Goal of pilot test

The goal of the pilot test is to obtain the coherence bandwidth from the PDP, and to ascertain the overall path loss assumptions.

Safety procedures

- Use ESD wristbands when working with the PNA
- Double check connections before applying power
- Make sure the output is loaded before turning on power

Equipment list

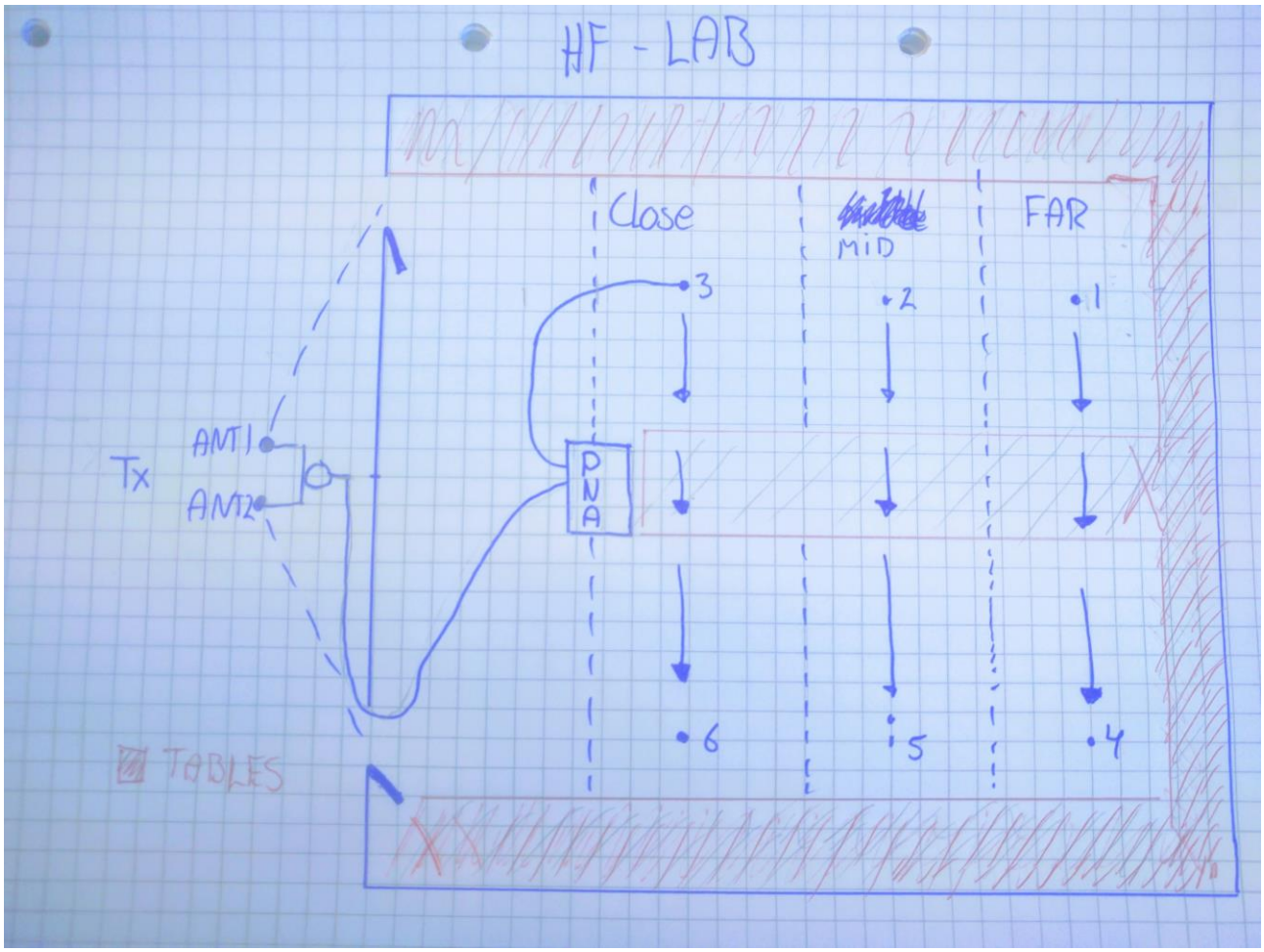
- PNA 5227A
- 2 x 4 GHz Directional antennas
- 1 x 4 GHz Omnidirectional antenna
- 1 x 5m cable (from PNA to Rx antennas)
- 1 x 12m (from PNA to Tx antennas)
- 1 x lossless splitter
- 2 x < 1m cables
- Calibration kit for through line calibration
- ESD wristbands

Setup parameters

PNA settings

- Change to time measurement
- Frequency: 4 GHz
- resBW: 200 MHz (5 ns resolution)
- ouput power: 15 dBm
- sampling frequency: 60 Hz
- sweep time: 10 s

Setup



Connections (take picture)

Procedure for pilot test

- Input setup from table in PNA
- Do a through line calibration with cables
- Connect antennas to PNA to obtain setup from figure
- Place Tx antennas at Tx position pointing towards the doors
- Hold Rx antenna at position 1 as seen on figure

- Start measurement while moving Rx antenna across the room to position 4
- Save measurement as “Far region”
- Reset now with Rx antenna at position 2 as seen on figure
- Start measurement while moving Rx antenna across the room to position 5
- Save measurement as “Mid region”
- Reset now with Rx antenna at position 3 as seen on figure
- Start measurement while moving Rx antenna across the room position 6
- Save measurement as “Close region”

Goal of measurements

The goal of the measurements is to determine the distribution of fading gain in an office environment.

