



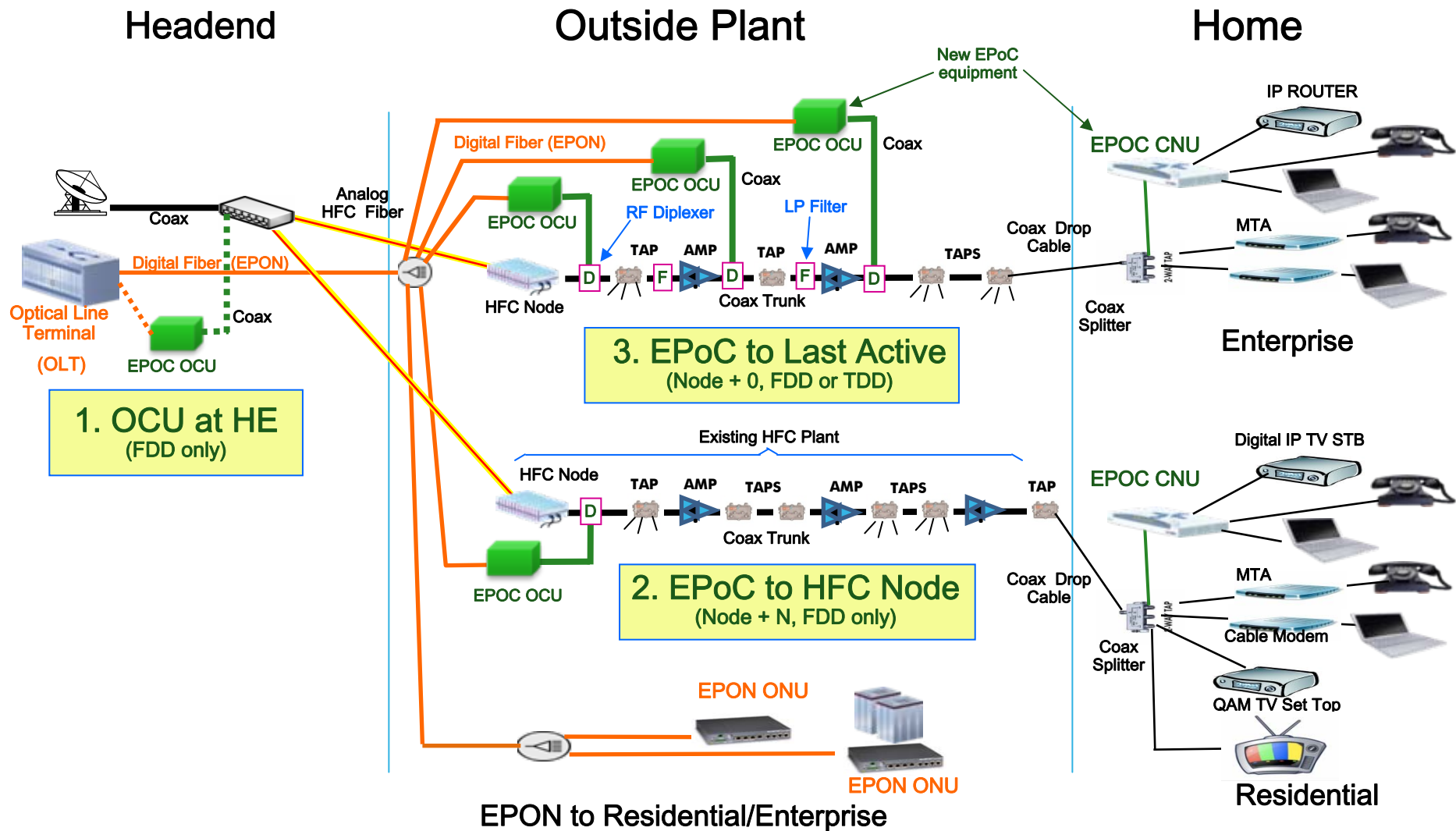
High-Band EPoC Deployment Scenarios

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EPoC Use Cases



HFC, EPoC, EoC

Coax Spectrum Options



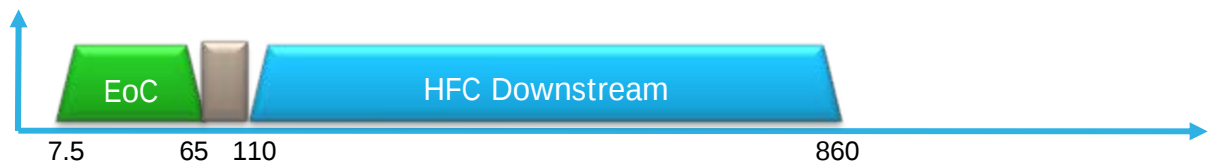
Low/High band EPoC (FDD)



