EPON over Coax

RF Spectrum Ad Hoc – Status Report

Steve Shellhammer (Qualcomm)

Formation

- The RF Spectrum Ad Hoc was formed at the September 2012 EPoC Task Force Meeting
- During the Study Group phase there were several unofficial conference calls on RF Bandwidth

Prior to Ad Hoc Formation

- At the September TF meeting there was a presentation [1] given on choices the Task Force should make regarding RF Bandwidth

1. Specify the Required RF Bandwidth for each of the supported PHY modes
2. Specify the rules for exclusion sub-bands
3. Specify the out-of-band (OOB) emission requirements
4. Decide if the PHY will use absolute subcarrier frequencies

Conference Calls

- The Ad Hoc holds weekly conference calls
- Tuesdays 11 AM Pacific Time (2 PM Eastern Time)
- We could add some calls at a different time if there is interest from our participants from Asia
- Four conference calls so far
  - October 9
  - October 16
  - October 23
  - November 6
- Minutes of the meetings have been sent to the email reflector

Goals – Provide Recommendations to the Task Force

- Recommend the Frequency Bands and Center Frequencies for the various PHY modes
  - FDD Downstream
  - FDD Upstream
  - TDD
- Recommend channel bandwidth for various PHY modes
  - FDD DS = 192 MHz (Task Force decision)
  - FDD US
  - TDD
- Recommend rules for exclusion sub-bands
- Recommend out-of-band (OOB) emission requirements for protection of legacy services
- Recommend channel bonding configurations

Presentations

- FDD Downstream Frequency Band and Center Frequencies [2]
  - Frequency Band from 108 MHz to 1200 MHz
  - Center frequencies on 2 MHz grid
- OFDM Subcarrier Nulling in Downstream P802.3bn [3]
  - Described purpose of in-band nulling to mitigate interference to and from other services
  - Provided some recommendations on in-band nulling, details available in the presentation
- High-Band EPoC Deployment Scenarios [4]
  - Described several deployment scenarios for both FDD and TDD, in both North America and China
  - Described spectrum impact of various scenarios

Plan Going Forward

- Hear proposals on various areas related to RF Spectrum
- Build consensus on specific recommendations
- There are topics in the Backup slides which we can discuss and straw poll during the Ad Hoc time-slot, and then motion during the TF meeting on Thursday
- Make recommendations to the Task Force at Task Force meetings

References

1. Steve Shellhammer, Hesham ElBakoury, Ed Boyd, Bill Powell and Leo Montreuil, "EPoC RF Bandwidth Task Force Choices," September 2012
2. Avi Klinger, "FDD Downstream Frequency Band and Center Frequencies," October 2012
3. Leo Montreuil, "OFDM Subcarrier Nulling in Downstream P802.3bn," October 2012
4. Bill Powell and Randy Sharpe, "High-Band EPoC Deployment Scenarios," October 2012

Backup – Straw Polls

FDD Downstream Band

- Which of the following possible FDD downstream lower band edges do you prefer?

Possible Lower Band Edge
108 MHz
550 MHz

- Which of the following possible FDD downstream upper band edges do you prefer?

Possible Lower Band Edge
1002 MHz
1200 MHz
1800 MHz

- Are you okay with a 2 MHz increment in the channel center frequency?

FDD Upstream Band

- Should the FDD upstream be a single 192 MHz OFDM channel?
- Possible lower band edge: 5 or 15 MHz
- Possible upper band edge: 200 MHz or 250 MHz
- Possible center frequency increment: 1 or 2 MHz

TDD Frequency Band

- Support two TDD frequency bands
  - Low Band
  - High Band

Low Band

- Possible lower band edge: 5 MHz
- Possible upper band edge: 200 MHz

High Band

- Possible lower band edge: 860 or 960 MHz
- Possible upper band edge: 1200 or 1800 MHz

Exclusion Sub-band Rules

- Possible rules for FDD Downstream

Exclusion sub-band can be on the lower portion of the channel, the upper part of the channel, or within the channel
Exclusion sub-bands are a multiple of 2 MHz and on a 2 MHz grid (We may need to support smaller sub-bands for set-top box pilots)
After exclusion sub-bands there must be a continuous sub-band of at least 24 MHz wide. (Do we want to make sure this is the middle 24 MHz?)
Do not support exclusion sub-bands for analog TV services within the 192-MHz OFDM channel.