

Guided Wave Circuit Theory

course for Dept. EEE

Tokyo Institute of Technology

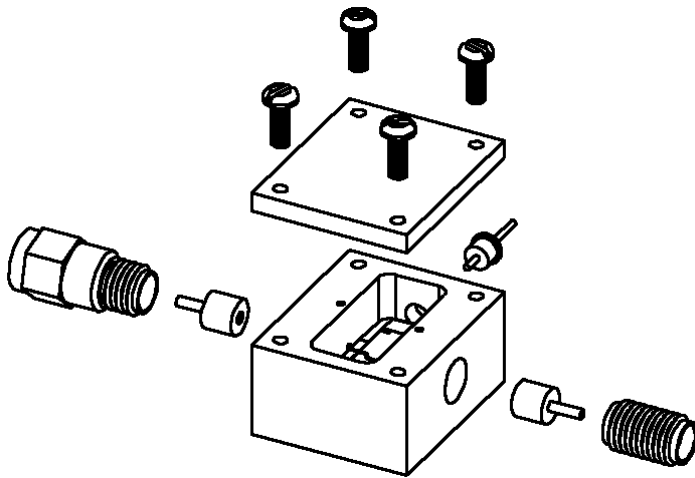
T.Mizumoto, Dept. EEE

Detailed lecture notes are available at OCWi.

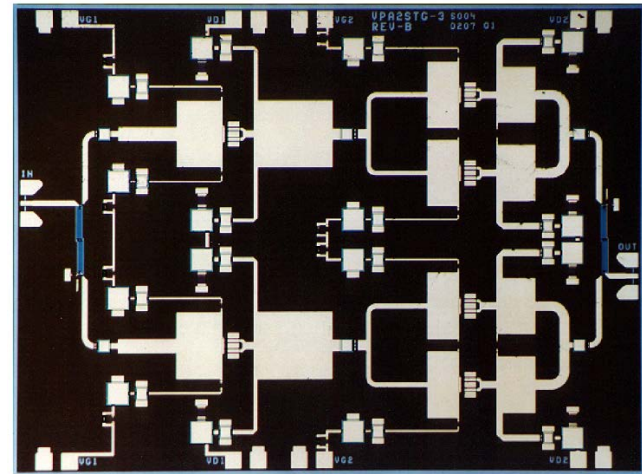
RF circuits and devices



Tokyo Tech



<http://www.tmeplano.com/gallery.htm>



<http://www.ausairpower.net/AC-0700.html>

Applications



Tokyo Tech

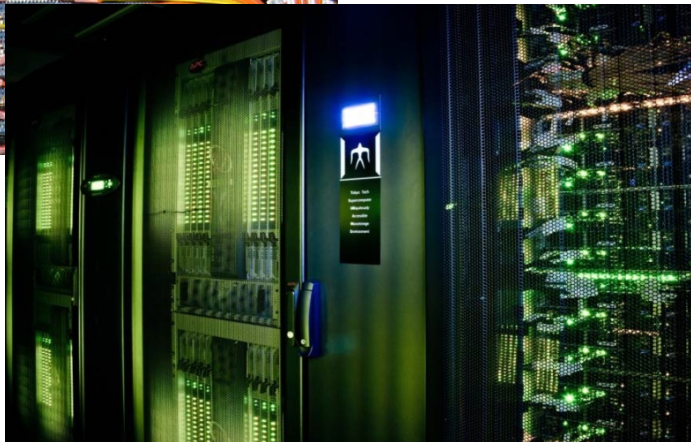
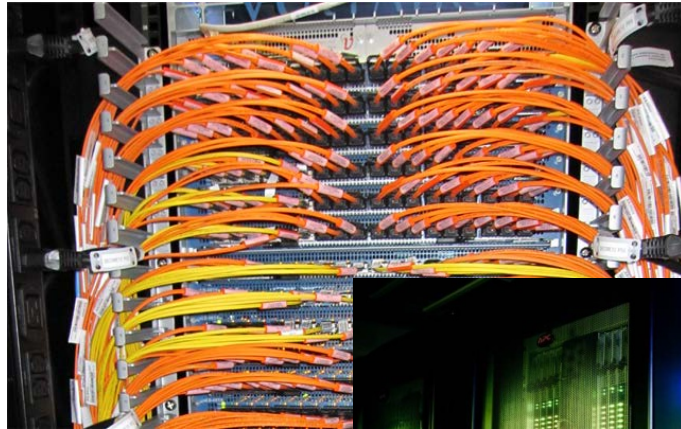
- ✓ Communications
- ✓ Sensing
- ✓ Energy supply or transfer
- ... etc



<http://www.nipic.com/show/2,00076096k05c87497.html>



<http://www.knowyourmobile.com/mobile-phones/apple-iphone/22247/how-block-numbers-iphone>



Titech TSUBAME



topics included

- 1 Introduction to waveguide
- 2 Transmission line
- 3 Waveguide composed of conductor (coaxial line, micro-strip line, and metallic hollow waveguide)
- 4 Dielectric waveguide
- 5 Optical fiber; dispersion and nonlinearity
- 6 Coupled mode equation
- 7 Guided waves in periodic structures
- 8 Scattering matrix
- 9 Eigen excitation and eigen value
- 10 Coupled waveguide (directional coupler)
- 11 Resonators, filter and MUX/DEMUX
- 12 Nonreciprocal circuits (isolators and circulators)
- 13 Monolithic Microwave Integrated Circuits (MMIC) / Photonic Integrated Circuit (PIC)

References

D.Marcuse : “Theory of dielectric optical waveguides,” Academic Press

R.E.Collin : “Field theory of guided waves,” McGraw-Hill

J.Helszajn : “Passive and active microwave circuits,” John Wiley & Sons

Notes

Download lecture notes and slides from OCWi, and bring them in every class.

Contact address:

Office : O-okayama S-9 Building, Room 905 (ext.2578)

e-mail: tmizumot@pe.titech.ac.jp