High band EPoC (TDD)



High band EPoC (FDD)



Low band EoC (TDD; China Today)



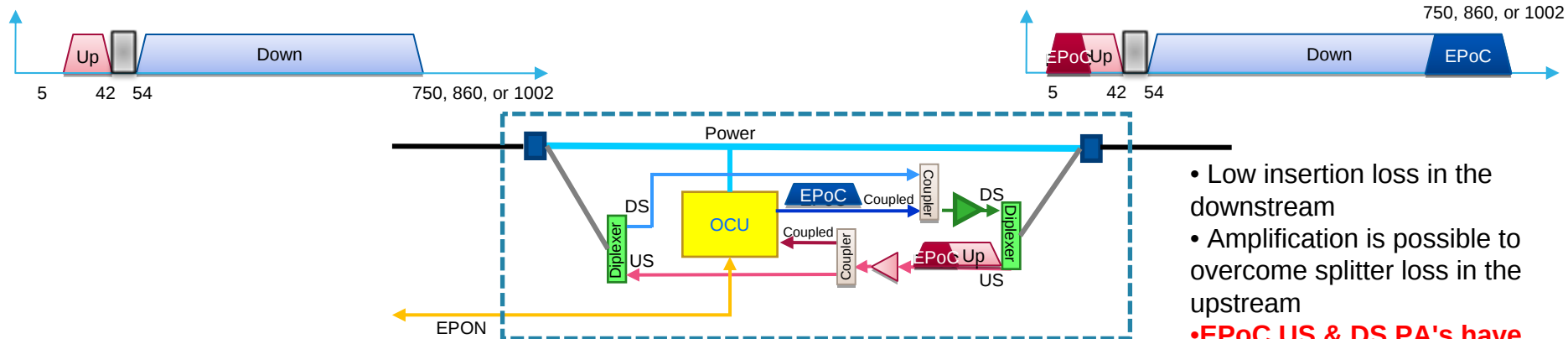
EPoC FDD (China Future?)

EPoC Spectrum Insertion/Extraction

Low Band US, High Band DS

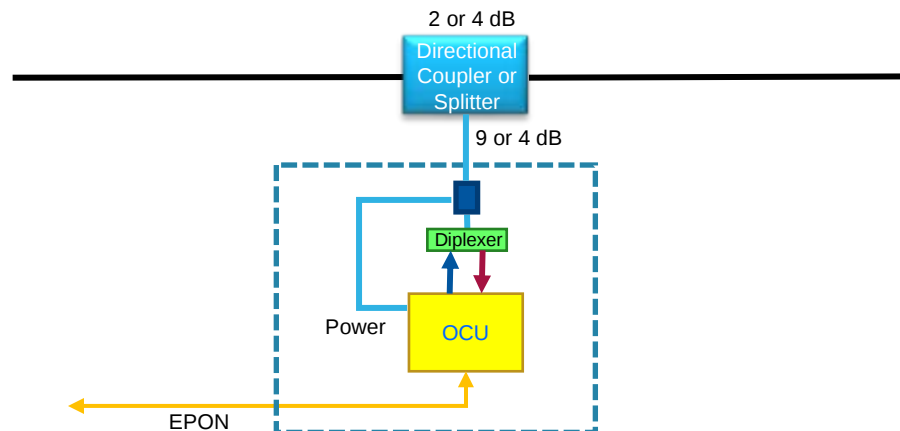
- Sharing EPoC upstream with DOCSIS upstream spectrum will be difficult

