

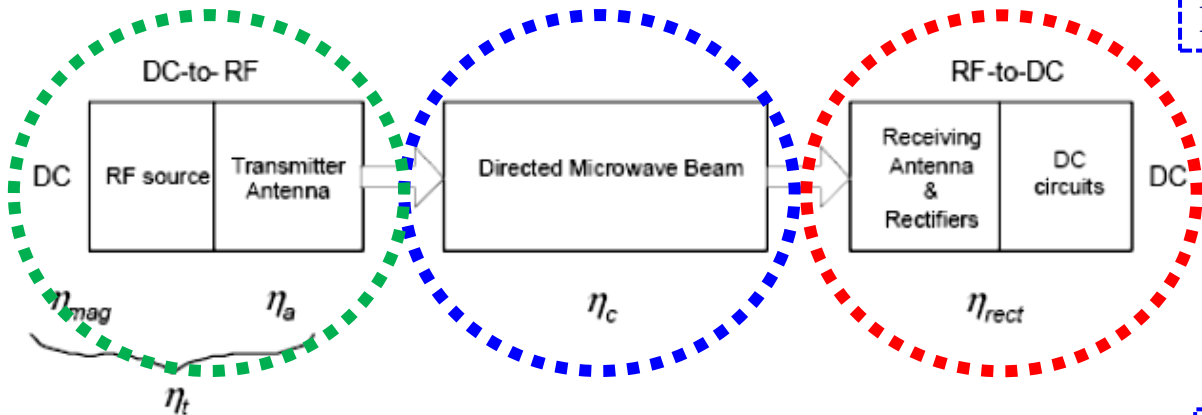
# Using Pulse Width and Pulse Shape Modulation to Enhance Power Conversion Efficiency under Constraint of Low Input Power

## Wireless Power Transmission System

寬度與波形調變技術

生醫環境

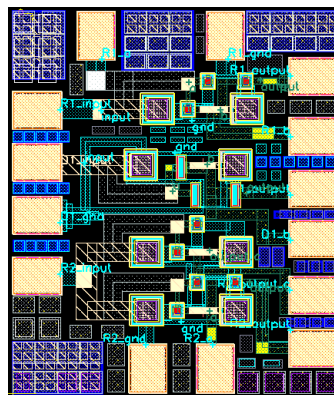
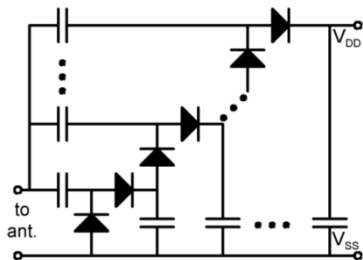
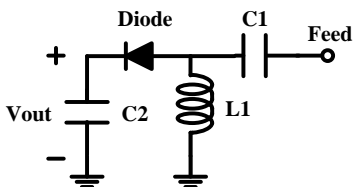
接收端



