EPoC Downstream Pilot Proposal

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Downstream Pilots

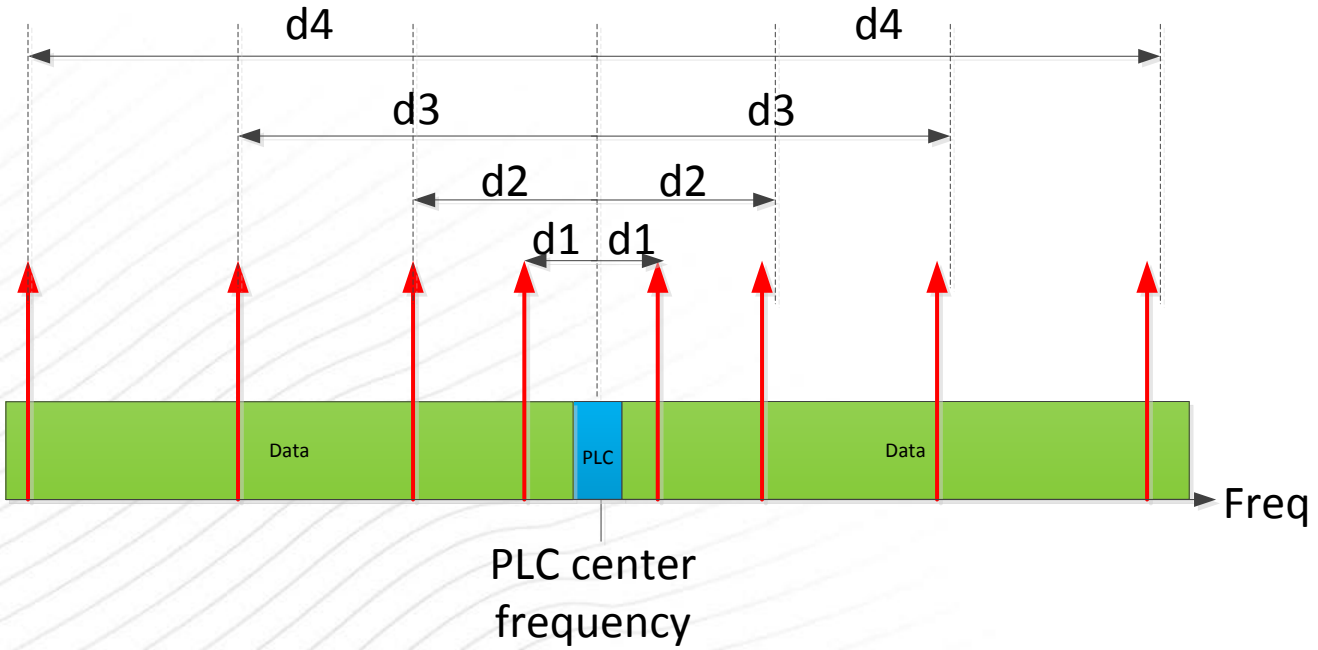
- Two pilot types for downstream FDD
  - Scattered Pilots
    - Transmitted on different frequency locations in different symbols
  - Continuous Pilots
    - Transmitted at fixed frequencies on every OFDM symbol
- Two pilot types for downstream TDD
  - Regular Pilots
    - Transmitted in a single OFDM symbols reoccurring in a predefined way
  - Continuous Pilots
    - Transmitted at fixed frequencies on every OFDM symbol
- This presentation provides more details on the continuous pilots specifications (common for FDD and TDD)
  - Locations
  - Modulation
  - Transmitted power

Continuous Pilots Locations

- The locations of the continuous pilots in the 6.4 MHz band around the PLC center frequency (“PLC Band”) are defined by specifications and are always the same
- The locations of the continuous pilots outside the PLC Band are set according to specific rules by the CLT
- Information on the locations of the continuous pilots is provided to the CNU over the PLC channel

Locations of the Continuous Pilots Around the PLC

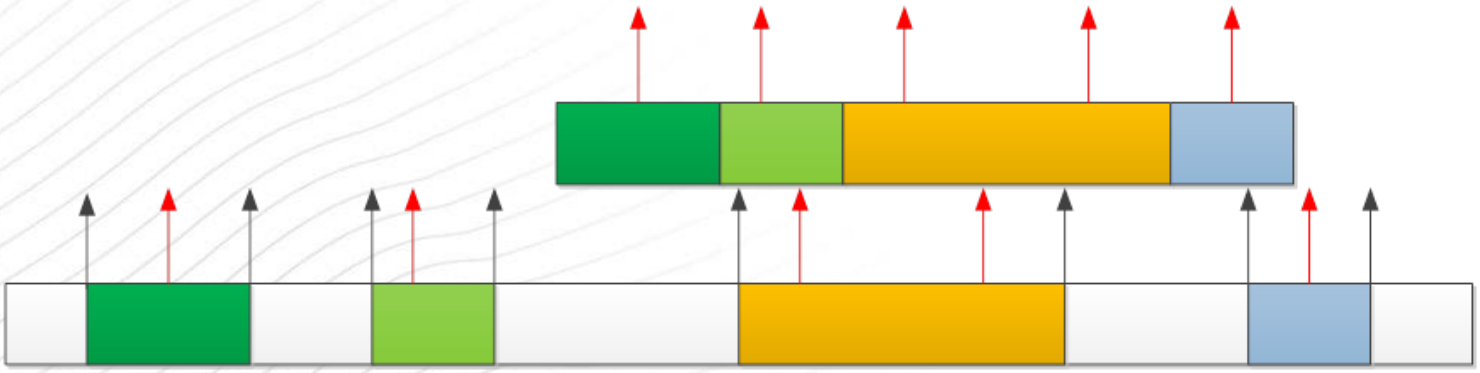
- Eight continuous pilots are placed in the PLC Band symmetrically around the center frequency of the PLC with different spacing, as described in the table below



	4K	8K
d1		
d2		
d3		
d4		

Locations of the Continuous Pilots Outside the PLC Band

- The CLT must allocate the continuous pilots outside the PLC Band according to the following rules:
  - At least 8 continuous pilots must be located outside the P{LC band
  - At least every 64 subcarriers for OFDM channels of 48 MHz or less
  - At least every 128 subcarriers for OFDM channels greater than 48 MHz
  - Cannot be placed in exclusion bands but must be placed at the edges of exclusion bands



Continuous Pilots Modulation and Power Boosting

- Continuous pilots BPSK modulated with a pseudo random binary sequence (PRBS) of length 2^13
- The PRBS is generated using a 13 bit linear feedback shift register using the following polynomial: x^13+x^12+x^11+x^8+1
- Continuous Pilots are transmitted with a power greater than the average power of data subcarriers
  - Amount of boosting between 3 dB to 6 dB (more analysis required)
  - Provides additional SNR for the CP to enhance receiver performance
  - Implication on the total transmission power is minor

Thank You