- 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**

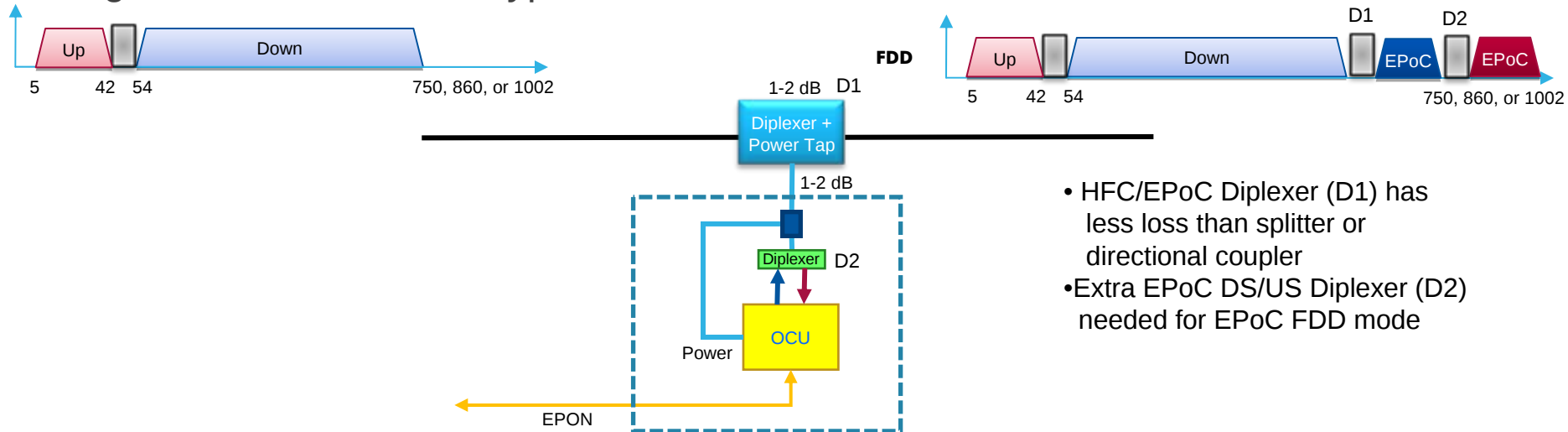
- Bypass OCU**



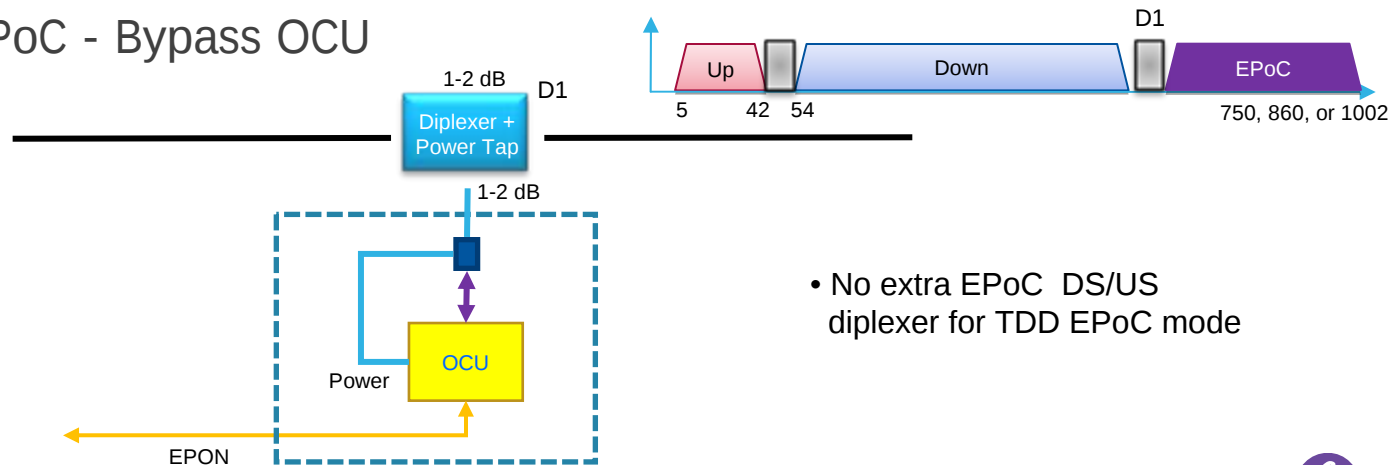
- **High insertion loss in both downstream and upstream**
- **Not acceptable**

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

• High-Band FDD EPoC - Bypass OCU



• High Band TDD EPoC - Bypass OCU



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 $\sim 1\text{Gb/s}$ DS and $\sim 1\text{Gb/s}$ US on a Node+0 plant with "1 GHz" passives (assumes usability to $\sim 1.2\text{ GHz}$)
- 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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