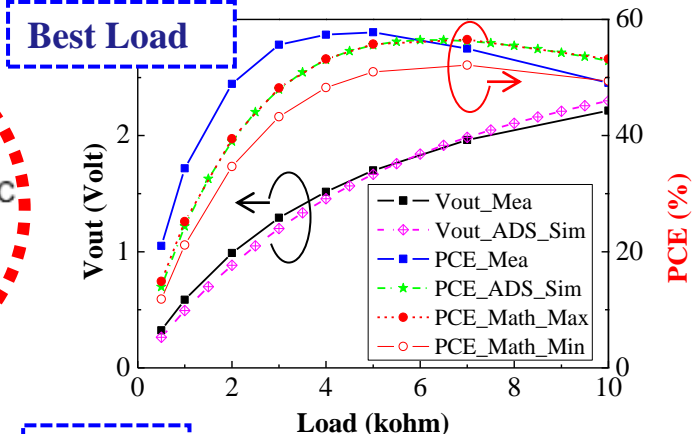
WPT transmitter

Free Space  
Transmission Channel

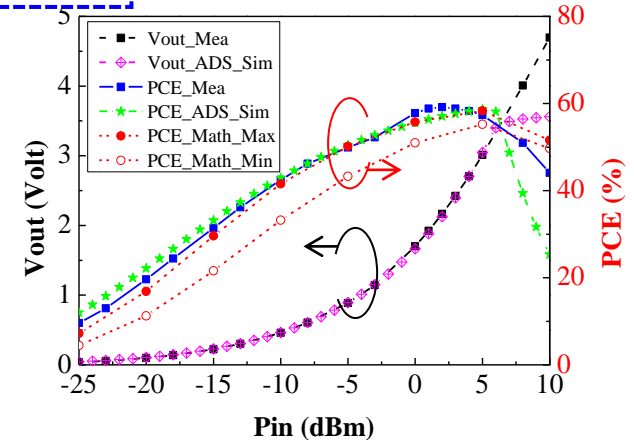
WPT receiver



Math Model  
V.S. ADS Simulation  
V.S. Measurement



Best  $P_{in}$



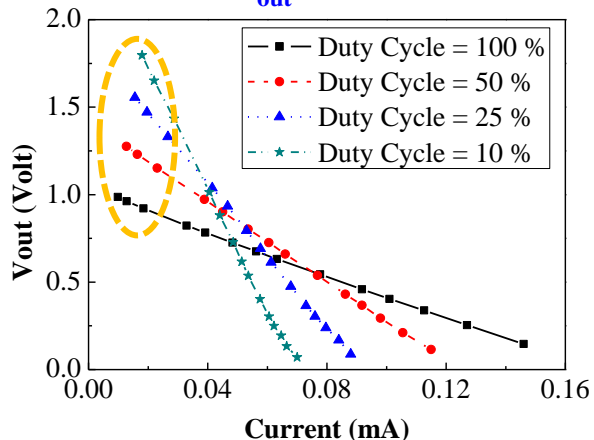
Advisor : Chin-Lung Yang  
Student : Yu-Lin Yang



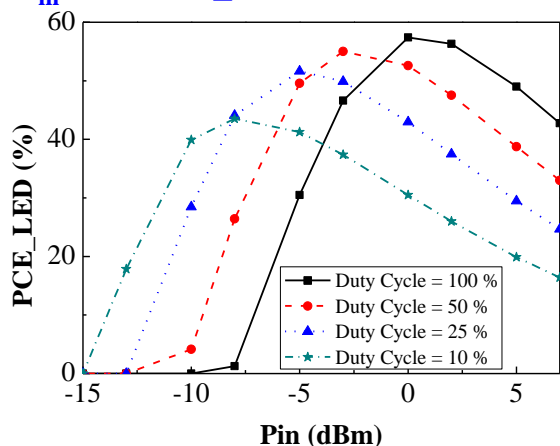
# Using Pulse Width and Pulse Shape Modulation to Enhance Power Conversion Efficiency under Constraint of Low Input Power

