

T10/05-390r1 SAS-2 Channel Models (3-Connector, Board/Cable/Backplane/Drive)

To: T10 Technical Committee
From: Barry Olawsky, HP (barry.olawsky@hp.com)
Date: 7 December 2005
Subject: T10/05-390r1 SAS-2 Channel Models (3-Connector, Board/Cable/Backplane/Drive)

Revision History

Revision 0 (20 October 2005) first revision
Revision 1 (7 December 2005) added crosstalk models

Related Documents

05-357r0 - SAS-2 External Cable Electrical Specification (Alvin Cox, Seagate)

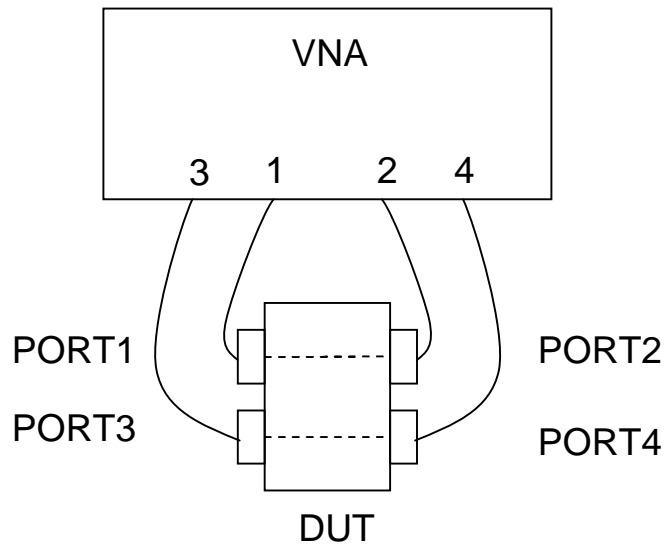
Overview

Provide sample channel models to the storage industry. Design configurations are,

- 1) HP12 consists of a 0.006" wide trace of 6 inches in length, a 1 meter SFF8484 26AWG cable, a 6 inch trace ~0.025" wide on a 0.090" backplane, and the secondary RX port of an SFF8482 connector.
- 2) HP13 consists of a 0.006" wide trace of 6 inches in length, a 6 inch SFF8484 30AWG cable, a 6 inch trace ~0.025" wide on a 0.090" backplane, and the secondary RX port of an SFF8482 connector.
- 3) HP14 consists of a 6 inch SFF8484 30AWG cable, a 6 inch trace ~0.025" wide on a 0.090" backplane, and the secondary RX port of an SFF8482 connector.
- 4) HP20 is the near-end crosstalk between the TX and RX pairs of the primary port of a pressfit SFF8482 connector as seen by the hard drive. The design consists of a 0.006" wide trace of 6 inches in length, a 1 meter SFF8484 26AWG cable, a 6 inch trace ~0.025" wide on a 0.090" backplane and the primary port of a SFF8482 pressfit connector.
- 5) HP21 is the near-end crosstalk between the TX and RX pairs of the primary port of a pressfit SFF8482 connector as seen by the hard drive. The design consists of a 0.006" wide trace of 6 inches in length, a 6 inch SFF8484 30AWG cable, a 6 inch trace ~0.025" wide on a 0.090" backplane and the primary port of a SFF8482 pressfit connector.
- 6) HP22 is the near-end crosstalk between the TX and RX pairs of the primary port of a hybrid SFF8482 connector as seen by the hard drive. The design consists of a 0.006" wide trace of 6 inches in length, a 1 meter SFF8484 26AWG cable, a 6 inch trace ~0.025" wide on a 0.090" backplane and the primary port of a SFF8482 hybrid connector.
- 7) HP23 is the near-end crosstalk between the TX and RX pairs of the primary port of a hybrid SFF8482 connector as seen by the hard drive. The design consists of a 0.006" wide trace of 6 inches in length, a 6 inch SFF8484 30AWG cable, a 6 inch trace ~0.025" wide on a 0.090" backplane and the primary port of a SFF8482 hybrid connector.

