High-Band EPoC Deployment Scenarios

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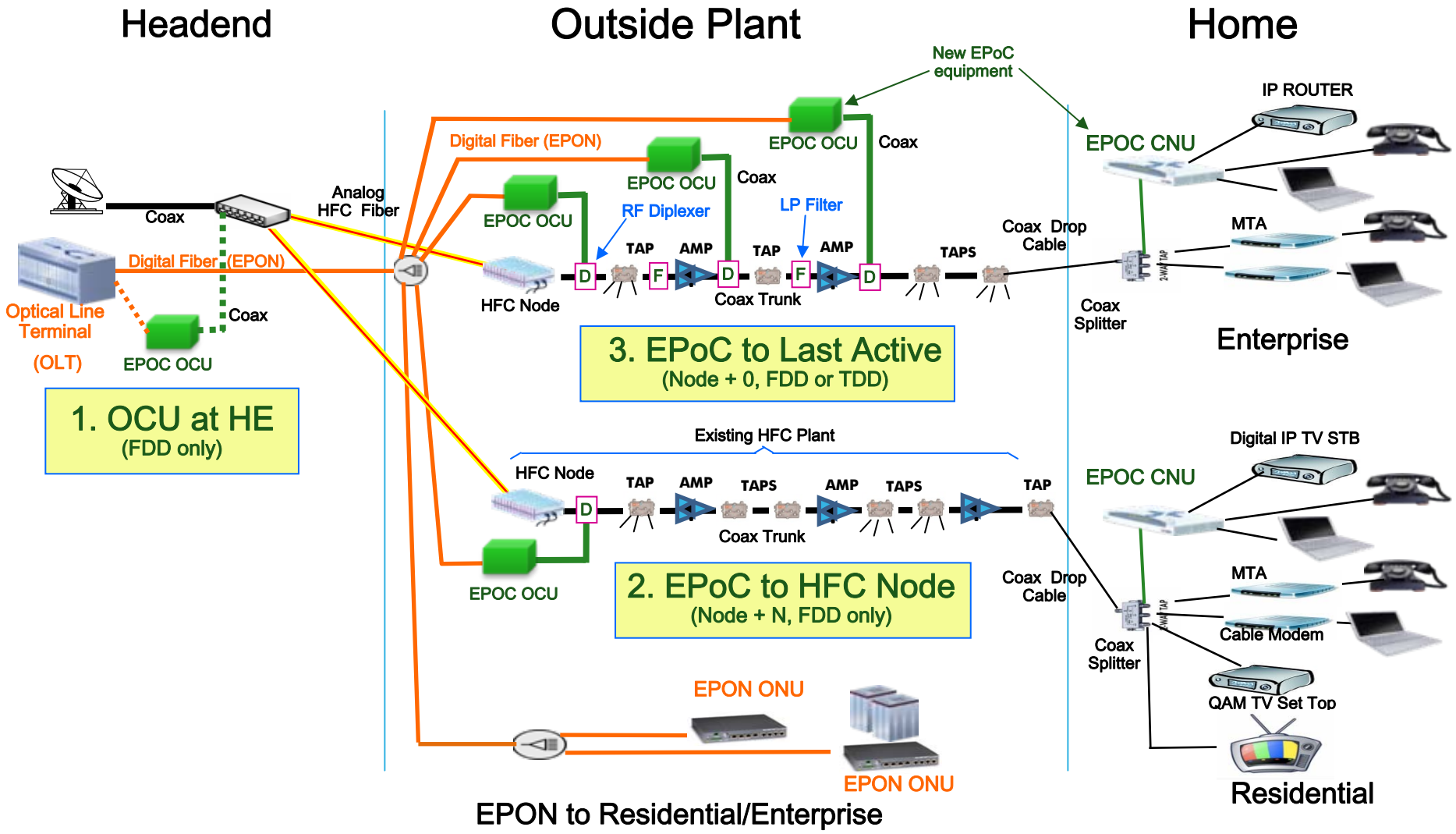
EPoC Use Cases



