Comments on Receiver Jitter Tolerance Specs

40Gb/s Ethernet Single-mode Fibre PMD Task Force
Geneva, May 2010

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Two jitter tolerance specs are being proposed by task force

- From Anslow_02_0510

Table 89–13—Applied sinusoidal jitter

Frequency range	Sinusoidal jitter, peak to peak (UI)
$f < 160$ kHz	Not specified
160 kHz $< f \leq$ 16 MHz	$8 \times 10^5 / f$
16 MHz $< f <$ 10 LB[a]	0.05

[a] LB = loop bandwidth; upper frequency bound for added sine jitter should be at least 10 times the loop bandwidth of the receiver being tested.

Traditional IEEE style and stress receiver sensitivity TBD

Table 89–14—Applied sinusoidal jitter

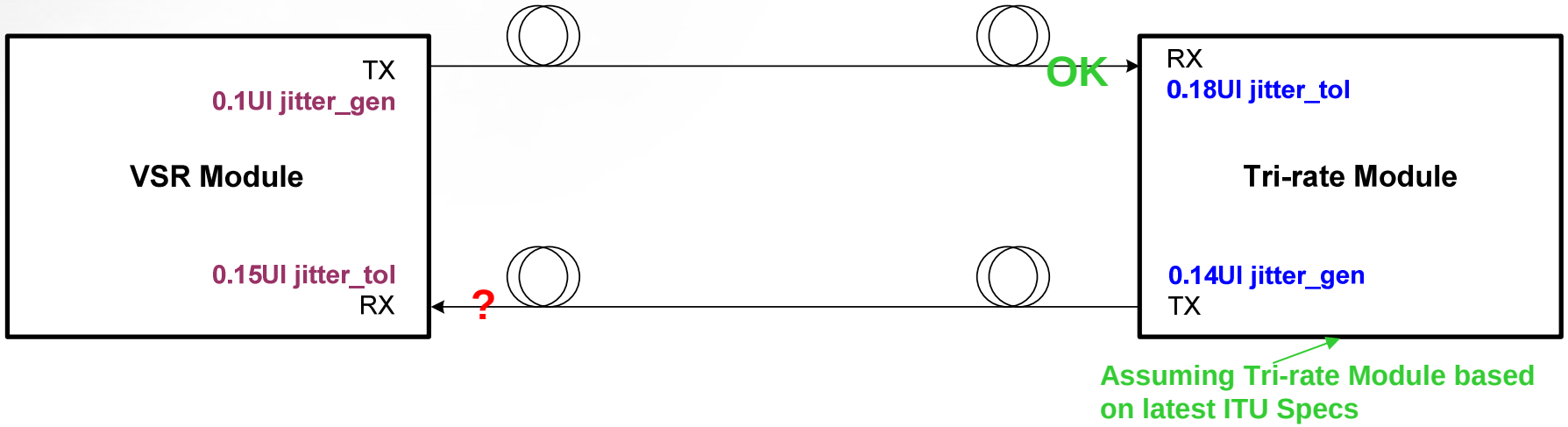
Frequency range	Sinusoidal jitter, peak to peak (UI)
$f < 480$ kHz	Not specified
480 kHz $< f \leq$ 16 MHz	$2.88 \times 10^6 / f$
16 MHz $< f <$ 10 LB[a]	0.18

[a] LB = loop bandwidth; upper frequency bound for added sine jitter should be at least 10 times the loop bandwidth of the receiver being tested.

Telecom type jitter tolerance with 1dB optical power penalty method at BER = 1E-10

Comments

- We support the telecom like jitter tolerance as shown in Table 87-14:
  1. Simplified testing w/o complication of SRS
  2. Consistent spec across tri-rates
- But we have concern about the spec at frequency above 16MHz w/o reference to jitter generation



Case	Jitter_Gen(UIpp)	Jitter_Tol(UIpp)	Standard/date	Installed Base
1	0.1	0.15	G.8251/Nov. 2001	> 95%
2	0.14	0.18	G.8251/August 2008	Very small (if any)

Recommendation

1. **Support “telecom like” jitter tolerance spec similar to Table 89-14**
2. **Add informative spec of jitter generation 0.1 UI over 16MHz – 10x LB to guarantee backward compatible to legacy VSR module**
3. **Specify jitter tolerance 0.15UI at frequency above 16MHz, which is sufficient with a 0.1UI jitter generation**

Table 89–14—Applied sinusoidal jitter [b]

Frequency range	Sinusoidal jitter, peak to peak (UI)
$f < 480$ kHz	Not specified
480 kHz $< f \leq$ 16 MHz	~~$2.88 \times 10^6/f$~~ $2.4 \times 10^6/f$
16 MHz $< f <$ 10 LB[a]	~~0.18~~ 0.15

[a] LB = loop bandwidth; upper frequency bound for added sine jitter should be at least 10 times the loop bandwidth of the receiver being tested.

[b] Informative: 0.1UIpp jitter generation from transmitter in order to guarantee interoperability with the installed OC768 and OTU3 legacy modules.

Q & A

SEMTECH

Thank You!