Measurement Setup

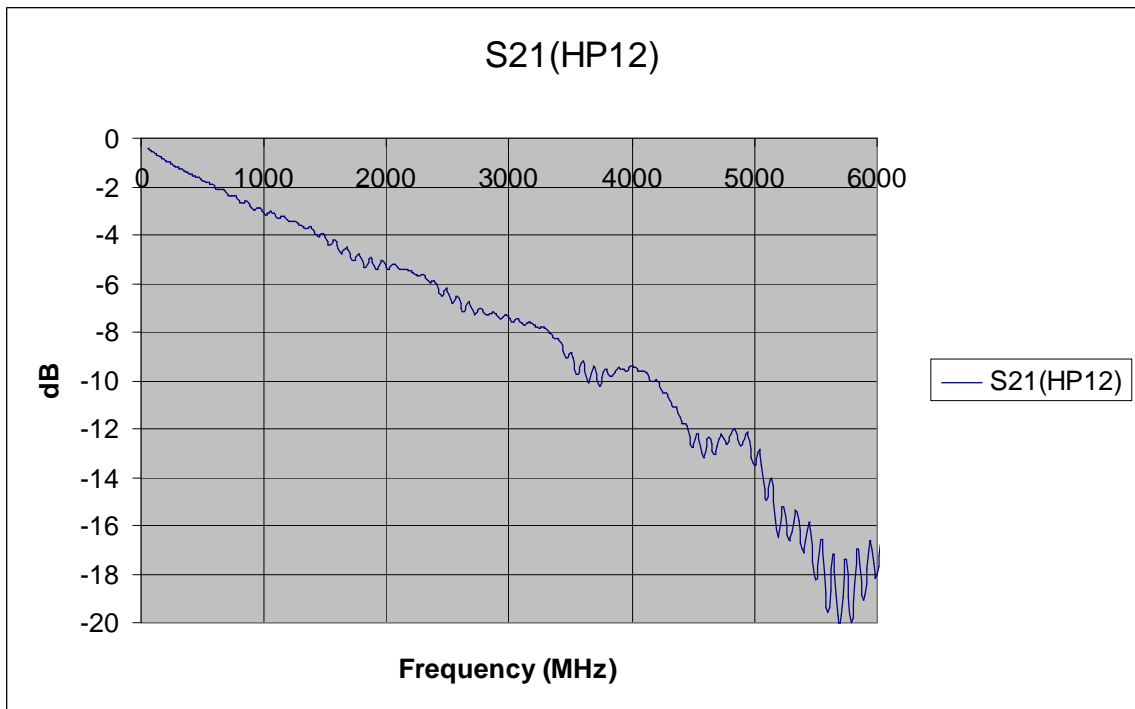
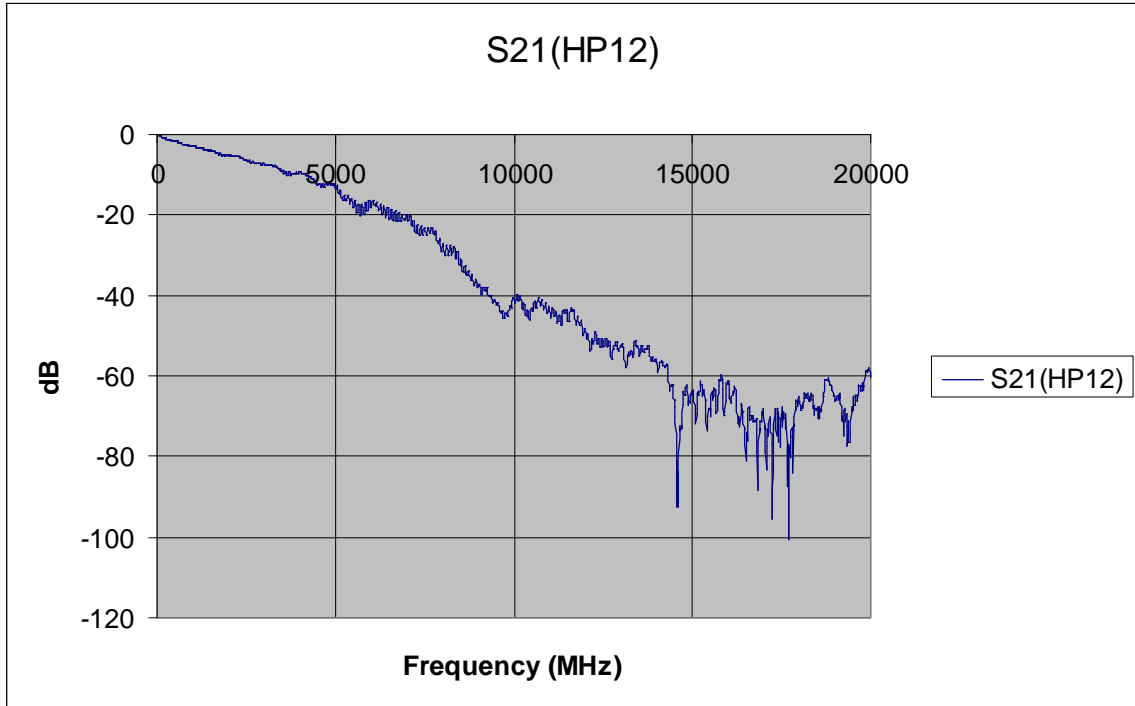
Measurements were performed with an E8362B Agilent VNA and N4419A test set. The frequency range is 50MHz to 20GHz with a 10MHz step size. The format of the data is (magnitude, angle) ... but not dB magnitude. Input to output port mapping through the DUT is shown in the following figure.



