E157 Lecture 23 Day Plan

Any questions before quiz

Quiz + Team Quiz + Talk through solution

Clarify that conversion gain includes splitting power between tone and image.

Do mixers work for signals with bandwidth instead of tones? → Yes, AM modulation, draw it

Introduce phase noise in very rough sense → LO noise leads to frequency variations

What LO frequencies make 20MHz IF from 40MHz RF?
→ 20MHz and 60MHz: LO can be either high side injection or low side injection

What's a tracking generator for? Relate to S-parameters

- Creates a variable frequency sweep
- If you put it into a system and the output into a spec an, you trace out Bode magnitude
- i.e.: can make a scalar VNA for picking off S21

Draw spectra for SSB mixer below

https://commons.wikimedia.org/wiki/File:SSB_and_Image_Rejection_Mixer.svg
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Single Sideband Mixer

Image Rejection Mixer