**RF Spectrum Ad Hoc – Minutes July 2, 2013**

**Provided the IEEE-SA Patent Policy link.  Everyone on the call was familiar with the patent policy.**

- https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf

Everyone on the call was familiar with the IEEE patent policy.

**Reviewed eStraw Poll results**

C: Two bands make sense since it may be more practical

C: Agree with Matt Schmitt's comment

C: If we have a very wide band, it should not be required to support the entire band.

C: This is like saying our EPON later cover a very wide range of wavelengths.  This seems expensive.

C: I seen markets for two TDD bands, a low band and a high band, and the equipment would only be required to support one of the bands.

C: There would be a PMD for each band.  Vendors could support one or both of the bands.

C: Does having two PMDs require a change to the objectives?  We may need to change that.

C: After the discussion I would have voted "Either the lower or the upper" on eStraw Poll #18.

**Lower TDD Band**

Q: As you get lower in the band how does that impact the PHY?

A: You start to cover a number of octaves.  I do not see this as a real problem

A:  There is a lot of noise between 5 and 15 MHz and a lot of group delay due to lightning protection.  It might be better to use a better part of the spectrum.  In DOCSIS today, 5 to 15 MHz is not used.

A: It is possible to start at 15 MHz we would avoid the noise issue.  A lower order modulation is possible, but it makes things more complex.

A: Leaning toward starting at 15 MHz

A: Today it is used for some low-order QAM set top returns

C: The noise is due to florescent lights, vacuum cleaners, etc.  This will likely also be noisy in a passive network.

C: There is not the problem with the diplexer like you have in an active network.

C: To support 5 to 15 MHz you need to back-off on your signal and a larger CP to deal with group delay.  That larger CP will cost you efficiency for the entire channel.

C: You will not have the diplex filter so there may not be as much group delay.

C: There are some circuits for power insertion and lightning protection which will cause some group delay issues.

C: In a passive cable plant this 10 MHz of spectrum is not that scarce, as it in in the upstream of an FDD network.

**Straw Poll**

Which frequency do you prefer for the lower band edge of the low-frequency TDD band?

- 5 MHz        2
- 15 MHz        4
- Other        0
- Abstain        2

C: The standard should not limit the vendor, so I voted for 5 MHz.

C: Would really like to see our LDPC performance to see if we could utilize the 5-15 MHz spectrum.

## Upper Band Edge
- 207 MHz (this is 15 + 192)
- 234 MHz (consensus FDD US upper band edge)
- Other

C: Traditional FDD cable networks are 5-42 MHz, if you move the diplexer and keep everything from 5-42 untouched and add 192 MHz you get 234 MHz
C: Mark made a presentation a few weeks ago on FDD, and it included a survey on inputs received.
C: Not ready to decide this, other than to have at least 192 MHz
C: Tend to like the value of 234 MHz

## Straw Poll
Which frequency do you prefer for the upper band edge of the low-frequency TDD band?
- 207 MHz          0
- 234 MHz          4
- Other             0
- Abstain           4

Decided to not take eStraw Polls this week since it will likely be some of the same people voting and this week there is a holiday.

# Upper TDD Band

## Reference
http://grouper.ieee.org/groups/802/3/bn/public/oct12/yao_01_1012.pdf

## Lower Band Edge
- 860 MHz
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## Upper Band Edge
- 1500 MHz
- 1600 MHz
- 1700 MHz
- 1800 MHz

C: If there is a broadcast system below this, there is standard equipment that is 750, 860 and 1002 plant bandwidths
C: This frequency is right above the HiNOC frequencies. So there are probably diplexers below the HiNOC frequencies.
C: If there is a system that is TDD and there are two diplexers (CNU and CLT) you can probably go down to 15% transition bandwidth, since there are no actives in-between.
C: In the US at least one MSO is looking into the upper TDD band, and will research it and bring in some recommended numbers

C: Some upper band edges of 1500 and 1600 MHz are being discussed with new Taps.

**Attendance**

| Person | Affiliation |
| --- | --- |
| Jim Farmer | Aurora Networks |
| Marek Hajduczenia | ZTE |
| Mark Laubach | Broadcom |
| Leo Montreuil | Broadcom |
| Michael Peters | Sumitomo Electric |
| Duane Remein | Huawei |
| Steve Shellhammer | Qualcomm |
| Joe Solomon | Comcast |