## Pulse Width Modulation (PWM)

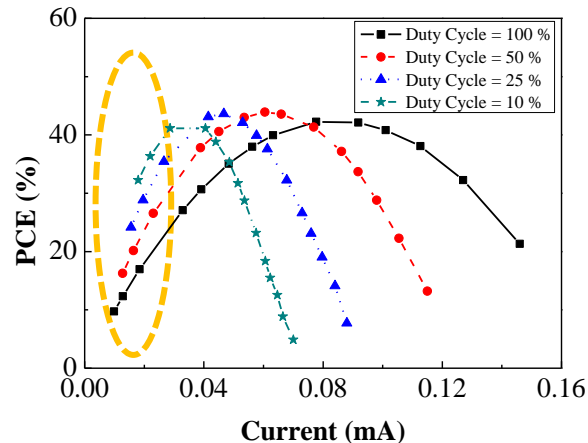
### ➤ Current V.S. $V_{out}$



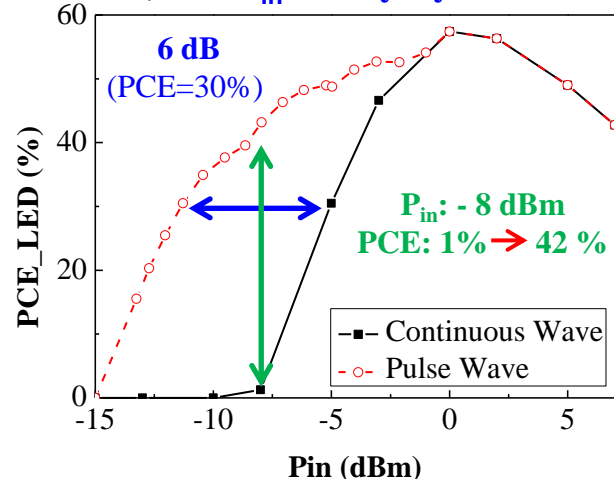
### ➤ $P_{in}$ V.S. PCE\_LED



### ➤ Current V.S. PCE



### ➤ 同時調整 $P_{in}$ 與 Duty Cycle



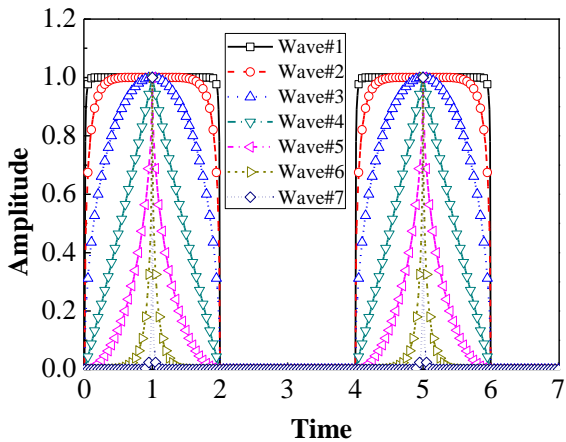
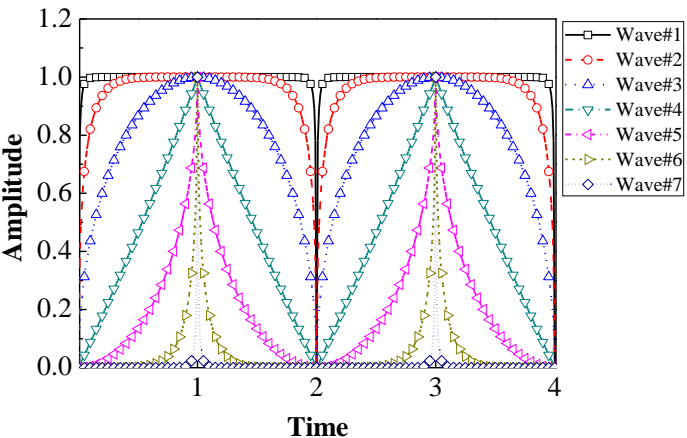
Advisor : Chin-Lung Yang  
Student : Yu-Lin Yang



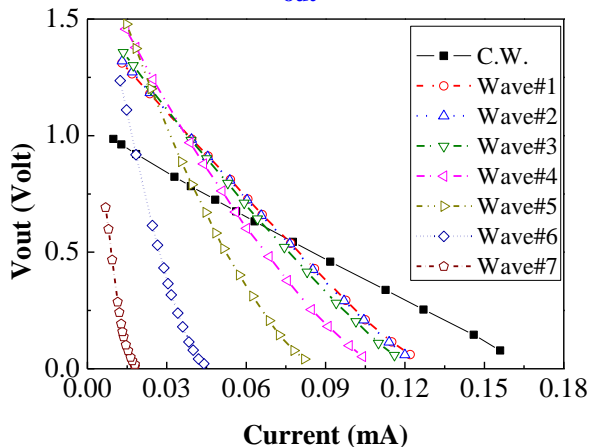
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## Pulse Waveform Modulation (PWF)M

