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Calibration Proposal for Annex 113A

802.3bz

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Background on this proposal regarding Note 1:

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- The calibration method described in note 1 has been in use and still appears reasonable at the lower frequencies as utilized by 1G, 2.5G, 5G and 10G
- A new calibration procedure based on maintaining a fixed level of injected common mode has been proposed to replace or augment Note 1
- The Note 1 method may be unworkable at higher frequencies associated with 40G where the clamp loss can be much higher and with shielded cabling which has a different response than unshielded cabling
- Additional proposals of fixing a source drive level have been submitted and in particular for shielded cabling where fixing the common mode is not practical and may not be relevant

Many excellent proposals have been submitted , but some details may be counterproductive to achieving a timely resolution and may be more than needed for EMC engineering instruction

This proposal attempts to include the proposed methods, while avoiding excess detail

Proposal:

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1. Leave the existing figures and change Note 1 into a note that describes the need to ensure low distortion and proper control over the power and frequency adjustment during the test sweeps

   Note 1: The signal generator should include control of :
   1. Harmonic distortion to be maintained so as not to influence test results at specified levels
   2. Switching transients such that signal level and frequency content do not influence results throughout the test sweeps
   3. Signal generator performance given excess clamp reflections, since the clamp return loss is highly variable

2. Create a new section **113A.4 Suggested calibration methods**

113A.4 Suggested calibration methods

The clamp may be used for a wide range of developmental lab experimentation and testing, but for the test setup shown in Figure 113A–4 the following calibration methods may be used:

1) A loss pad from the source may minimize the influence of clamp reflections to maintain a fixed drive into the clamp at the specified impedance and level.
2) Unshielded cabling results in a strong common mode response. For common mode rejection testing with unshielded cabling, the setup is calibrated with the breakout fixture and balun by adjusting the signal generator level needed to fix the received common mode at the specified level for test.
3) Shielded cabling results in a more complex mix of common mode and differential mode interference dependent mostly on the MDI connector and the cabling plug. Testing external field ingress can be based on fixing the level driving the clamp. There are two ways to do this:
    a. Adjust the signal generator so that the signal detected through the clamp is maintained at the specified level.
    b. Use a directional coupler to sense the level being driven into the clamp and adjust the signal generator to be maintained at the specified level.