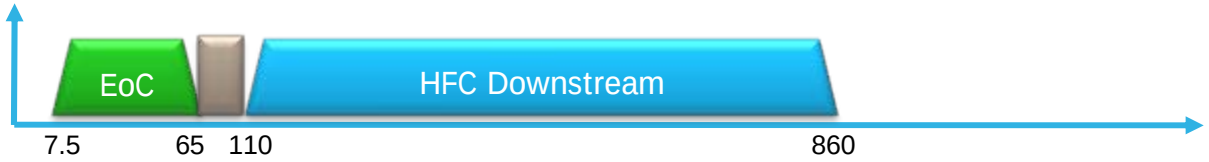
HFC, EPoC, EoC

Coax Spectrum Options

Low/High band EPoC (FDD)

High band EPoC (TDD)

High band EPoC (FDD)

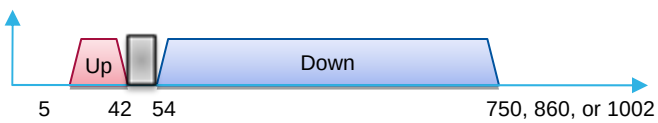


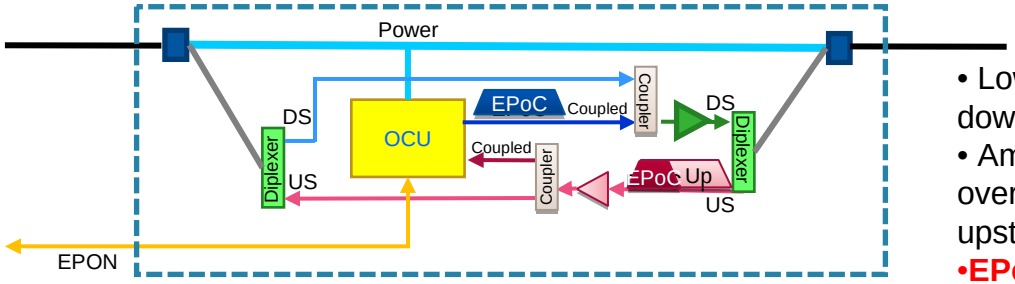
Low band EoC (TDD; China Today)

EPoC FDD (China Future?)

EPoC Spectrum Insertion/Extraction
Low Band US, High Band DS

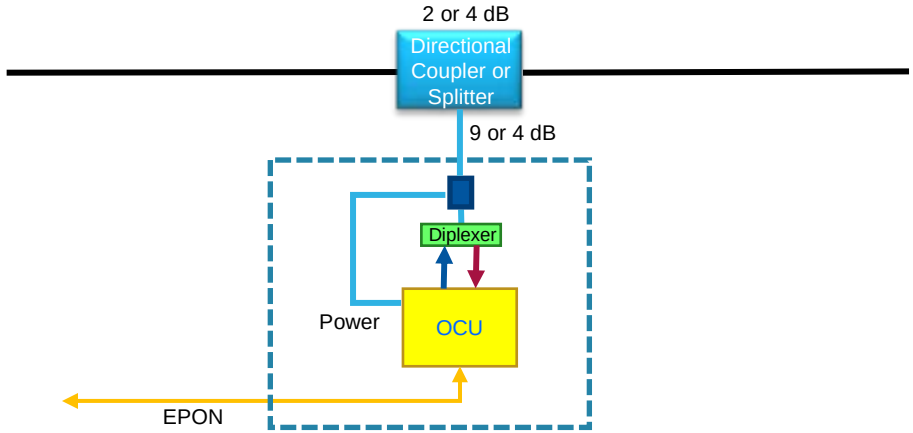
- Sharing EPoC upstream with DOCSIS upstream spectrum will be difficult
  - **In-line OCU**





- Low insertion loss in the downstream
- Amplification is possible to overcome splitter loss in the upstream
- **EPoC US & DS PA's have to source whole HFC + EPoC spectrum**