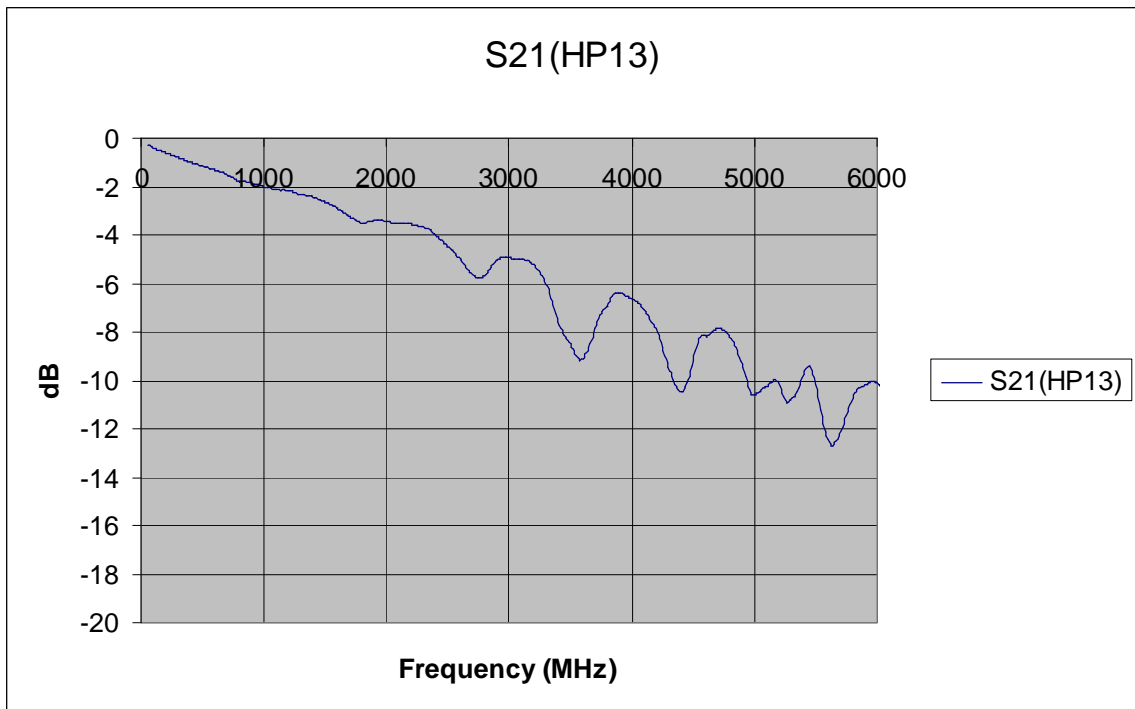
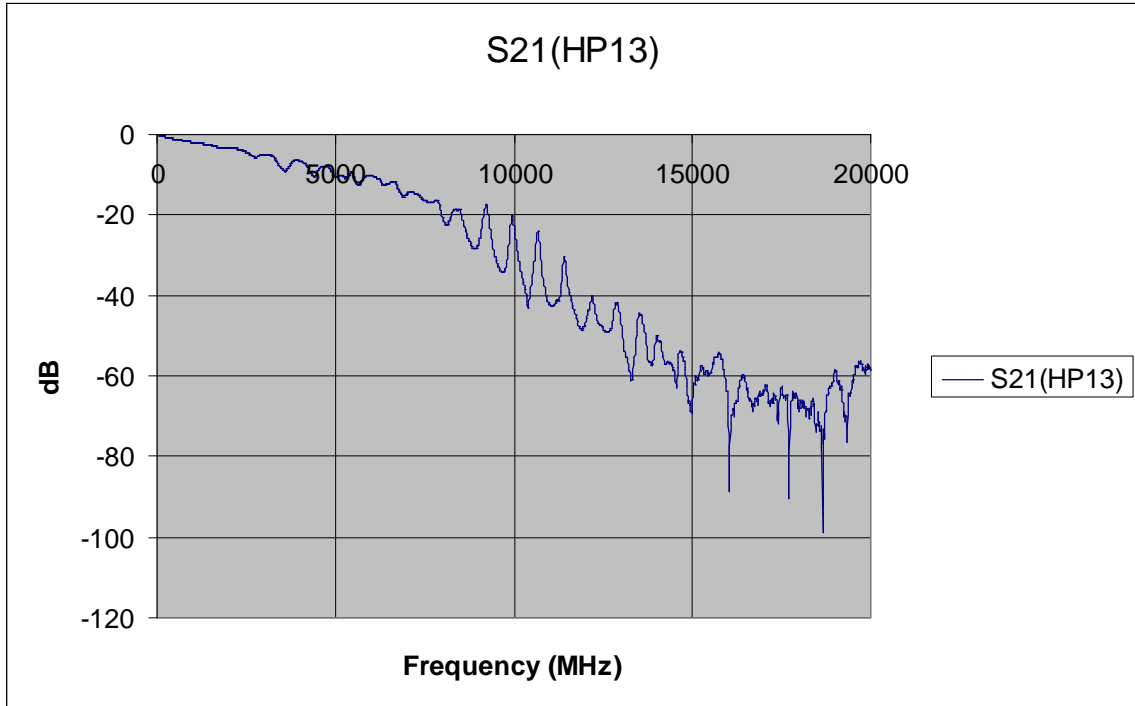
S21 Plots

