- **날　　짜** : 2015년 3월 17일
- **제　　목** : **16-bit PWM Standard PWM 사용법**
- **문서번호** : **KR_ES_0270**
- **작 성 자** : 하삼식 (Vincent.ha@microchip.com , FAE)

< Engineering Issue 내용 >

1. 관련 Devices :

- PIC with 16bit PWM

2. 내용

- 16-bit PWM Standard PWM

3. 준비 사항

- MPLAB X

- PIC12F157x devices

4. 사용방법

1) PIC12F1572_PWM 프로젝트 열기

2) 설정확인

A. PWM1CON = 0b11000000;

i. PWM Module Enable

ii. Output Enable

iii. Mode를 Standard PWM모드로 설정

REGISTER 22-1: PWMxCON: PWM CONTROL REGISTER

R/W-0/0	R/W-0/0	R/HS/HC-0/0	R/W-0/0	R/W-0/0	R/W-0/0	U-0	U-0
EN	OE	OUT	POL	MODE<1:0>		—	—
bit 7							bit 0

iv.

B. PWM1CLKCON = 0b00000000;

i. Prescaler와 Clock Source선택

REGISTER 22-4: PWMxCLKCON: PWM CLOCK CONTROL REGISTER

U-0	R/W-0/0	R/W-0/0	R/W-0/0	U-0	U-0	R/W-0/0	R/W-0/0
—	PS<2:0>			—	—	CS<1:0>	
bit 7							bit 0

ii.

C. Period, Duty, Phrase설정

i. PWM1PR = 10; // in

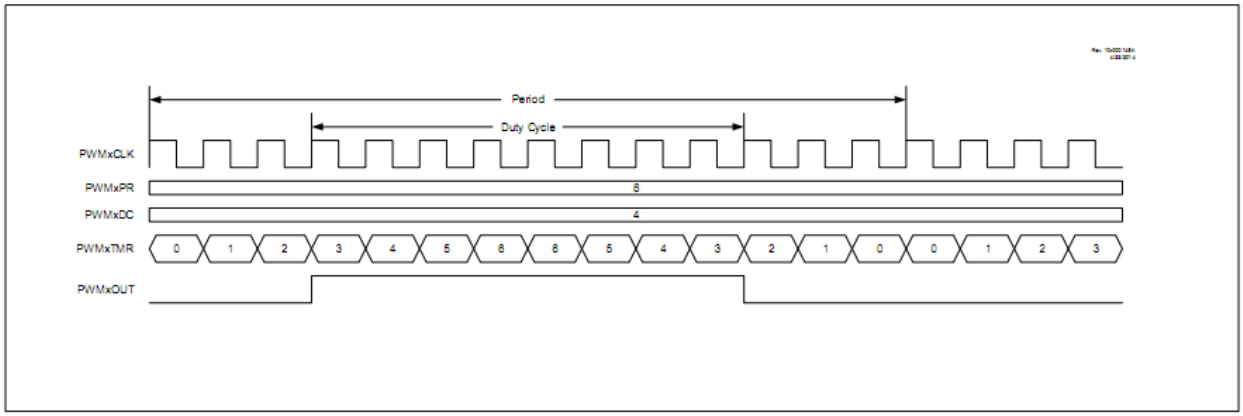
ii. PWM1PH = 4;

iii. PWM1DC = 9;