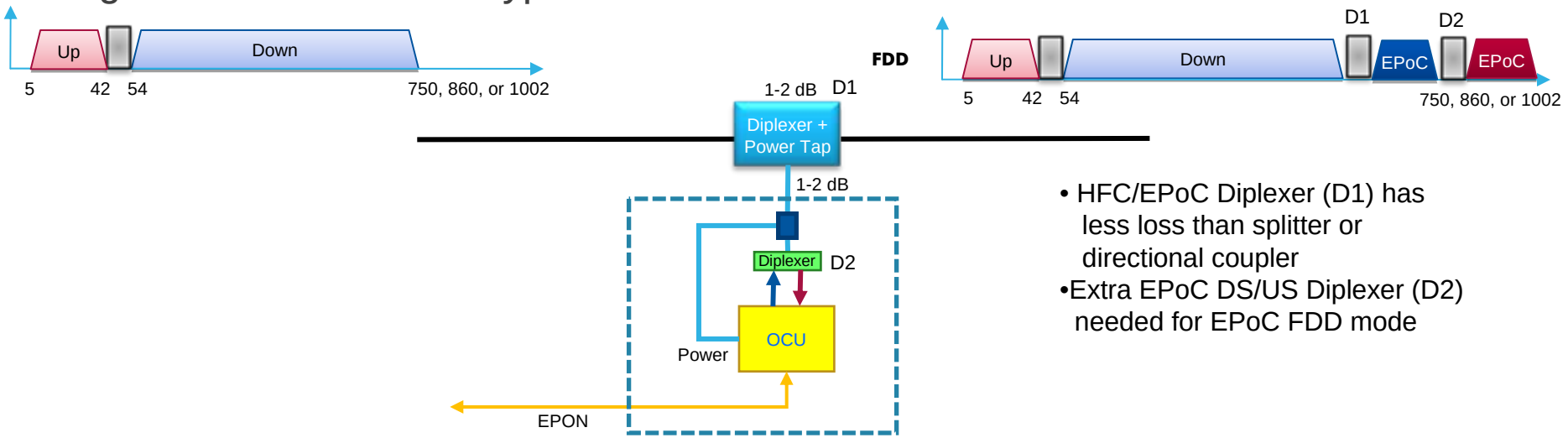
  - **Bypass OCU**



- **High insertion loss in both downstream and upstream**
- **Not acceptable**

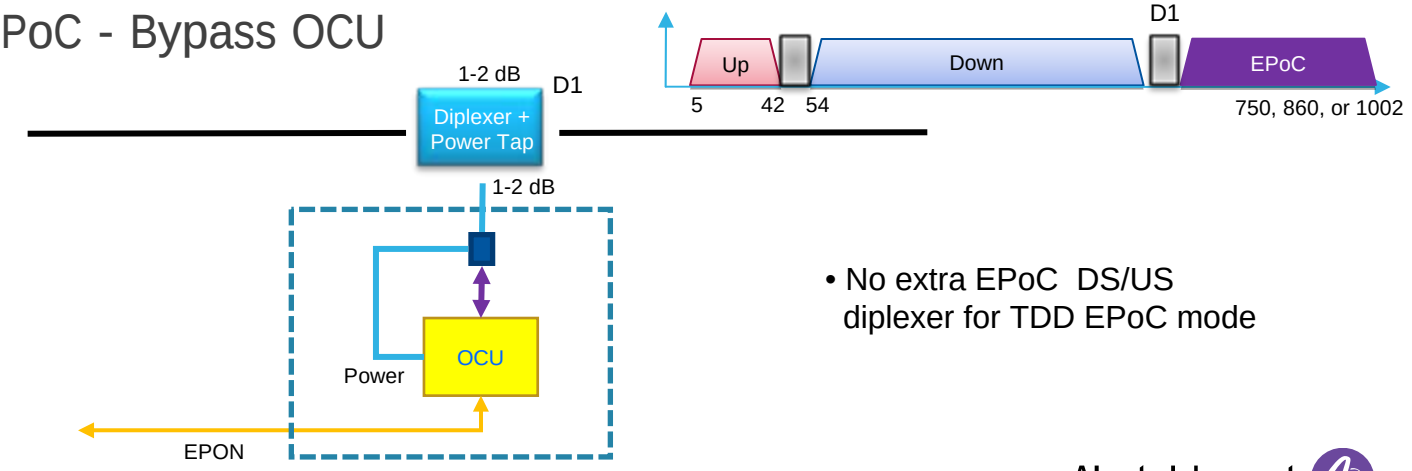
EPoC Spectrum Insertion/Extraction
High Band DS + US (overlay)

