

Proposal for SAS FM Test Specification

Revision 0

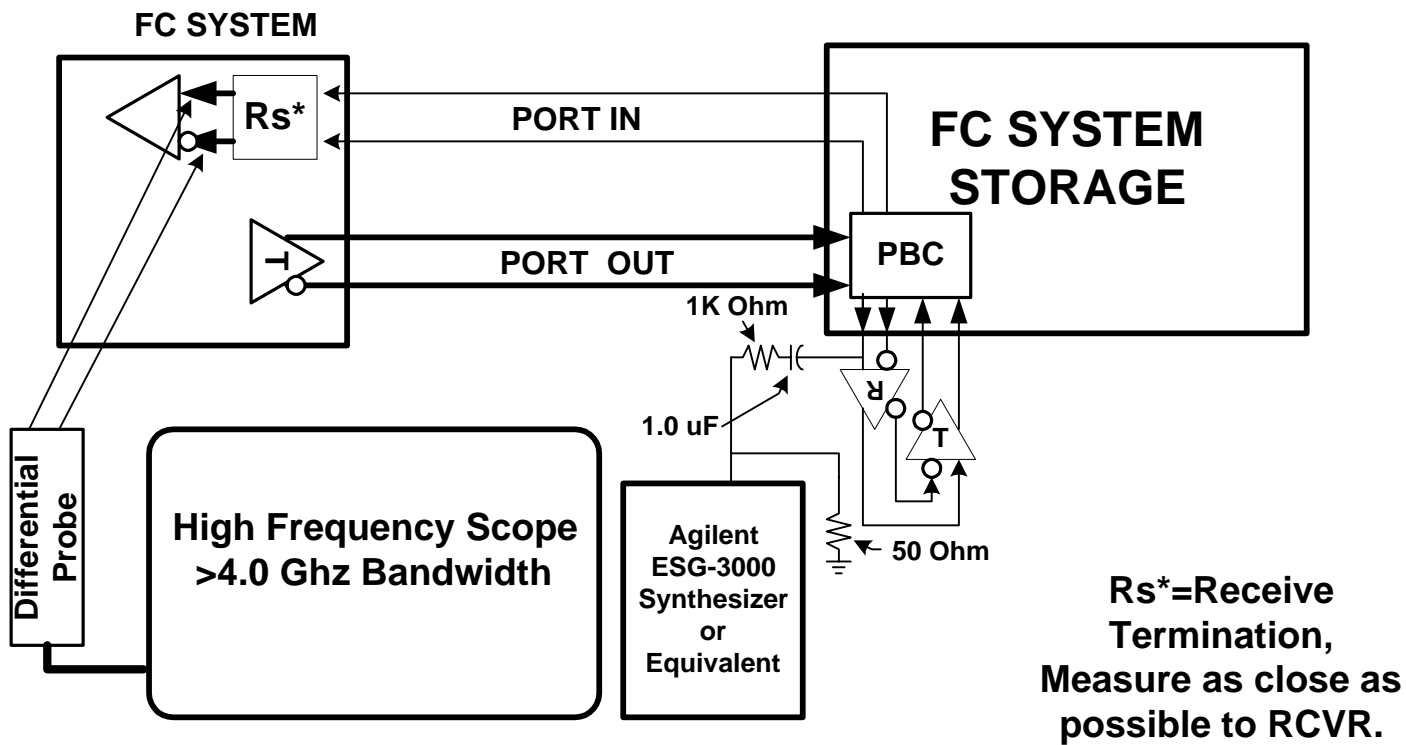
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Transceiver Ability to Handle Frequency Modulation (FM)

The ability of the system transceiver to handle FM can be limited by its noise environment and its design limits. Drawing from Fibre Channel (FC) experience, while the ANSI specification only requires FM tracking to 631 Khz @1.0625 Gbps and 1.26 khz @2.125 Gbps, practical system margin dictates that the FM capability be higher. In drives, it is recommended to 10x the modulation allowed by ANSI. In this test, we are reversing the FM application to the system to insure that the system does not have FM weakness that could result in bit errors at the system level. The system must be able to run a bit error rate test with at least 5 Mhz sinusoidal modulation of the data and adequate amplitude of the injected sinusoidal signal (Fig. 5) to create an eye closure of 0.6 Unit Interval (UI) as defined in Table 4 below. As noted in the Figure 5, this test is based upon the availability of a synthesized sinusoidal clock source such as the Agilent ESG-3000 that is capable of constructing the swept frequency signal source to create the FM modulation defined for the test in Table 4.

Systems and drives must have FM margin to operate in noisy power, ESD, or even radiated noise environments.



Rs*= System Termination

Figure 5 FC System FM Testing

Table 4 Transceiver FM Test Limits

Frequency	Eye Closure	Test Duration (no errors)
1.5 Gb/s	350 ps with frequency continuously swept from 100 khz to 5 Mhz, 200 steps, 30 msec dwell each step, fixed amplitude.	2 minutes with random data 2 minutes all 7E(hex)
3.0 Gb/s	175 ps with frequency continuously swept from 100 khz to 5 Mhz, 200 steps, 30 msec dwell each step, fixed amplitude.	2 minutes with random data 2 minutes all 7E(hex)