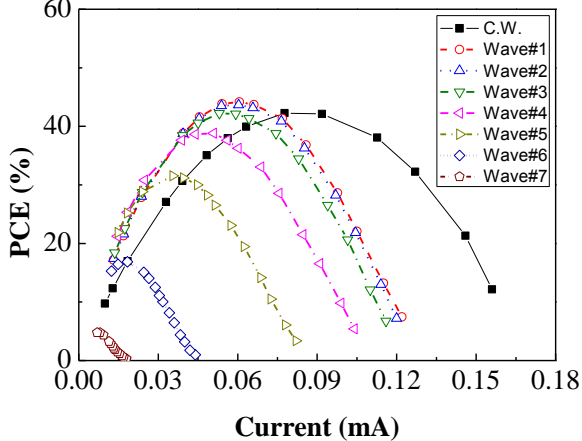
### Design & Parameter



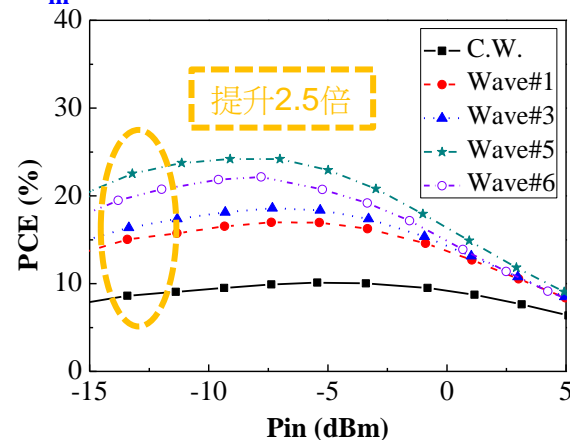
### Current V.S. $V_{out}$



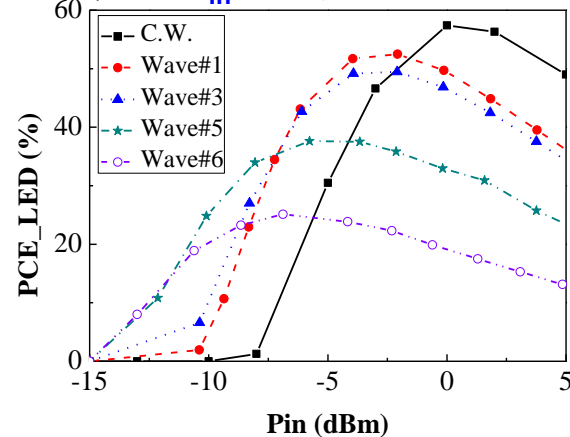
### Current V.S. PCE



### $P_{in}$ V.S. PCE



### 同時調整 $P_{in}$ 與 波形

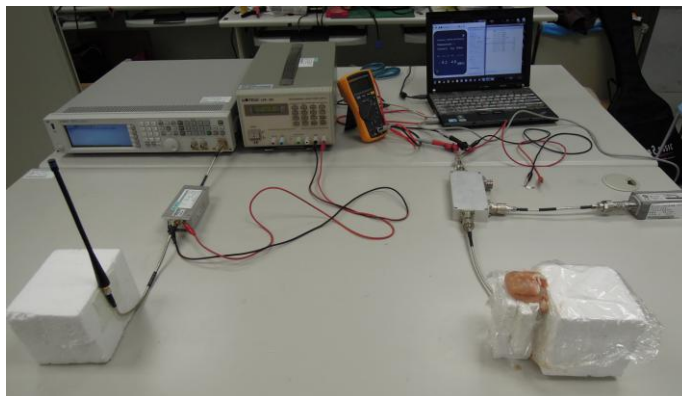
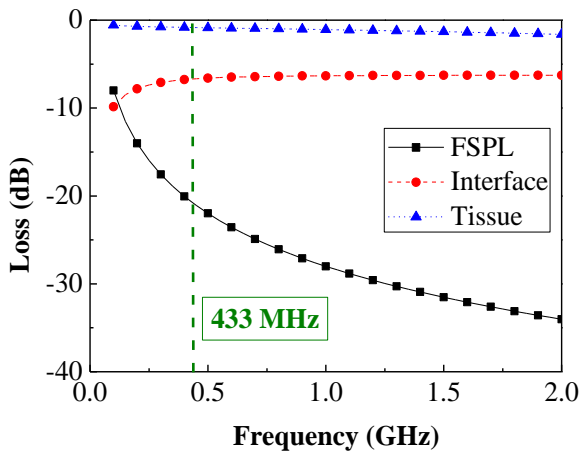
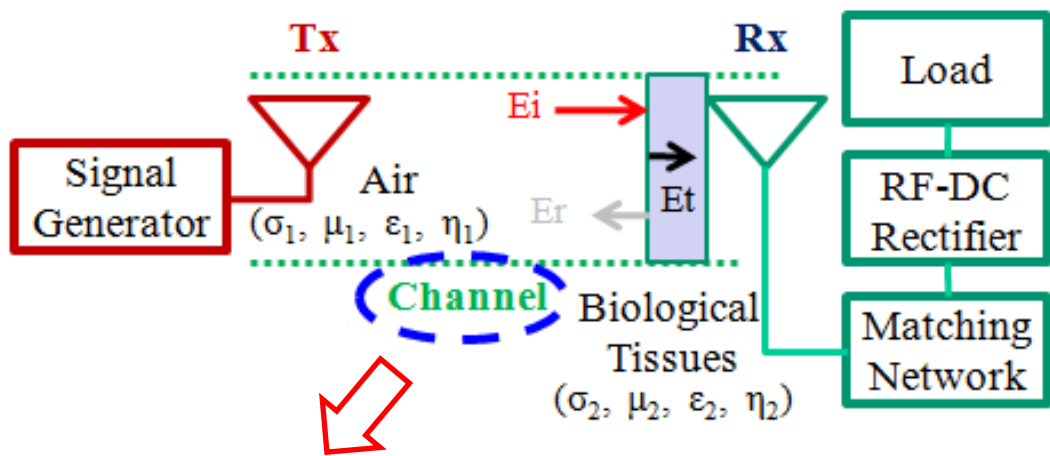


