

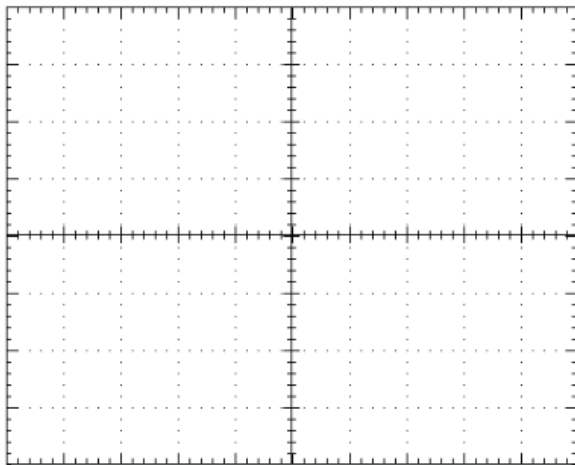
## EXPERIMENT RESULTS

### 1. Buck Converter

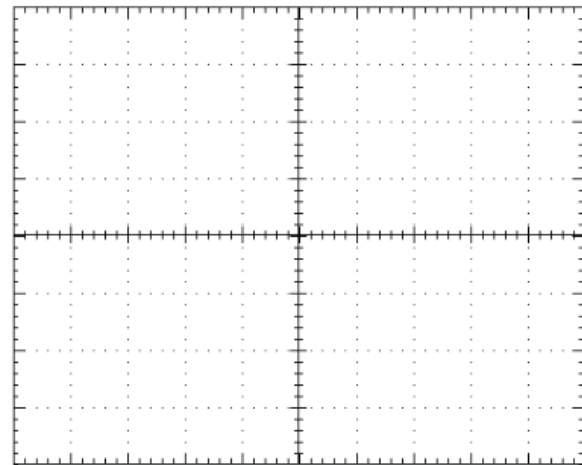
#### 1.1. Pulse Width Effect

**Table 1.** Pulse width effect in buck converter

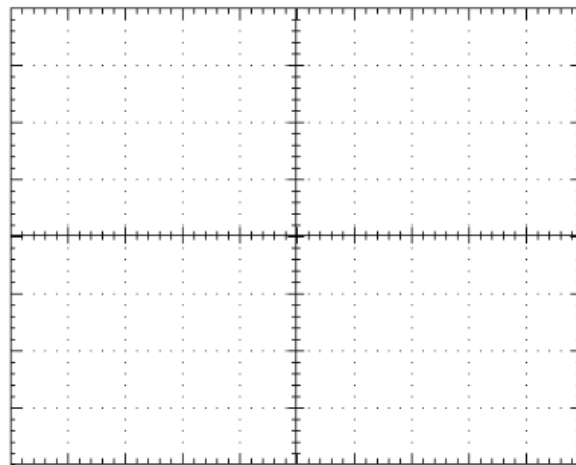
$R = 100\Omega$ , $f_s = 50kHz$				
Duty-Cycle	$V_{in}$	$I_{in}$	$V_{out}$	$I_{out}$
0.1				
0.3				
0.5				
0.7				
0.9				



