32GFC Jitter Tracking Proposal

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13-159v0
Background

- FC-PI-4 introduced Rx Jitter Tracking test for 8GFC. The test method is in MSQS 2.3.4

- FC-PI-5 extended the test to 16GFC by scaling the frequencies:

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<table>
<thead>
<tr>
<th>Rx jitter tolerance test, OMA</th>
<th>mW (dBm)</th>
<th>0.048 (-13.2)</th>
<th>0.048 (-13.2)</th>
<th>0.066 (-11.8)</th>
<th>0.066 (-11.8)</th>
<th>0.095 (-10.2)</th>
<th>0.095 (-10.2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rx jitter tracking test, frequency and pk-pk amplitude</td>
<td>(kHz, UI)</td>
<td>NA</td>
<td>(510, 1) (100, 5)</td>
<td>(510, 1) (100, 5)</td>
<td>(840,1) (168,5)</td>
<td>(840,1) (168,5)</td>
<td></td>
</tr>
<tr>
<td>Unstressed receiver</td>
<td>mW</td>
<td>0.029</td>
<td>0.029</td>
<td>0.042</td>
<td>0.042</td>
<td>0.063</td>
<td>0.063</td>
</tr>
</tbody>
</table>
Background (cont’d)

- The 8GFC “corner” frequency is \(\frac{8500}{1667} \approx 5\) MHz
- The 5UI SJ tolerance is at 100 kHz, i.e. \(5\text{MHz} / 50\).

- Separately, IEEE 802.3 defined a SJ tolerance mask as part of the Rx stressed Rx sensitivity test.
- That mask uses a corner frequency of \(\frac{10000}{2500} = 4\) MHz
- The 5UI SJ tolerance is at 40 kHz, i.e. \(4\text{MHz} / 100\).

- IEEE is using optical dB for the SJ amplitude, since it is an optical test.
- FC-PI-4 used electrical dB for SJ amplitude, although gamma-R could be an optical test.
52.8.1 Sinusoidal jitter for receiver conformance test

The sinusoidal jitter is used to test receiver jitter tolerance. Sinusoidal jitter may vary over a magnitude range as required to accurately calibrate a stressed eye per 52.9.9. The range is limited by the constraints of Table 52–19.

Figure 52–4—Mask of the sinusoidal component of jitter tolerance (informative)
16GFC and 32GFC scaled from 10GE SJ mask

- **32GFC**
  - >5UI tolerance at 40kHz * 28/10 = 112 kHz
  - >1UI tolerance at 200kHz * 28/10 = 560 kHz
  - Mask corner at 4 MHz * 28/10 = 11.2 MHz
  - 10*LB = 80 MHz * 28/10 = 224 MHz (proposed)

- **16GFC**
  - >5UI tolerance at 40kHz * 14/10 = 56 kHz  (PI-5 has 168 kHz)
  - >1UI tolerance at 200kHz * 14/10 = 280 kHz  (PI-5 has 840 kHz)
  - Mask corner at 4 MHz * 28/10 = 5.6 MHz  (not in PI-5 or MSQS)
  - 10*LB = 80 MHz * 14/10 = 112 MHz (proposed)
  - Since these 16GFC numbers are more relaxed than FC-PI-5, propose that FC-PI-6 include a note saying that these are corrected from what is in PI-5 and that either one can be used for compliance.
Thank You