Advisor : Chin-Lung Yang  
Student : Yu-Lin Yang

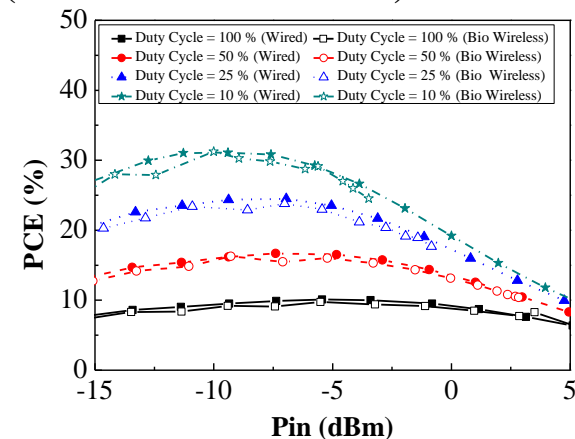


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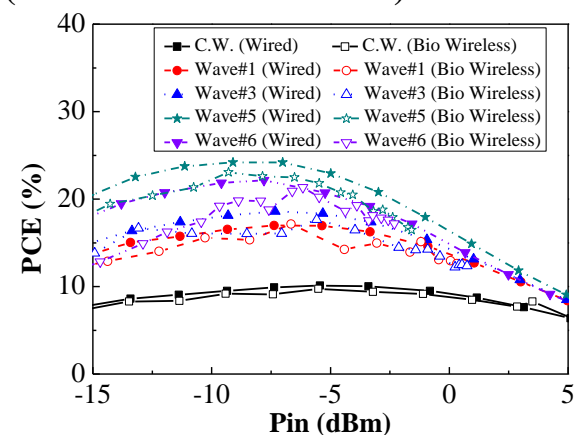
## Wireless Biomedical Applications



### PWM Measurement Results (Bio Wireless V.S. Wired)



### PWFM Measurement Results (Bio Wireless V.S. Wired)



Advisor : Chin-Lung Yang  
Student : Yu-Lin Yang