**(a)**  $D = 0.1$



**(b)**  $D = 0.5$



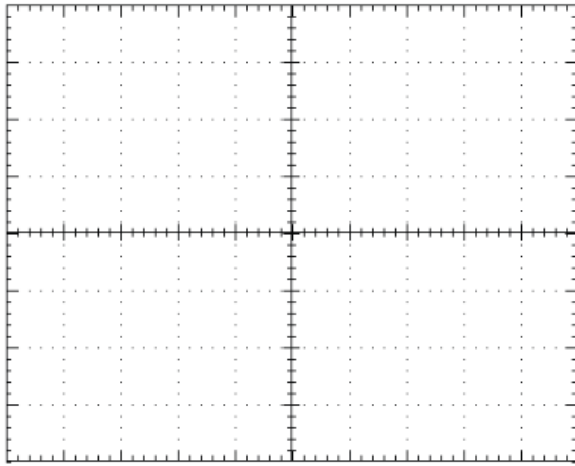
**(c)**  $D = 0.9$

**Figure 1.** Test results for different pulse widths

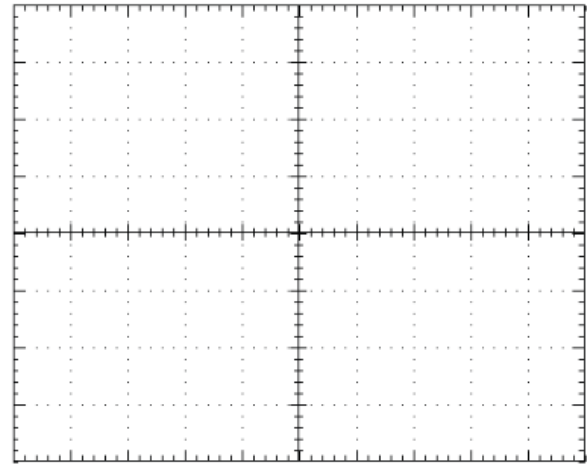
## 1.2. Switching Frequency Effect Etkisi

**Table 2.** Influence of switching frequency in buck converter

$R = 100\Omega$ , $D = 0.5$				
$f_s$	$V_{in}$	$I_{in}$	$V_{out}$	$I_{out}$
40 kHz				
60 kHz				
80 kHz				
100 kHz				



(a)  $f_s = 40 \text{ kHz}$



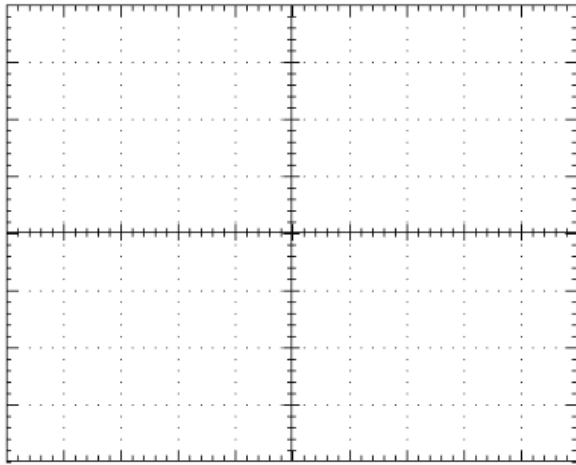
(b)  $f_s = 100 \text{ kHz}$

**Figure 2.** Inductor current waveforms for different switching frequencies

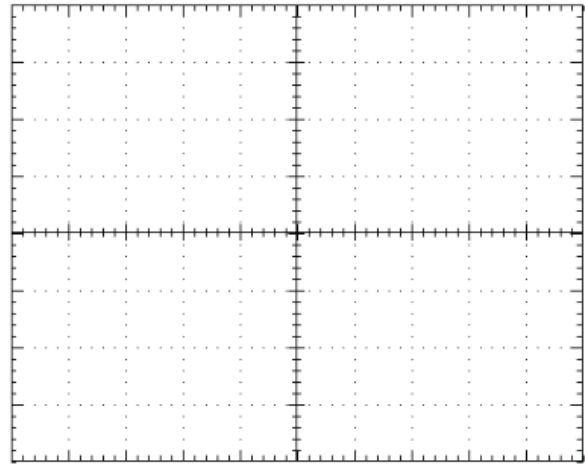
## 1.3. Load Effect

**Table 3.** Load effect in buck converter

$f_s = 100\text{kHz}$ , $D = 0.5$				
$R$	$V_{in}$	$I_{in}$	$V_{out}$	$I_{out}$
10 $\Omega$				
50 $\Omega$				
100 $\Omega$				



