

E157 Lecture 20 Day Plan

Any questions before quiz

Quiz + Team Quiz + Talk through solution

Make a harmonic power budget for an amplifier chain

- Carrier frequency is 2.4GHz
- Chain goes: amp-filter-amp
- Amplifiers: <https://www.minicircuits.com/pdfs/ZRL-3500+.pdf>
- Filter: <https://www.minicircuits.com/pdfs/VBF-2435+.pdf>
- Input power scenarios:
 - one tone at 5dBm,
 - two tones at 0dBm, one at 2.4GHz and one at 2.42GHz
 - one tone at 5dBm + a blocker at 2.6 GHz and 20dBm

Spectral Regrowth – intermodulation with a wider-band input signal

General Distortion Product – $\frac{1}{2^n} \sum_{k=0}^n \binom{n}{k} e^{jk\theta} e^{-j(n-k)\theta}$

Check-in, office hours

Example link budget

<https://docs.google.com/spreadsheets/d/17uMhoFzrmR6VXw7P1cpnW45qMeqVjfOMFiarAdiyc9I/edit?usp=sharing>