Cl **113A**   *SC* **113A.2**   *P* **193**   *L* **47**   # 196

Moffitt, Bryan   CommScope

Comment Type **E**   *Comment Status* **D**   Clamp Test

Electrical information should be placed where it is called out instead of a mechanical
descriptive section.

SuggestedRemedy

move this sentence and table 113A-1 to page 194 line 22

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Follow BQ

Cl **113A**   *SC* **113A.3**   *P* **191**   *L* **2**   # 216

Zimmerman, George   CME Consulting

Comment Type **E**   *Comment Status* **D**   Clamp Test

The use of 'shall' in an informative annex is not allowed. Should would be more appropriate
(see 802.3bq d2p2 comment 176 from Curtis Donahue)

SuggestedRemedy

Editor to review clause 113A after edit and replace all shalls with 'should' or other language if
appropriate. Align with BQ resolutions

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **113A**   *SC* **113A.3**   *P* **194**   *L* **13**   # 217

Zimmerman, George   CME Consulting

Comment Type **E**   *Comment Status* **D**   Clamp Test

Various typos in 113A.3 see 802.3bq d2p2 comments 222-224 by Alon Regev

SuggestedRemedy

Editor to review final editing of 113A.3 with 802.3bq d2p2 comments 222-224 to ensure typos
mentioned are cleaned out.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **113A**   *SC* **113A.3**   *P* **194**   *L* **32**   # 197

Moffitt, Bryan   CommScope

Comment Type **T**   *Comment Status* **D**   Clamp Test

The clamp injects an electomagnetic (EM) interference wave on the cable. For the validation to
be relevant or consistent to the test, the EM fields should encounter a similar
termination/grounding structure for both the validation and the test.

SuggestedRemedy

change:
Breakout Fixture - A passive fixture with an MDI connector jack input and individual outputs for
each of the 8 signal wires.
to:
Breakout Fixture - A passive fixture with an MDI connector jack input, a shield and grounding
surface that is similar to the transmitter/reciever being tested and individual outputs for each of
the 8 signal wires.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.
BQ

Cl **113A**   *SC* **113A.3**   *P* **194**   *L* **39**   # 198

Moffitt, Bryan   CommScope

Comment Type **T**   *Comment Status* **D**   Clamp Test

Balun spec should stay over 40 in the entire upper frequency range, like the other range.

SuggestedRemedy

change:
Common-Mode Rejection: > 50dB (1 MHz-1000 MHz), > 40dB at 2000 MHz
to:
Common-Mode Rejection: > 50dB (1 MHz-1000 MHz), > 40dB up to 2000 MHz

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output
BQ

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **113A**
SC **113A.3**

Page 1 of 6
9/9/2015 11:10:33 AM

Cl **113A**   *SC* **113A.3**   *P* **194**   *L* **43**   # 201

Moffitt, Bryan   CommScope

Comment Type   **T**   *Comment Status* **D**   *Clamp Test*

Item e) is overly specified in the wrong direction. If this is to be a PHY test and not a cabling test, then it will work best without connectors in the link. Most plugs will only terminate on cordage which has a derating factor and cannot support link performance at the full link length. 4 pair 100 Ohms is also redundant since it is already specified.

SuggestedRemedy

replace:
Test cable: A 30m, 4-pair 100 ^ plug-terminated cable that meets PHY link segment specifications.
With a description like page 196 line 10:
Plug terminated cabling up to the maximum length that meets the specification for the PHY under test.

Another point to resolve (but spread through the text) is that the test cabling should be the exact same cabling used in the validation.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output
BQ

Cl **113A**   *SC* **113A.3**   *P* **194**   *L* **45**   # 202

Moffitt, Bryan   CommScope

Comment Type   **T**   *Comment Status* **D**   *Clamp Test*

Choke impedance cannot be specified exactly like this. All specifications should be changed to be as minimums.

