On Comments Related to Subclause 113.5.4.3 and Annex 113A

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Goals

- Summarize comments against P802.3bq D2.1, Subclause 113.5.4.3 and Annex 113A
  - Comments from xx
  - Observations based on discussion in the July 8th, 2015 Rx CMNR ad hoc meeting
- Review proposed updates to Annex 113A (“v0.3 mark-up”)
- Suggest some (believed to be) friendly suggestions for those proposals (“v0.4 mark-up”)
  - Most significant are those related to “re-using” Annex 113A for other Multi-GBASE-T PHY rates

D2.1 Comments – 113.5.4.3 and 113A

- 6 comments received
- Two against 113.5.4.3
  - #13 (E), #111 (T)
    - #13 is in the “EZ” bucket and not discussed here
- Four against 113A – All Technical
  - #110, #112, #113, #94

Comment #111

- Splitting some technical detail between this clause and the Annex creates confusion, and new technical information is available suggesting a change in source control. Change the paragraph to move all technical detail to the Annex.
- Suggested Remedy - Replace with:
  - *"An 80 MHz to 2000 MHz test can be made using the cable clamp described in Annex 113A, 30 meter plug-terminated cabling that meets the requirements of 113.7, suitable broadband ferrites, and a common ground reference plane for this test equipment and the equipment under test. A controlled sine wave that is stepped across the entire frequency range is used to generate the external electromagnetic field and corresponding shield current."*
- Observations on the comment:
  - Note that the suggested remedy, which could be accommodated if Annex 113A remains specific to Clause 113, conflicts with the suggestions in Comment #113 and Comment #94.
  - In the spirit of those two comments, it is believed to be more appropriate to keep relevant technical information in the normative subclause of the specification, with the minimum technical detail in the specification being the following:
    - Impairment type and, if applicable, frequency range
    - Source power
    - Test cable/channel length
    - Test cable/channel specifications (by reference to the appropriate link segment)
  - In parallel, PHY/rate specific details should be removed from the Annex and the Annex text should refer to the governing specification for those parameters.
  - ~~Two examples are provided, one for P802.3bq and a strawman for P802.3bz~~ **Didn't get the strawman written up… still to be done.**

Comment #110

- There are now several different versions of cable clamp and the details shown only apply to one of them.
- Suggested Remedy: Change (the referenced) line to:
  - “This annex describes an example of a cable clamp and a representative methodology that should be used in the rejection of…”
- Observations on the comment
  - This is a friendly update and was accepted in the July 8th P802.3bq Rx CMNR ad hoc. Some alterative (but believed to be friendly) text is included in the v0.4 mark-up of Annex 113A.

Comment #112

- Clamp data needs updating.
- Suggested Remedy: Change (the referenced) line to:
  - “The electrical parameters of the clamp measured between the source connections and without installed cabling are as follows:
  - a) Insertion loss: < 3 dB below 1 000 MHz and < 25 dB below 2 000MHz
  - b) Return loss: > 3 dB below 1 000 MHz and > 1 dB below 2 000 MHz
- Observations on the comment
  - This is a friendly update, but some additional follow-up may be required to confirm the new electrical parameters as follows:
    - Do these new limits line up with previous measurements and other (as yet unpublished work-in-process) measurements? **Answer = TBD.**
    - Do the specifications of the original 1MHz - 250MHz small-diameter clamp meet these limits? **Answer = Yes.**
  - If they're aligned, suggest accepting the limits as described in the v0.4 mark-up and:
  - Compare with results from other Task Force participants investigating the clamp(s).
  - Compare these with the original Campbell clamp limits (with the assumption that the smaller-diameter clamp may be used for P802.3bz) and include the low-frequency specifications.

Comment #113

- Cable clamp validation and 113A.4 Test Setup should be modified based on new information to be presented, including additional instructions for testing unshielded cabling that can be used by 802.3bz
- Suggested Remedy: To be presented
- Observations on the comment
  - This is believed to be a friendly update, and the Rx CMNR ad hoc agrees with the intent of re-using the generally applicable content of the Annex (using an EM clamp injection method for appropriate impairments)
  - Assuming the material to be presented is that reviewed in “” (that is, the v0.3 mark-up), please consider the P8023bz 126.5.4.3 strawman and the Annex 113A v0.4 mark-up as a friendly alternative

Comment #94

- Annex 113A describes test configurations and methods - it should be generic so it can be used with multiple PHYs. Examples of the references for 40GBASE-T should be given.
- Suggested Remedy:
  - Change "uses cabling that meets the requirements of Clause 113.7." to *"uses cabling that meets the requirements of the link segment for the PHY under test, e.g., Clause 113.7 for 40GBASE-T.“*
  - Change "An up to 30-meters of cabling that meets the specification of Clause 113.7 is connected between two 40GBASE-T PHYs and inserted into the cable clamp. The cable should be terminated on each end with an MDI connector plug specified in Clause 113.8.1." to *"An up to the maximum specified length of cabling that meets the link segment specification for the PHY under test, e.g., Clause 113.7 for 40GBASE-T, is connected between two such PHYs and inserted into the cable clamp. The cable should be terminated on each end with an MDI connector plug specified for the MDI of the PHY under test, e.g., Clause 113.8.1 for 40GBASE-T."*
  - Replace "40GBASE-T" *with "PHY"*
- Observations on the comment
  - As noted in observations on Comment #113, the Rx CMNR ad hoc fully supports the intent and direction of the comment.
  - Some “believed to be friendly” alternatives are included in the Annex 113A v0.4 mark-up.

BASE-T Receiver Immunity Requirements Using a Cable Clamp Methodology

Standard	SubClause	Requirement	Test Method	Impairment	Method
1000BASE-T (Clause 40)	40.6.1.3.3 Common-mode noise rejection	Normative ("M") in PICS	Described in Subclause 40.6.1.3.3 and Annex 40B	1.0Vrms (1.414 Vpeak)** sine wave signal from 1 MHz to 250 MHz	Coupling to all four pairs using cable clamp described in Annex 40B
2.5/5GBASE-T (Clause 126, D0.1) **MultiGBASE-T**	126.5.4.3 Rejection of External EM Fields	Specification is normative, but text may be interpreted as informative ("may perform," not in PICS)	Described in Subclause 126.5.4.3 and Annex 113A	6 dBm sine wave signal from 80 MHz to 2 000 MHz (TBD)	Coupling to all four pairs using cable clamp described in Annex 113A
10GBASE-T (Clause 55) **MultiGBASE-T**	55.5.4.3 Common-mode noise rejection	Specification is normative, but text may be interpreted as informative ("may perform," not in PICS)	Refers to Subclause 40.6.1.3.3 and by extension Annex 40B	6 dBm sine wave signal from 80 MHz to 1 000 MHz	Coupling to all four pairs using cable clamp described in Annex 40B
40GBASE-T (Clause 113, D2.1) **MultiGBASE-T**	113.5.4.3 Rejection of External EM Fields	Specification is normative, but text may be interpreted as informative ("may perform," not in PICS)	Described in Subclause 113.5.4.3 and Annex 113A	6 dBm sine wave signal from 80 MHz to 2 000 MHz	Coupling to all four pairs using cable clamp described in Annex 113A

Thank You!

Questions?