

To: T10 Technical Committee  
 From: Rob Elliott, HP (elliott@hp.com)  
 Date: 22 March 2006  
 Subject: 06-169r0 SAS-2 Correct receiver device jitter table DJ footnotes

### Revision history

Revision 0 (22 March 2006) First revision

### Related documents

sas2r03 - Serial Attached SCSI - 2 (SAS-2) revision 3  
 04-370r3 SAS-1.1 Merge IT and IR with XT and XR (Rob Elliott, HP)

### Overview

04-370r3, which first appeared in sas1r08, messed up two of the footnotes in table 56 - Receiver device jitter tolerance. Notes f and g were supposed to be applied respectively to the 1,5 Gbps and 3,0 Gbps DJ entries (not caring about IR vs CR), but were swapped to apply to the IR and CR DJ entries (not caring about 1,5 Gbps vs 3 Gbps).

### Suggested changes

#### 5.3.7.4 Receiver device jitter tolerance

Table 56 defines the amount of jitter the receiver device shall tolerate at the receiver device compliance point (i.e., IR or CR). Receiver device jitter testing shall be performed with the maximum (i.e., slowest) rise/fall times, minimum signal amplitude, and maximum total jitter, and should be performed with normal activity in the receiver device (e.g., with other transmitter circuits and receiver circuits on the same board as the receiver device performing normal activity).

**Table 56 — Receiver device jitter tolerance at receiver device compliance points IR and CR**

Signal characteristic	Units	IR		CR	
		1,5 Gbps	3,0 Gbps	1,5 Gbps	3,0 Gbps
Applied sinusoidal jitter (SJ) <sup>b</sup>	UI	0,10 <sup>c</sup>		0,10 <sup>d</sup>	
Deterministic jitter (DJ) <sup>a, h</sup>	UI	<del>0,35<sup>f</sup></del>		<del>0,35<sup>g</sup></del>	
		<u>0,35<sup>f</sup></u>	<u>0,35<sup>g</sup></u>	<u>0,35<sup>f</sup></u>	<u>0,35<sup>g</sup></u>
Total jitter (TJ) <sup>a, e, h</sup>	UI	0,65			

<sup>a</sup> All DJ and TJ values are level 1 (see MJSQ).

<sup>b</sup> The jitter values given are normative for a combination of applied SJ, DJ, and TJ that receiver devices shall be able to tolerate without exceeding the required BER (see 5.3.3). Receiver devices shall tolerate applied SJ of progressively greater amplitude at lower frequencies, according to figure 111 (see 5.3.5.4), with the same DJ and RJ levels as were used in the high frequency sweep.

<sup>c</sup> Applied sinusoidal swept frequency: 900 kHz to the minimum of 5 MHz and  $(3,75 \times 2^{(\text{generation} - 1)})$  MHz (e.g., 5 MHz for 1,5 Gbps and 7,5 MHz for 3,0 Gbps).

<sup>d</sup> Applied sinusoidal swept frequency: 1 800 kHz to the minimum of 5 MHz and  $(3,75 \times 2^{(\text{generation} - 1)})$  MHz (e.g., 5 MHz for 1,5 Gbps and 7,5 MHz for 3,0 Gbps).

<sup>e</sup> No value is given for RJ. For compliance with this standard, the actual RJ amplitude shall be the value that brings TJ to the stated value at a probability of  $10^{-12}$ . The additional 0,1 UI of applied SJ is added to ensure the receiver device has sufficient operating margin in the presence of external interference.

<sup>f</sup> The measurement bandwidth shall be 900 kHz to 750 MHz.

<sup>g</sup> The measurement bandwidth shall be 1 800 kHz to 1 500 MHz.

<sup>h</sup> The DJ and TJ values in this table apply to jitter measured as described in 5.3.5.3. Values for DJ and TJ shall be calculated from the CDF for the jitter population using the calculation of level 1 jitter compliance levels method in MJSQ.