Safety procedures

- Use ESD wristbands when working with the PNA
- Double check connections before applying power
- Make sure the output is loaded before turning on power

Equipment list

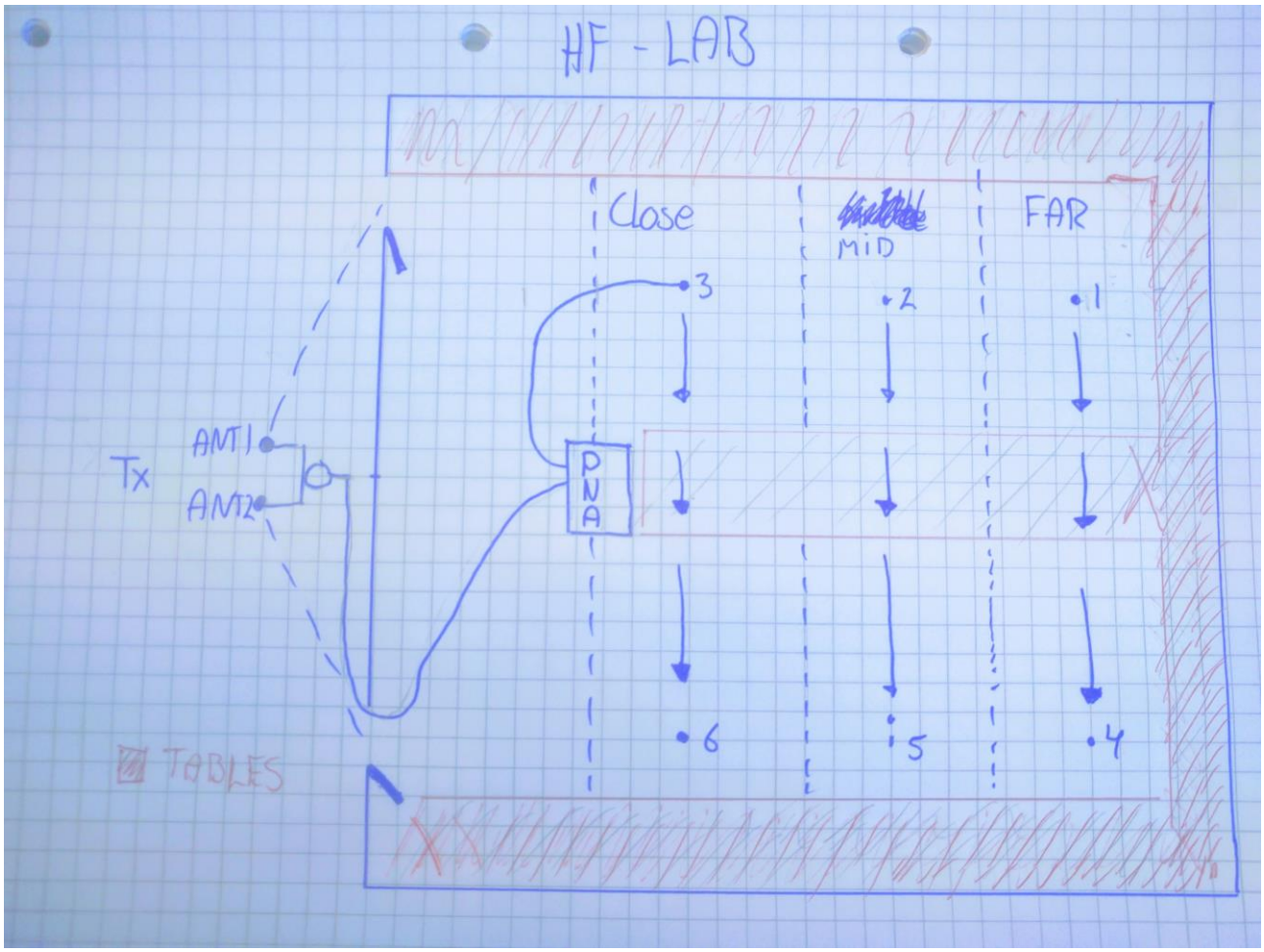
- PNA 5227A
- 2 x 4 GHz Directional antennas
- 3 x 4 GHz Omnidirectional antenna
- 3 x 5m cable (from PNA to Rx antennas)
- 1 x 12m (from PNA to Tx antennas)
- 1 x lossless splitter
- 2 x < 1m cables
- Calibration kit for through line calibration
- ESD wristbands

Setup parameters

PNA settings

- Center frequency: 4 GHz
- Span: TBD (waiting pilot test)
- Number of points: TBD (dependent on span and resBW but less than 200)
- resBW: 40 Hz (dependent on PA and path loss)
- ouput power: 15 dBm

Setup



Connections (take picture)

Procedure for pilot test

- Input setup from table in PNA
- Do a through line calibration with cables
- Connect antennas to PNA to obtain setup from figure
- Place Tx antenna at Tx position pointing towards the doors
- Hold Rx antenna at back corner

- Start moving at TBD(speed) along the back wall and start measuring. (from position 1 to position 4)
- Move 3-5 cm out and move back towards position 1
- Repeat moving back and forth until the required amount of samples is collected (50-100 times)
- Save as “fading gain”