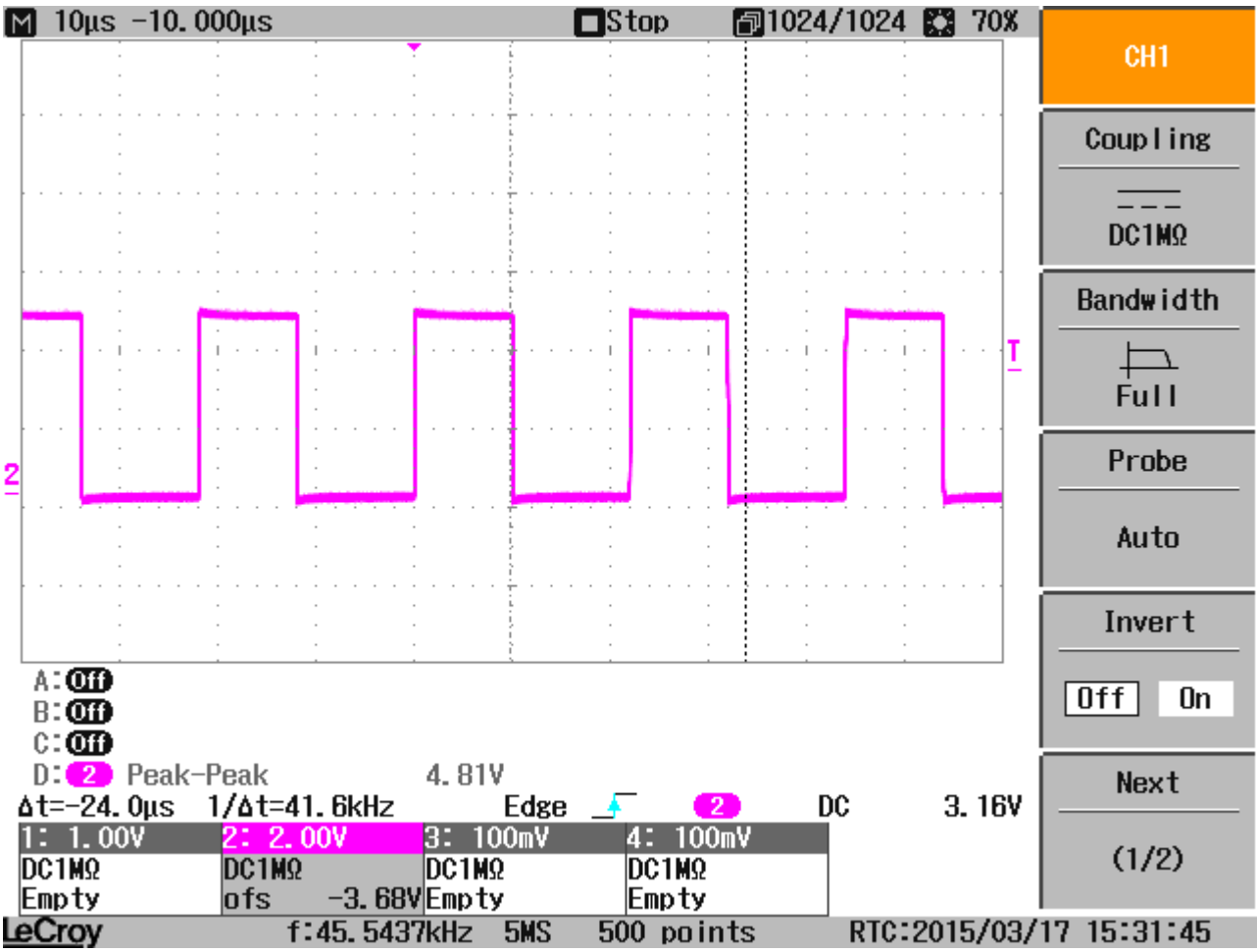
D. 결과

i. 실제 Duty는 Duty-Phrase값으로 결정됨

FIGURE 22-7: CENTER ALIGNED PWM MODE TIMING DIAGRAM



ii.



iii.

E. 계산식

EQUATION 22-1: PWM PERIOD IN STANDARD MODE

$$Period = \frac{(PWMxPR + 1) \cdot Prescale}{PWMxCLK}$$

EQUATION 22-2: PWM DUTY CYCLE IN STANDARD MODE

$$Duty\ Cycle = \frac{(PWMxDC - PWMxPH)}{PWMxPR + 1}$$

i. A detailed timing diagram for Standard mode is shown in Figure 22-4.