SuggestedRemedy

change:
Chokes (5)
to:
Chokes (minimum 5)
Also change:
"Impedance: 175 ƒÇƒn@ 100 MHz, 275 ƒÇƒn@ 250 MHz, 375 ƒÇ @ 500 MHz,
400 ƒÇ @ 1000 MHz"
to:
"Minimum Impedance: 175 ƒÇƒn@ 100 MHz, 275 ƒÇƒn@ 250 MHz, 375 ƒÇ @ 500 MHz,
400 ƒÇ @ 1000 MHz"

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output
BQ

Cl **113A**   *SC* **113A.3**   *P* **194**   *L* **54**   # 199

Moffitt, Bryan   CommScope

Comment Type   **T**   *Comment Status* **D**   *Clamp Test*

Based on cohen_CMNR_Test_for_2.5G-5GBase-T_20150812.pdf and other adhoc submissions, generator specifications should be more detailed. This is a compact and direct addition that indicates the proper methodology but avoids complex specifications that may be difficult to agree on.

SuggestedRemedy

change:
Signal generator capable of providing a sine wave signal of 1 MHz to 2000 MHz
to:
Signal generator capable of providing a sine wave signal of 1 MHz to 2000 MHz, with adequate test power for adjustments, low harmonic distortion and including control and monitoring of power and frequency transitions.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output

Cl **113A**   *SC* **113A.3**   *P* **195**   *L* **27**   # 205

Moffitt, Bryan   CommScope

Comment Type   **T**   *Comment Status* **D**   *Clamp Test*

Several confusing words of this should be changed:
The remainder of the test is conducted without changing the signal generator power. The cable pairs not connected to the balun are terminated in a resistor network.

SuggestedRemedy

change to:
 The remainder of the validation is conducted without changing the signal generator power. The breakout wires of pairs not connected to the balun are terminated in the resistors.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR Ad hoc output
BQ

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **113A**   Page 2 of 6
SC **113A.3**   9/9/2015 11:10:33 AM

Cl **113A**   *SC* **113A.3**   *P* **195**   *L* **29**   # 206

Moffitt, Bryan   CommScope

Comment Type   **T**   *Comment Status* **D**   *Clamp Test*

there is no table identified:
The chokes are placed on the table, located next to each other and approximately 2.0 cm from the clamp.

(note this couples with the next comment)

SuggestedRemedy

The chokes are positioned over the ground plane from the clamp, located next to each other and approximately 2.0 cm from the clamp.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.
Discuss with CMRR ad hoc output
BQ

Cl **113A**   *SC* **113A.3**   *P* **195**   *L* **31**   # 207

Moffitt, Bryan   CommScope

Comment Type   **T**   *Comment Status* **D**   *Clamp Test*

proper endpoint for each part of the cable span a(nd some clarity improvement):

The cable between the clamp and the breakout fixture should be positioned straight from the clamp to the breakout port and not contact the ground plane. Any plug shield contacts should mate with the breakout jack shield. The cable between the transmitter and the cable clamp should be installed...

SuggestedRemedy

Change to:
The cable between the chokes and the breakout fixture should be positioned straight from the chokes to the breakout port and not contact the ground plane. Any plug shield contacts should mate with the breakout jack shield. The cable between the link partner and the chokes should be installed...

Proposed Response   *Response Status* **W**

PROPOSED REJECT.
Endpoints in text are further positioned than suggested remedy, and suggested change would leave cable from clamp to chokes without definition.
Discuss with CMRR ad hoc output
BQ

Cl **113A**   *SC* **113A.3**   *P* **195**   *L* **35**   # 208

Moffitt, Bryan   CommScope

Comment Type   **T**   *Comment Status* **D**   *Clamp Test*

based on Pete Cibula submissions centering the cable in the clamp along with minor clarity fix.

SuggestedRemedy

(Note this relates to the previous comment) Change to:
The cable from the chokes to the breakout should be centered, straight and not in contact with the ground plane.