- High-Band FDD EPoC - Bypass OCU



- HFC/EPoC Diplexer (D1) has less loss than splitter or directional coupler
- Extra EPoC DS/US Diplexer (D2) needed for EPoC FDD mode

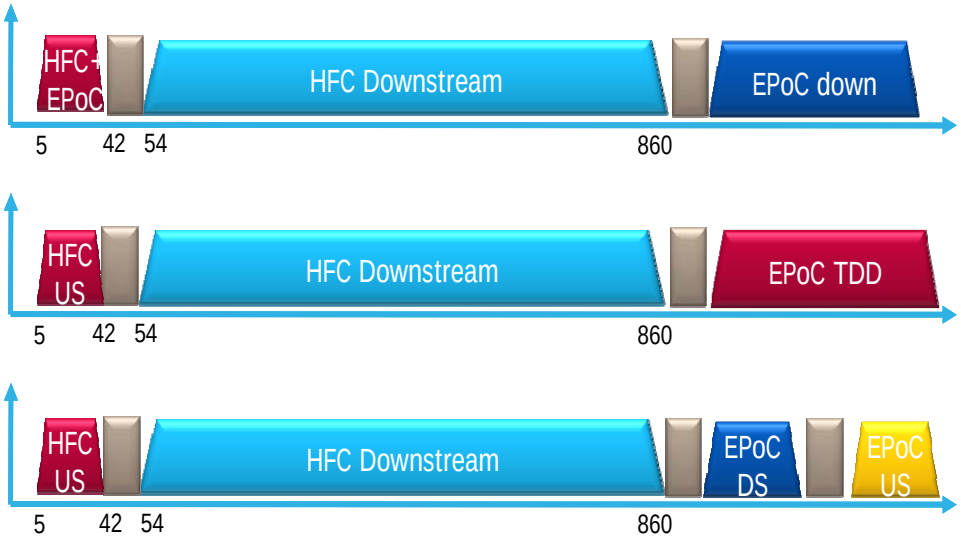
- High Band TDD EPoC - Bypass OCU



- No extra EPoC DS/US diplexer for TDD EPoC mode

EPoC Spectrum Choices

- EPoC US Spectrum
  - Low Band US (in HFC US band) => Requires new "EPoC-integrated" Nodes and Amps
  - High Band US (Overlay): Can be added above current HFC spectrum with:
    - Node + 0 Overlay
    - Using Existing Nodes & Amps
    - FDD or TDD
    - May require Taps/Splitter upgrades in coax segments being used (depends on Freq)
    - Requires EPON fiber extension to each Node or Amp where Node+0 EPoC Spectrum used
    - QAM/DOCSIS DS to 860 MHz, ~100 MHz Guard, 2x120 MHz EPoC ~ max 1200 MHz Spectrum



- Difficult to fit 1 GHz FDD EPoC in spectrum from 860-1200 MHz due to extra EPoC DS/US guard band

Summary & Questions

- High-band EPoC (TDD mode) can deliver ~1Gb/s DS and ~1Gb/s US on a Node+0 plant with "1 GHz" passives (assumes usability to ~1.2 GHz)
- Can be useful to serve Enterprise customers on mixed Residential/Enterprise plant w/o changing actives
- Interested in Operator input on probability of high-band EPoC use for Enterprise and/or Residential use

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