(a)  $R = 10 \, \Omega$



(b)  $R = 100 \, \Omega$

**Figure 3.** Inductor current waveforms for different load ratings

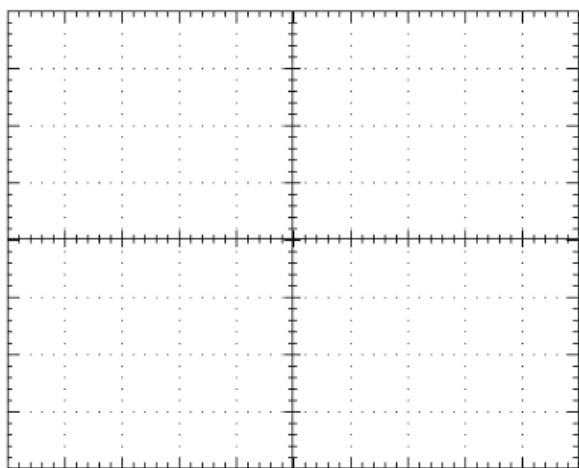
- Interpret the results obtained.

## 2. Boost Converter

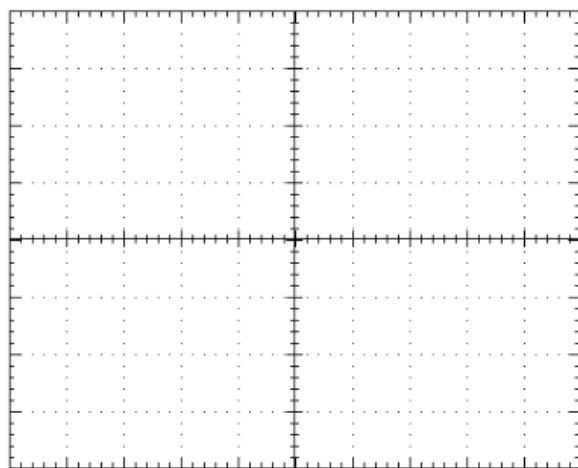
### 2.1. Pulse Effect

**Table 4.** Pulse width effect in boost converter

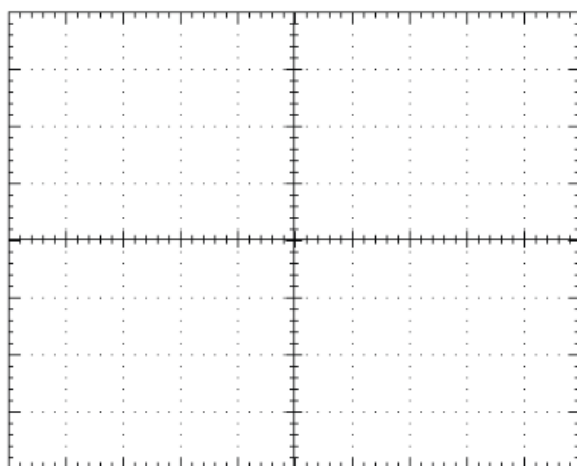
$R = 100\Omega$ , $f_s = 50kHz$				
Duty-Cycle	$V_{in}$	$I_{in}$	$V_{out}$	$I_{out}$
0.1				
0.3				
0.5				
0.7				
0.9				