S21 plots are provided below to assist in selecting sample channels to evaluate.

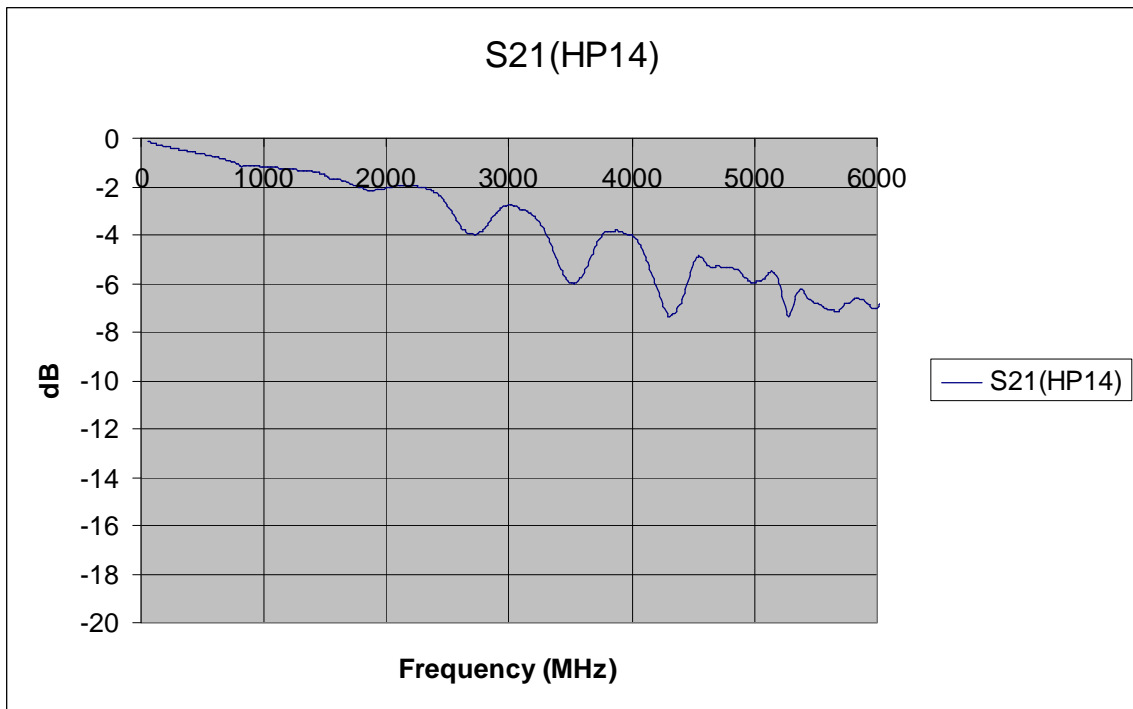
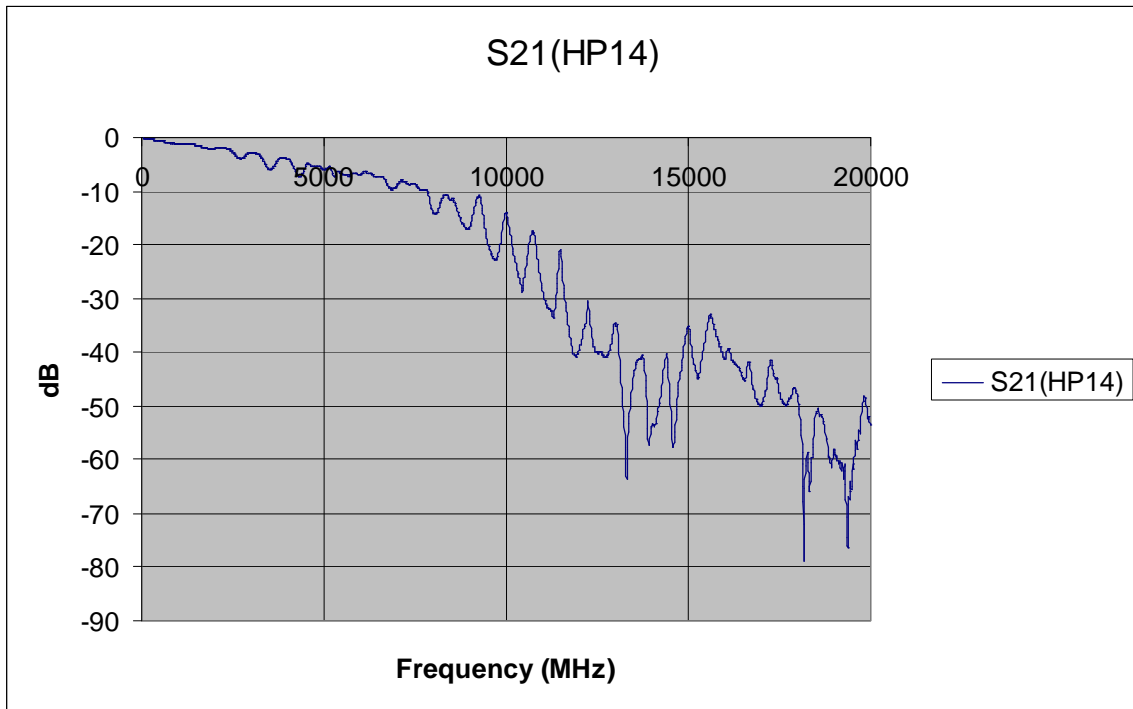
HP12_Brd_1mCable_Bp_Drive:

