I. Introduction

THIS document serves as a starting template for writing IEEE-trans. paper in NCTU, RFVLIS-Lab.

A. First Time Usa of Latex

1) Download Miktex, and open package manager. Remember to synchronize package list.
2) *Use package* MANAGER TO install the following packages: **please note the different fonts in this paragraph.)**
   - All IEEE transactions/bibtex packages. (the **ieeetran**, and **biblatex-ieee** package)
   - **Textcomp**: support some symbols. (the **was** package)
   - **amsmath**: support some maths.
   - **subfiles**: support independent compilable subfiles .tex structure as used in this template.
   - **dblfloatfix**: fixes double column figures ordering problems. (**dblfloatfix** package.)

B. Useful Commands

1) Use: **textbackslash**: to show \
2) Use: **label**{**aaaa**} inside figure, table, equations, or floats: and use it later with **ref**{**aaaa**}
3) Use: **cite**{**paperXXX**} to cite the paper in the *.bib file. For the item content of *.bib file, please go to IEEEexplore and click download citation with BibTex format.

C. Equation Templates

In all of the following approaches, a gate DC bias $V_{g,bias}$ is introduced as in Eq. XXXX.

$$V_{out} = N(V_{RF,Peak} - V_{th} + V_{gs,bias}). \tag{1}$$

Below is a **IEEEeqnarray** example. Note, it is a 2 by 2 array for alignment.

$$\begin{aligned} V_G &= A_v \cdot V_{in} - (V_{th} - V_{ITC,bias}) \\ &= A_v \cdot \left(V_{in} - \frac{V_{th} - V_{ITC,bias}}{A_v} \right). \end{aligned} \tag{2}$$

D. Table Templates

- use {v/t/v/t/} to control columns and column separating rule(line). Note that the separating rule are also treated as a column.
- use **IEEEeqnarrayrulerow,** **IEEEeqnarrayrulerow[rule_thickness]**, **IEEEeqnarraydblrulerow** , **IEEEeqnarraydblrulerow[rule_thickness][spacing]**, **IEEEeqnarraydblrulerowcut,** **IEEEeqnarraydblrulerowcut[rule_thickness][spacing]** to control horizontal separating rules. Use \IEEEeqnarraystrutsizeadd{4pt}{4pt} in the last hidden column in each row to add spaces above/below each row: **IEEEeqnarraystrutsizeadd**{**4pt**}{**4pt**}
- Use **parbox**{**18ex**}{} to control width.
- Use **raggedright**, **raggedleft**, and to adjust left/right alignment inside each cell.

TABLE I
Definition of Sensitivity and Power Conversion Efficiency.

Terminology	Definition
Power Sensitivity	The minimum input power required to achieve a specified DC output current, or voltage, or both.
Voltage Sensitivity	The minimum input voltage required to achieve a specified DC output current, or voltage, or both.
Power Conversion Efficiency (PCE)	$PCE \equiv \frac{\text{Output DC power}}{\text{Input RF power}}$

E. Put your own subsections.

1) Put your own subsubsections1.:

2) Put your own subsubsections2.:

TABLE II
SUMMARY OF THE UHF RF-TO-DC RECTIFIER PERFORMANCE.

Specification	**This work**	**A**	**B**	**C**
Frequency(MHz)	900	950	915	915
Technology	0.28μm thick-gate oxide CMOS in 65nm process	0.35μm	90nm	0.2μm
PCE@Output power	27.97%@19.3mW	15.1%@0.6μW	11%@13.1μW	71.5%@0.285mW
Number of stage / type of the rectifier	5/half-wave	1 (six stacks) / full-wave	17/half-wave	1/full-wave
Chip area	0.442mm^2	0.104mm^2	0.19mm^2	0.133mm^2

TABLE III
SUMMARY OF THE MMWAVE RF-TO-DC RECTIFIER PERFORMANCE.

	This Work	[**?**]	[**?**]
Technology	65nm	90nm	65nm
Number of Stages	7	10	3
Operating Frequency	46-56GHz	45GHz	70-72GHz
Peak Efficiency	20.65%	0.5%	8%
Input Sensitivity	-6dBm @2μA, 1.2V	2dBm	5dBm