

# Smith Chart

After completing this section, students should be able to do the following.

- Describe Smith chart as a polar plot of reflection coefficient.
- Estimate the reflection coefficient from the Smith Chart.
- Read the reflection coefficient off the Smith Chart
- Mark the point on the Smith Chart given reflection coefficient.
- Calculate load impedance if reflection coefficient and transmission-line impedance are given
- Calculate reflection coefficient if load impedance and transmission-line impedance are given
- Explain how was Smith Chart developed
- Read normalized impedance and reflection coefficient on Smith Chart given a random point on the Smith Chart
- Given impedance find the normalized position of the impedance on the Smith Chart.
- Describe the reason for introducing admittance
- Write impedance and admittance of an inductor and capacitor.
- Explain why is the susceptance of an inductor negative and reactance is positive.
- Explain why is the admittance Smith Chart rotated 180 degrees.
- Distinguish between load impedance and normalized load impedance. Describe impedances on the Smith Chart as normalized impedances
- Given impedance, read admittance on combo Y/Z chart
- Given a random point on Y/Z chart, find admittance, impedance and the reflection coefficient.
- Explain electrical length
- Calculate the input impedance and input reflection coefficient
- Describe input reflection coefficient in terms of load reflection coefficient.

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Learning outcomes:  
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