

Evaluation Criteria and Requirements Ad Hoc – Minutes Jan 30, 2013

Provided IEEE-SA Patent Policy.

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

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

We discussed having straw polls for each of the potential evaluation criteria and requirements and then finding a way get feedback from the larger group before the next face-to-face meeting.

We discussed doing electronic straw polls to the email reflector to get input from the larger group. Mark will look into our options.

IEEE 1588v2 requires symmetric delay, which we do not have in EPoC. We need a different approach like we do in EPON. 802.1as provides a way to support 1588v2 in EPON.

The delay through the amplifiers cannot be controlled so that may also impact our ability to implement network synchronization.

We need to know the downstream/upstream time delay.

Near a diplexer transition frequency you may get a difference in downstream/upstream delay.

How about doing this network synchronization through the passive network? We would like to be able to support mobile backhaul in the various cable plants.

We have looked at the delay over the cable plant. The amplifiers are wideband so they are reasonably low-delay. The difference is very small, in the nanosecond range.

The channel model showed 400 ns group delay at the band edge. You probably need to stay somewhat away at the band edge.

The downstream amp has a GHz bandwidth, with delay of 5-10 ns. The upstream amplifier has a 40 MHz bandwidth and hence may have a delay of 25 ns. So we could be getting a 20 ns differential per amplifier.

The low-pass filter will introduce delay.

We could ask some of the system vendors, Cisco, Arris, and Motorola, to measure the group delay for some amplifiers.

The OFDM waveform, which is wideband, will not see the large delay at the band edge.

Asked if Rogers had done any time-critical mobile backhaul, and they had not.

In DOCSIS synchronization is by time stamp, provides jitter of less than 200 ns. When you operate in SC-DMA in addition to synchronization on the time stamp, you also need to synchronization on the

waveform, which has a much higher frequency counter; there is a requirement for higher accuracy synchronization.

If we were able to know the delay difference between upstream and downstream, we could possibly correct for it.

What is the reference point for timing? In EPON it was the TQ counters. Like in EPON it seems like using TQ counters in EPoC makes sense.

Are you talking absolute delay or delay variation? Absolute delay.

Measure s12 and s21 for the amplifiers to get the group delay for downstream and upstream.

Attendance List

Person	Affiliation
Ed Boyd	Broadcom
Hesham ElBakoury	Huawei
Jim Farmer	Aurora
Andrea Garavaglia	Qualcomm
Marek Hajduczenia	ZTE
George Hart	Rogers
Avi Kliger	Broadcom
Mark Laubach	Broadcom
Leo Montreuil	Broadcom
Bill Powell	Alcatel Lucent
Duane Remein	Huawei
Steve Shellhammer	Qualcomm
Tom Staniec	Cohere Communications