**(a)**  $D = 0.1$



**(b)**  $D = 0.5$



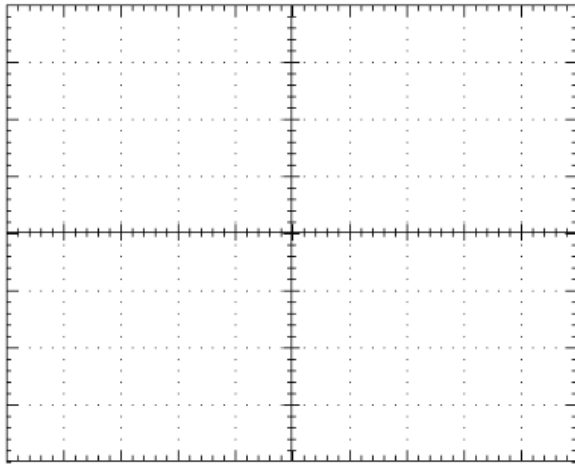
**(c)**  $D = 0.9$

**Figure 4.** Test results for different pulse widths

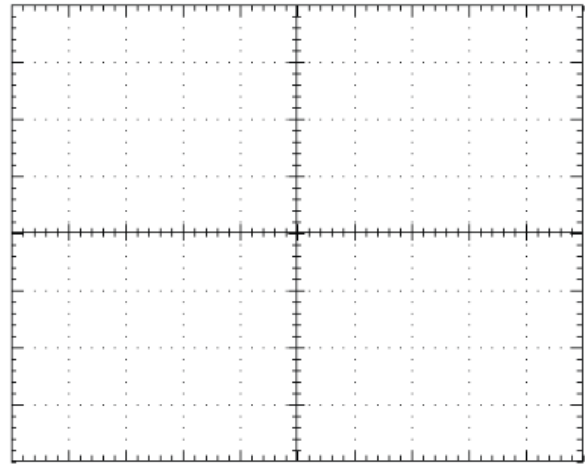
## 2.2. Switching Frequency Effect

**Table 5.** Influence of switching frequency in boost converter

$R = 100\Omega$ , $D = 0.5$				
$f_s$	$V_{in}$	$I_{in}$	$V_{out}$	$I_{out}$
40 kHz				
60 kHz				
80 kHz				
100 kHz				



(a)  $f_s = 40 \text{ kHz}$



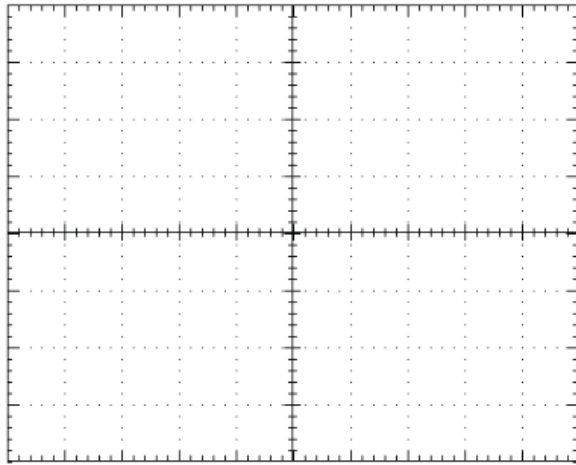
(b)  $f_s = 100 \text{ kHz}$

**Figure 5.** Inductor current waveforms for different switching frequencies

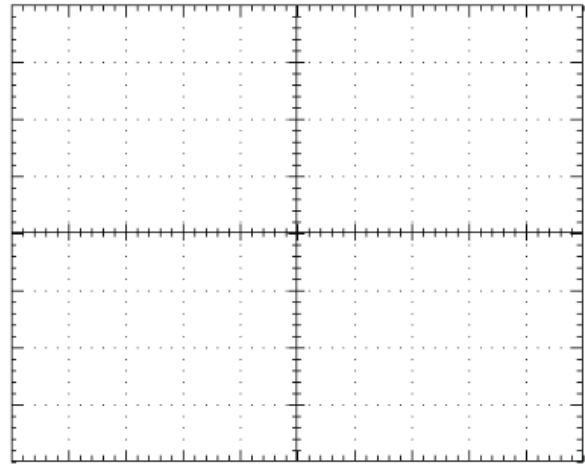
## 2.3. Load Effect

**Table 6.** Load effect in boost converter

$f_s = 100\text{kHz}$ , $D = 0.5$				
$R$	$V_{in}$	$I_{in}$	$V_{out}$	$I_{out}$
10 $\Omega$				
50 $\Omega$				
100 $\Omega$				



(a)  $R = 10 \, \Omega$



(b)  $R = 100 \, \Omega$

**Figure 6.** Inductor current waveforms for different load ratings

- Interpret the results obtained.