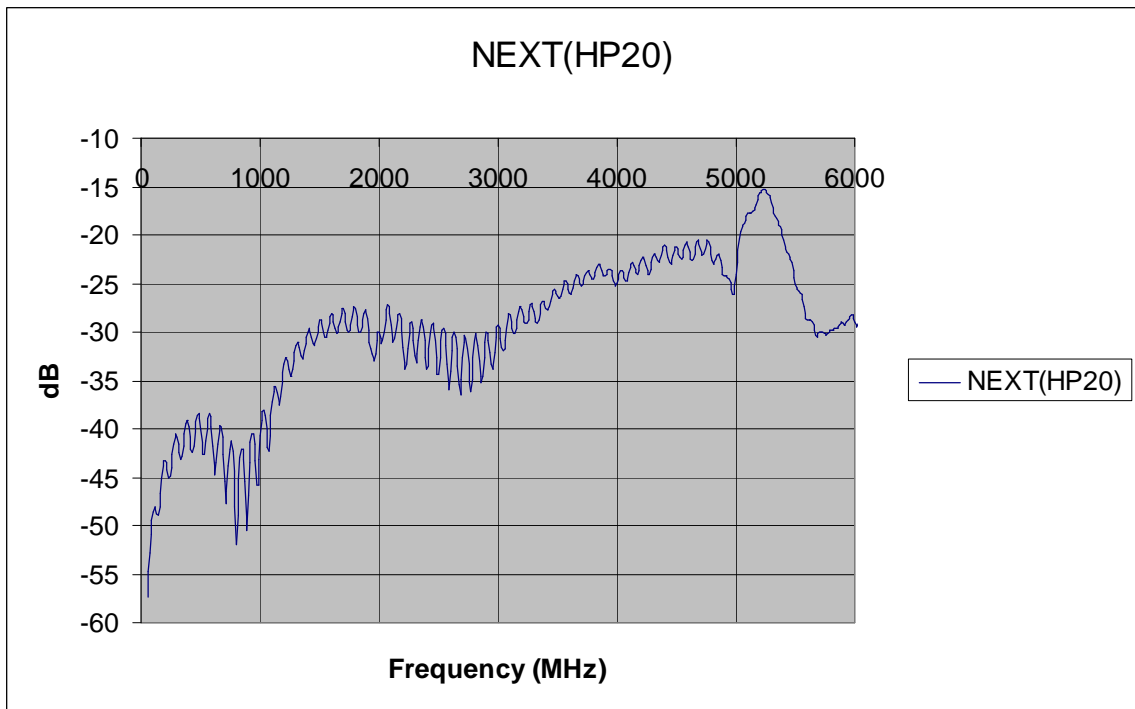
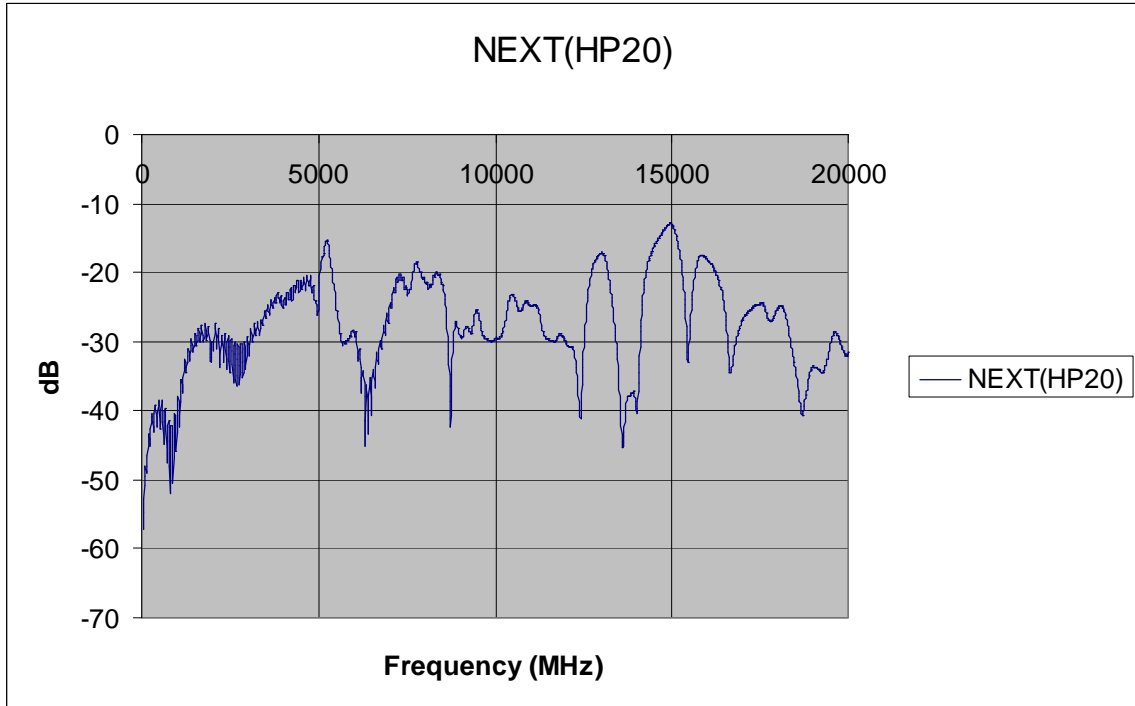


