

European CablingNews

Technical Note

By Erik Bech – July 2007

Category 6A connecting hardware testing

EC (European Cabling) is now ready for testing of connecting hardware to the new Category 6A requirements.

Development of the new test procedures has taken place in the standardisation committees of TIA/EIA and IEC. EC (European Cabling) has followed this work closely and is actively participating in the IEC work. During the past six months we have subsequently modified our test program for the new testing, and we have now written our internal test procedure¹. By using samples from one of our customers, we have conducted the complete series of tests and we are now ready to perform the first certifications.

New in testing of Category 6A connecting hardware is:

- The standard frequency range is up to 500 MHz. It is standard praxis to use a linear frequency scale in the graphs, which highlights the performance at high frequencies.
- The requirements for return loss are so high that the plug for testing this parameter has to be very good, and complicated matrix calculations have to be used for certification of a suitable plug for the measurements.
- For NEXT measurements there are now 14 test cases (14 different plug specifications) for which the NEXT of the jack under test has to be approved.
A big reduction in the test work is that only one test plug shall be used. The results for the 14 test cases are calculated from the measurements with the one plug.

Testing at higher frequencies sets new challenges for the test set-up. Ideally it would be best to halve the physical size of the pyramid set-up used for stabilisation of the impedances of the test leads to the connector under test. For some of the measurements in the forward direction we use the permanent link adapter test plug from Fluke. This plug can be calibrated very close to the tip of the plug, then minimising errors from test leads. In the backward direction this cannot be done. For some of the measurements we do not use the pyramids, but just a terminated plug with very short test leads. For evaluation of parameters for the test plugs the direct probe is mandatory.

For manufacturers to develop a new connector it is mandatory to know the test procedures. Due to good work in the standardisation committees, the procedures are now close to finalization. And we are ready for the first certifications. In addition we are prepared to help our customers implementing their own testing facility.



¹ This test procedure may be obtained by our customers.

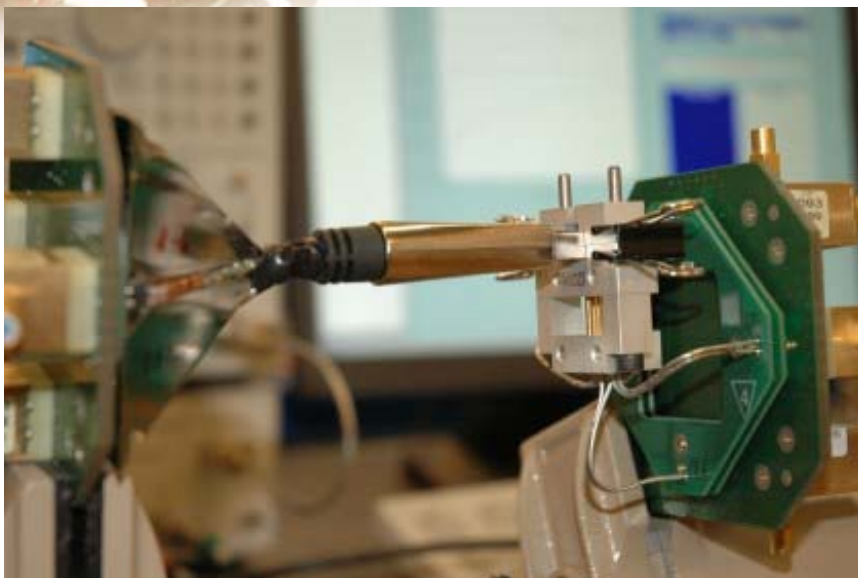


Figure 1.

Figure 1 shows a measurement of FEXT for the Fluke plug. The Fluke plug is mated with the direct probe, which by help of miniature coaxial spring loaded test pins connects directly to each of the 8 contact terminals in the plug.

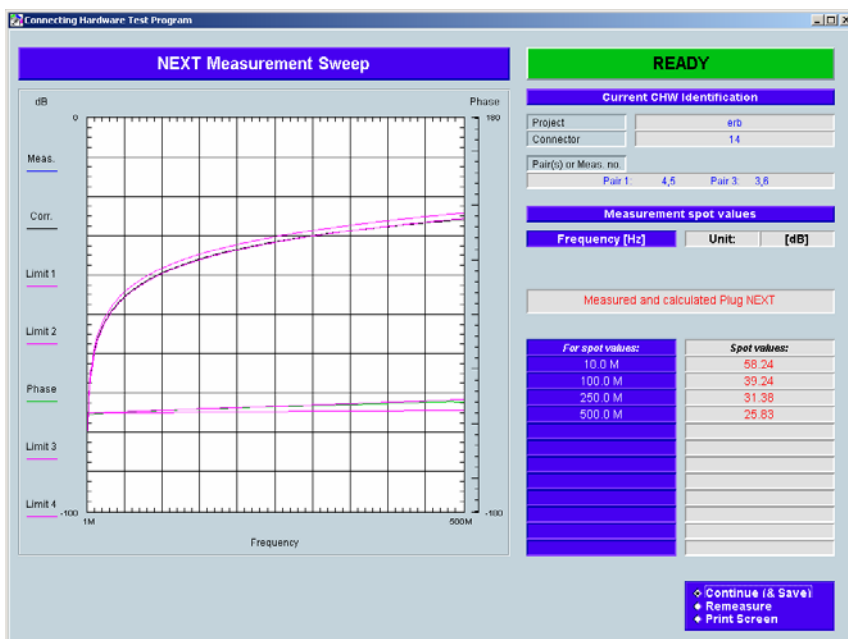


Figure 2.

Figure 2 shows a sample graph of NEXT for the critical 3,6-4,5 pair.