Proposed Response   *Response Status* **W**

PROPOSED REJECT.
Discuss with CMRR ad hoc output
Proposed remedy does not center the cable relative to anything in particular.
BQ

Cl **113A**   *SC* **113A.3**   *P* **195**   *L* **38**   # 209

Moffitt, Bryan   CommScope

Comment Type   **T**   *Comment Status* **D**   *Clamp Test*

This is not generic enough:
The differential-mode and common-mode voltage outputs of the balun and breakout fixture should meet the limits shown in Table 113A–2 over the frequency range 1 MHz to 2000 MHz for each cable pair.

SuggestedRemedy

change to:
The differential-mode and common-mode voltage outputs of the balun and breakout fixture should meet the limits shown in Table 113A–2 over the frequency range being tested for each cable pair.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.
BQ

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **113A**   Page 3 of 6
SC **113A.3**   9/9/2015 11:10:33 AM

Cl **113A**   *SC* **113A.3**   *P* **196**   *L* **1**   # 210

Moffitt, Bryan   CommScope

Comment Type **T**   *Comment Status* **D**   *Clamp Test*

This note and procedure may be useful in the lower frequency range, but becomes unworkable at the higher frequencies where trasnsmission reflections and the clamp loss are much more significant. New calibration procedures are proposed that should suplememnt it.

SuggestedRemedy

Presentation will be submitted

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Review with presentation
BQ

Cl **113A**   *SC* **113A.3**   *P* **205**   *L* **35**   # 128

Cohen, Larry   Aquantia

Comment Type **T**   *Comment Status* **D**   *Clamp Test*

Specify the frequency point sweep set in the validation phase instead of during the test phase. The same set should be used during the test phase.

SuggestedRemedy

Proposed new text inserted after line 35:

The signal generator output frequency is swept incrementally over the specified test frequency range with a step size that should not exceed 1% of the preceding frequency. At each frequency point, the common-mode and differential-mode component power levels are measured at the balun interface and recorded for each of the four pairs.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output
BQ

Cl **113A**   *SC* **113A.3**   *P* **206**   *L* **6**   # 129

Cohen, Larry   Aquantia

Comment Type **T**   *Comment Status* **D**   *Clamp Test*

Add optional addtional validation steps that allow generation of reproducible target common-mode ingress levels in the test setup. Note these steps are optional and performed at the discretion of manufacturer.

SuggestedRemedy

Insert the following text after line 6 (Note 1):

To improve test reproducibility, the manufacturer may optionally perform the following additional steps to the above validation procedure. First, the manufacturer must defne specific target common-mode test level values and differential mode limit values at each frequency point. Upon completion of the four measurement sweeps, select the data from a single pair and compute the difference between the measured common-mode power level and the common-mode target test level at each frequency point. The computed difference values are stored as the signal generator output level correction factors that will be applied at each frequency point during the test procedure. At each frequency point, apply the correction factor to the signal generator output level used during the validation procedure. If the corrected level exceeds the maximum output level of the signal generator (e.g. +20 dBm), the correction factor should be limited such that the signal generator output remains at the maximum output level. Apply the correction factor to the measured differential components of all four pairs. The resulting corrected differential mode levels should meet the manufacturer's defined limits over the full test frequency sweep range for each cable pair.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output
BQ

Cl **113A**   *SC* **113A.4**   *P* **206**   *L* **26**   # 130

Cohen, Larry   Aquantia

Comment Type **T**   *Comment Status* **D**   *Clamp Test*

Add a provision in the test procedure to allow for optional target common-mode ingress test levels.

SuggestedRemedy

Add the following text directly after the existing text on line 26:

Alternatively, the output power of the signal generator may be adjusted from the fixed calibration level with the optional frequency-dependent correction factor computed in 113A.3 and applied to the clamp input to reproduce the manufacturer's specified target common-mode ingress

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output
BQ

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **113A**   Page 4 of 6
SC **113A.4**   9/9/2015 11:10:33 AM

Cl **113A**   *SC* **113A.4**   *P* **206**   *L* **28**   # 131
Cohen, Larry   Aquantia

Comment Type   **T**   *Comment Status*   **D**   *Clamp Test*
Add text defining the set of frequency test points, the dwell time at each frequency, and the carrier envelope rise/fall transition at each frequency point in the equipment test procedure. Revised new text from an earlier comment.

SuggestedRemedy
Add the following text starting at line 28 after the last paragraph:

The signal generator output frequency is swept incrementally over the specified test frequency range with the same frequency point set used in the validation procedure. During the transition to the next frequency point, the signal generator output should be off or attenuated by at least 30 dB from its prescribed level. When the transition is complete, the carrier envelope shall rise to its prescribed output level in no less than 100 usec. Before the next frequency transition, the carrier enveloope should fall to at least 30 dB below its prescribed level in no less than 100 usec. The dwell time at each frequency should not be less than the time necessary for the EUT to be exercised and to respond, but should in no case be less than 0.5 seconds.

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.
Discuss with CMRR ad hoc output
BQ

Cl **113A**   *SC* **133A.3**   *P* **194**   *L* **41**   # 200
Moffitt, Bryan   CommScope

Comment Type   **T**   *Comment Status*   **D**   *Clamp Test*
Based on Cable_RF_ingress_measurement_in_an_anechoic_chamber.pdf and earlier adhoc submissions, other devices besides baluns can be used for similar results.

SuggestedRemedy
add note:
Other devices for detecting differential and common mode signals may be used, provided the performance is demonstrated to be equivalent or better.

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.
Add note: "Other devices for detecting differential and common mode signals may be used."
(in an informative section, provided might be interpreted as a normative requirement, and the reader using another device should understand the importance of assessing the performance)
BQ

Cl **126**   *SC* **126.5**   *P* **153**   *L*   # 133
farjad, ramin   Aquantia

Comment Type   **T**   *Comment Status*   **D**   *Clamp Test*
we should consider specifying the test procedure with further details here to avoid confusion of what the realistic way to test is. Some test procedures ramp the freq from 80M-2000MHz fairly fast and expect to see a robust link (with preferably no error), while in a real life scenario we do not have such freq ramp. I think we need to specify the test such that they assert one EM freq at a time with some minimal time in between, in order of a second or so

SuggestedRemedy

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.
Consider with CMRR ad hoc output

Cl **126**   *SC* **126.5.4.3**   *P* **153**   *L* **29**   # 125
Cohen, Larry   Aquantia

Comment Type   **T**   *Comment Status*   **D**   *Clamp Test*
Change test parameters to values specific for 2.5G/5G.

SuggestedRemedy
Change "2000 MHz" to "1000 MHz". Change "30 meter" to "100 meter".

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.
Consider with CMRR ad hoc output

Cl **126**   *SC* **126.5.4.3**   *P* **153**   *L* **32**   # 126
Cohen, Larry   Aquantia

Comment Type   **T**   *Comment Status*   **D**   *Clamp Test*
Change test parameters to values specific for 2.5G/5G.

SuggestedRemedy
Change "2000 MHz" to "1000 MHz".

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.
Consider with CMRR ad hoc output

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **126**
SC **126.5.4.3**

Page 5 of 6
9/9/2015 11:10:33 AM

CI **126**   *SC* **126.5.4.3**   *P* **153**   *L* **33**   # 127

Cohen, Larry   Aquantia

Comment Type   **T**   *Comment Status* **D**   *Clamp Test*

Measuring power applied to the clamp opposite clamp port may result in significant measurement error.

SuggestedRemedy

Modify text to clarify that the power applied to the input of the clamp must be controlled. The means of measurement are up to the manufacturer or test operator.

Existing text:
signal power measured at the output of the clamp does not exceed 6dBm

Proposed new text:
signal power applied to the input of the clamp does not exceed 6dBm

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Consider with CMRR ad hoc output

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

CI **126**
SC **126.5.4.3**

Page 6 of 6
9/9/2015 11:10:33 AM