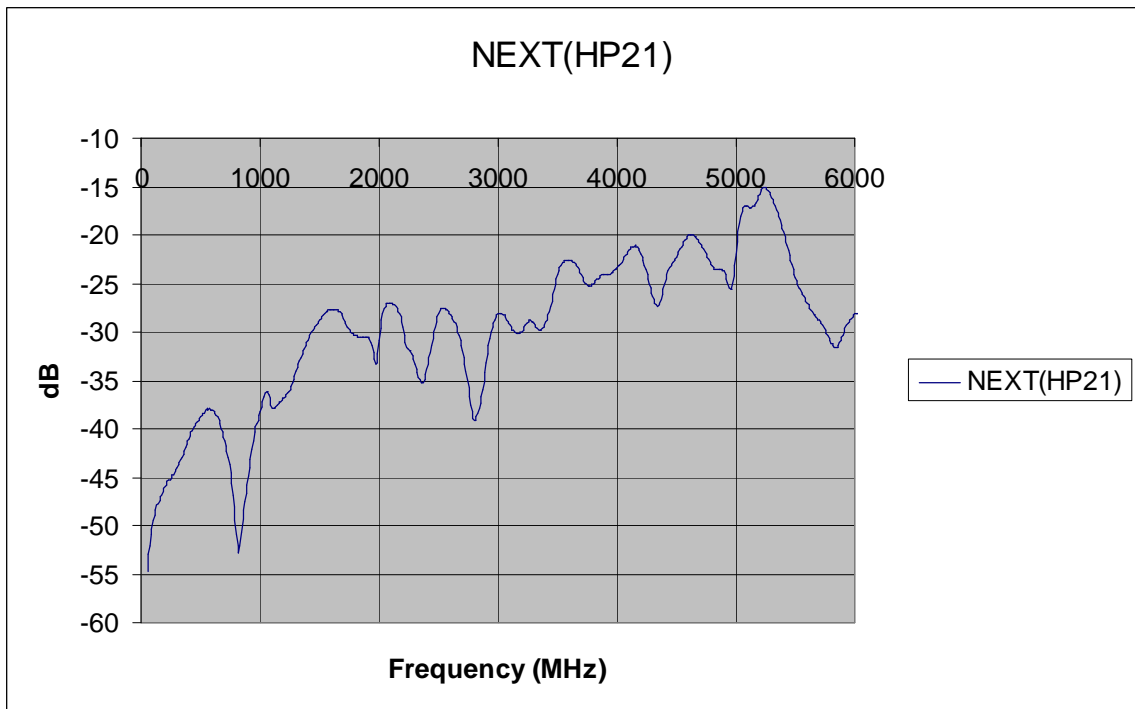
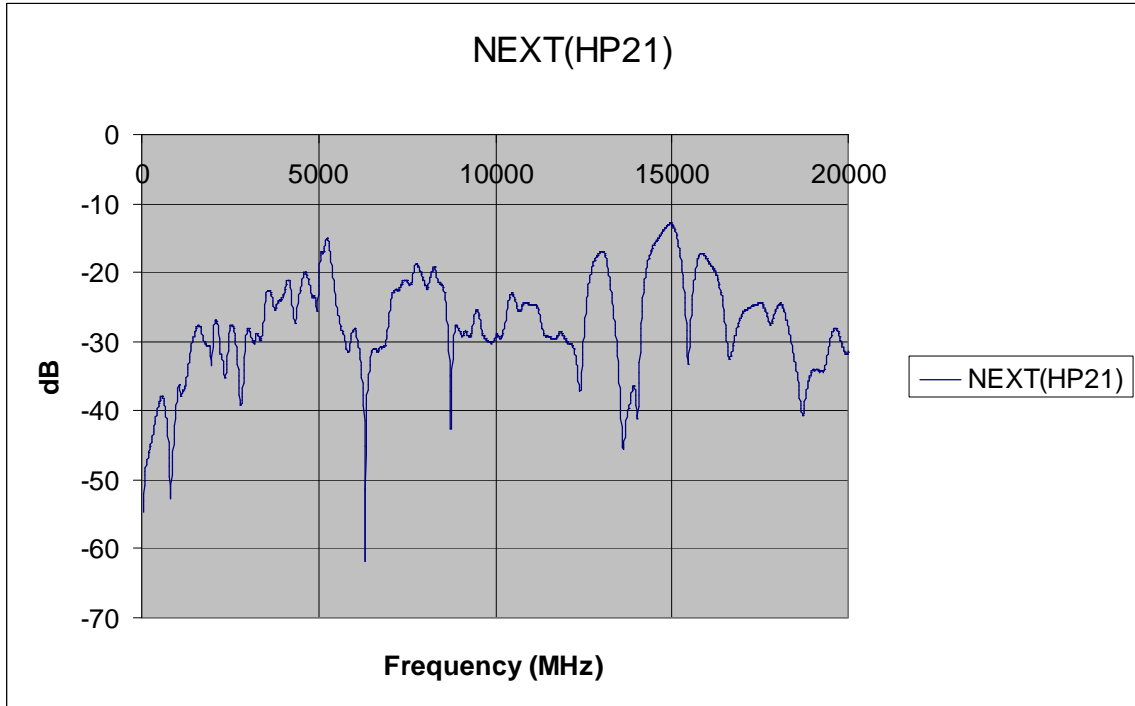
HP13_Brd_6inCable_Bp_Drive:



HP14_6inCable_Bp_Drive:







HP22_Xtalk_SFF4882_Hybrid_PrimaryPort_1mSFF8484Cable:

