz around) when the PWM duty Cycle > 60%. The input PWM duty cycle is not linearity to the fan speed, what happened? How to turning the parameters correctly and improve Current balancing?