CAT6, Or Not CAT6, That Is The Question...

It is almost impossible these days to imagine a company without it own data network. These may vary in complexity and quality from CAT5e, CAT6 right up to CAT6a. At first glance these all look very similar, but they have very different specifications.

The more data you need to distribute around your network, the greater the bandwidth needs to be. This is typically reflected in the frequencies that the cable can support. CAT5e cable can support up to 100 MHz, CAT6 up to 250 MHz, and CAT6a up to 500 MHz. Many companies within the Broadcast and Media industry will have at least CAT6 structured cabling to accommodate the large files and data rates required for their work-flows. But how compliant are these CAT6 infrastructures?

Most reputable data installation companies test each cable for compliance, and can offer a manufacturer's warranty for up to 10 years. This only really applies if all the components of the CAT6 channel have been supplied by a single manufacturer i.e. cable, patch panels and wall-plates. Unfortunately there are other installers that simply test their Cat6 cables for continuity, ignoring or ignorant of the specification. Sadly these days, the latter is becoming commonplace. Without a compliance test there is no way to be sure that each CAT6 cable meets the standard. Just because the label on the patch panel and wall-plates says 'CAT6' doesn't make it so.

Why do some CAT6 cables fail to deliver? The choice of cable manufacturer is very important, so don't opt for a cheap brand. Many companies offer the label of CAT6 on their bulk cable, but do not guarantee the specification up to 100m. These cables simply can't deliver because the copper is not of a high enough grade to support the specification. On very short runs they will comply, but when the cables extend over a longer distance they fail. The impedance of CAT6 cable should be 100 ohms, yet some cheaper bulk cable is less, sometimes as low as 85 ohms. These cables will often fail to meet the CAT6 specification.

There are two main causes of cable failure; namely, crosstalk, which is data interference between adjacent pairs within the cable; or return loss, which is caused by poor quality copper with mismatched impedance. Anything less than a 100 ohm cable will cause data to effectively be lost down the cable, producing interference and hence signal loss. With crosstalk or return loss, data may become unrecoverable, resulting in the data packets being resent over the network. This can cause the network to appear slow.

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In addition to the problem of cheap cable is quality of the installation itself. If the CAT6 cables are not installed and terminated correctly they may still pass a continuity test, but could fail a more rigorous compliance test. The cable will fail if there are kinks in the cable, or if the cable has been bent too tightly. It will also fail if the conductor pairs are unwound too much prior to termination.

So does a continuity test really mean that much? The only way to be sure your CAT6 infrastructure can deliver is to test it with an industry standard cable nalyser like a Fluke DTX or equivalent. These units can test circuits from CAT5e to 10Gb Ethernet cables, as well as fibre networks. They are quick and easy to use and give detailed reports on each circuit tested, leaving the client reassured that their structured cabling is working at its best. The units can also indicate what has caused a test failure, making it easy to rectify the fault.

However, these cable analysers don't come cheap, and are probably too expensive for in-house IT departments to own. Some companies offer a data Cable Health Check, providing testing services. This is important to companies who are moving into new premises and need assurances that the network infrastructure will meet their needs. Mike Watson,Technical Director of Absolute CAD, explains:

"Many installers of CAT6 cables simply test their work with a Mod-Tap or continuity tester, before handing over the network. Not once have they checked that the network conforms to the CAT6 standard, and many clients are left unaware that there are any issues."

Mike continues: "A network can easily be tested for compliance with an appropriate cable analyser giving peace of mind to clients and installers that the structured cabling in up to speed." Absolute CAD provides Cable Health Check Services and professional wiring services to the Broadcast and Media Industry.

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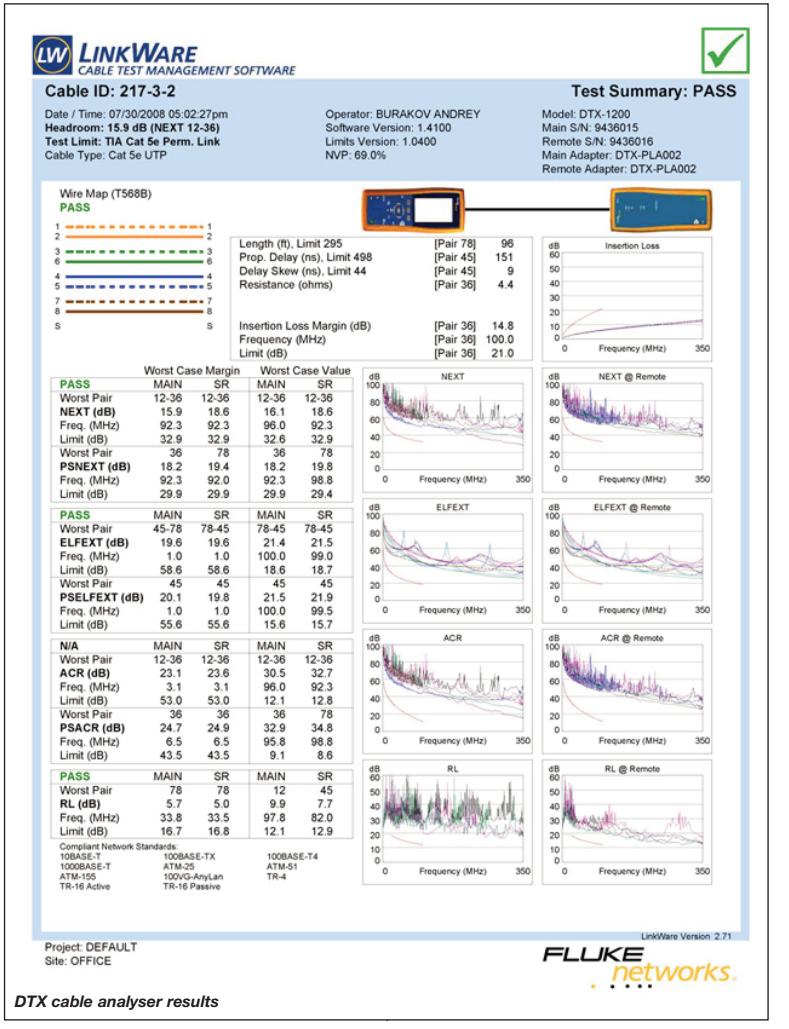

DTX cable analyser results