

Lab 2

Channel estimation

Requirements

- A signal of 4800 samples
- Packet detection
- Resistance to three different noises
- Boost your data rate!

Grading criteria

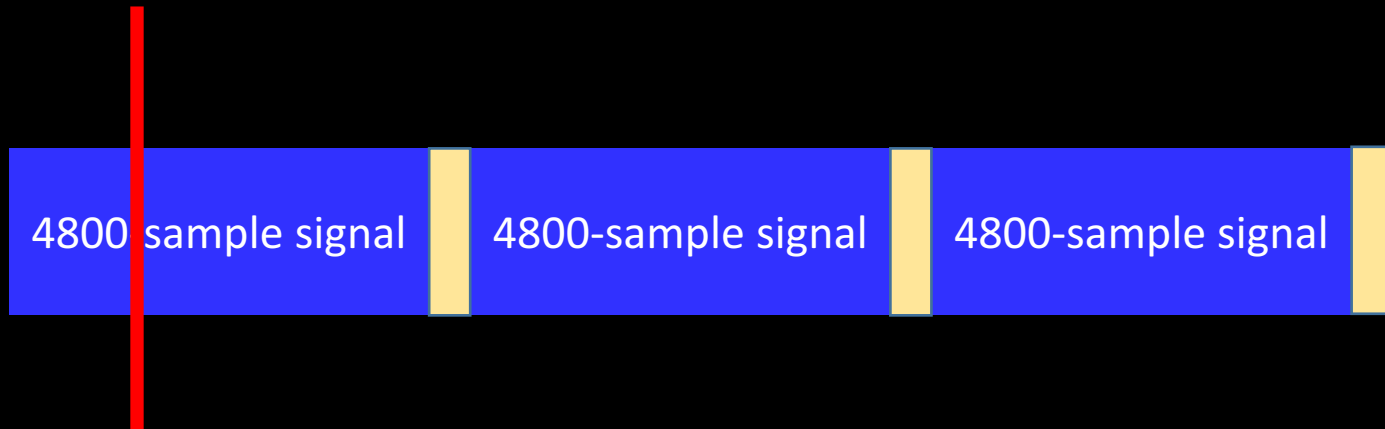
- Baseline– 10%
 - Packet detection
 - 2000 bps
- Resistance to three channels– 45%
 - First channel: Gaussian noise- 10% + 2*5%
 - Second channel: CFO + SFO + Gaussian noise- 15% + 2*5%
 - Third channel: secret- 20% + 1*5%
- Boost data rate – 25%
 - 5% for each 2x. throughput
- Report – 20%
 - Encode / decode explanation + work division
 - Single carrier comparison- 10%

Lab #2

- Create a signal of 4800 samples
 - Including preamble and symbols
 - Save the samples as .mat file
 - Sample mat file:
<https://drive.google.com/file/d/1LpPp0v1zUtvR7Y6dvhmmnDGLmRh5ZSUx/view?usp=sharing>
 - Upload your mat file through
 - scp -P 1022 teamN_v#.mat
wn17_lab2@mvnl.csie.ntu.edu.tw:~/ch1/
 - For channel 2: wn17_lab2@mvnl.csie.ntu.edu.tw:~/ch2/
 - For channel 3: wn17_lab2@mvnl.csie.ntu.edu.tw:~/ch3/
 - Password: wnfa2017

Lab #2

- Packet detection
 - The 4800-sample signal will be repeated 4 times and be cut off randomly at the beginning
 - 200-sample noise
 - Total 15000 samples



Lab #2

- Three different channel noise
 - Gaussian noise
 - CFO + SFO + Gaussian noise
 - Secret.....about channel response and high loss
 - Captured the noised .mat file in
 - <http://mvnl.csie.ntu.edu.tw/~wnfa/wn17fall/>
 - CLEAR in 12/14 (Thur.) 23:59

Grading criteria

- Baseline– 10%
 - Packet detection
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- Resistance to three channels– 45%
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 - Second channel: CFO + SFO + Gaussian noise- $15\% + 2 \cdot 5\%$
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- Boost data rate – 25%
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 - Encode / decode explanation + work division
 - Single carrier comparison- 10%

Demo

- 12/14 (Thur.)
- 15 min per team
- Whole day available, book the time slot at <https://docs.google.com/spreadsheets/d/1Gt0kPkDGTFpR8MTsswOTMN4ZozkOdAH661KgcRgJloc/edit?usp=sharing>
- Please feel free to email us if both of you are not available

Submit

- courses.dlc.ntu.edu.tw
 - Exercise > Lab2
 - .zip containing encode.m/ decode.m/ report.pdf