Common Public Radio Interface

802.1CM Sync requirement improvement

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Synchronization timing error

- Class A+: |TE| < 10 ns   Nice to have
  - **MIMO, Tx-diversity**
- Class A: |TE| < 45 ns   Must have
  - **CA Intra Contiguous.**
- Class B: |TE| < 110 ns   Must have
  - **CA Intra Non-Contiguous, CA Inter**
- Class C: |TE| < 1.36 µs   Must have
  - **LTE TDD**
- Class D: |TE| < TBD   Must have
  - **LTE FDD**

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Synchronization timing error

- Reason for changing
  - Address question 2 in this presentation http://www.ieee802.org/1/files/public/docs2016/cm-baosh-synchronization-comments-on-D0-4-0916-v02.pdf#10
  - The timing error in the GM compared to a real absolute time is out of scope for CPRI.
  - If this is included in the numbers it will require new numbers when future better GM accuracy will be available.

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Synchronization timing error

$|TE_{RE}|$ = 20 ns   Budget for internal RE timing error

$|TE_{PRTC/GM}|$ Budget for PRTC/GM accuracy
(Not specified by CPRI)

- Class A+: $|TE|$ < 32.5 ns - $|TE_{RE}|$ = 12.5 ns
  - **MIMO, Tx-diversity**

- Class A: $|TE|$ < 65 ns - $|TE_{RE}|$ = 45 ns
  - **CA Intra Contiguous.**

- Class B: $|TE|$ < 130 ns - $|TE_{RE}|$ = 110 ns
  - **CA Intra Non-Contiguous, CA Inter**

- Class C: $|TE|$ < 1.5 μs - $|TE_{RE}|$ - max$|TE_{PRTC/GM}|$
               = 1.48 μs - max$|TE_{PRTC/GM}|$
               = (1.38 μs if max$|TE_{PRTC/GM}|$ = 100 ns)
               = (1.45 μs if max$|TE_{PRTC/GM}|$ = 30 ns)
  - **LTE TDD**

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Synchronization timing error

- Class A+, A and B: The timing error of the slave clock in the RE compared to a common GM clock (or nearest common BC).
  (No REC need to fulfill Class A+, A or B)

- Class C: The timing error of the slave clock in the RE or REC compared to any GM clock.

  - Here we have a component, the error of the PRTC/GM clock compared to the real absolute time, that is not specified by CPRI.

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