

USING Shielded Patch Cords IN UTP Channels

Customers sometimes ask whether they can use shielded patch cords in an unshielded channel.

Based on industry standards, real-life field performance, and lab testing, Leviton has found that the use of shielded patch cords in otherwise unshielded channels is not only an acceptable combination but offers numerous benefits to the customer.

What do the standards say?

Neither ANSI/TIA 568.2-D or IEC/ISO11801-1 have any requirements that a channel must be constructed of either all screened or all unshielded elements. In IEC/ISO 11801-1 Section 6.3.2, component choice of channels states that “The parameters specified in 6.3 apply to channels with screened or unshielded cable elements, with or without an overall screen, unless explicitly stated otherwise.”

In addition, IEC/ISO11801-1 Annex C on electromagnetic characteristics states “Use of components with good electromagnetic characteristics, the use of screened or unshielded components throughout a system, and installation according to manufacturers’ instructions, will help to achieve good electromagnetic characteristics of the cabling.”

As a result, strictly from a standards perspective, there is not a requirement that all components within the channel be either UTP or shielded.

Grounding questions

Another question we hear: **“Since a shielded patch cord is not grounded, does it act as an antenna?”**

In an ungrounded condition, a screen/shield will have increased attenuation at higher frequency because of the low-pass filter formed by its resistance, distributed shunt capacitance, and series inductance. As a result, the shield effectiveness is reduced. However, based on testing at Leviton's Berk-Tek labs, the coupling between two adjacent U/UTP cables is still a minimum of 20 dB worse than the interaction between two ungrounded F/UTP cables. Therefore, even under worst-case ungrounded conditions, the UTP cable behaves more like an antenna than the F/UTP cable.

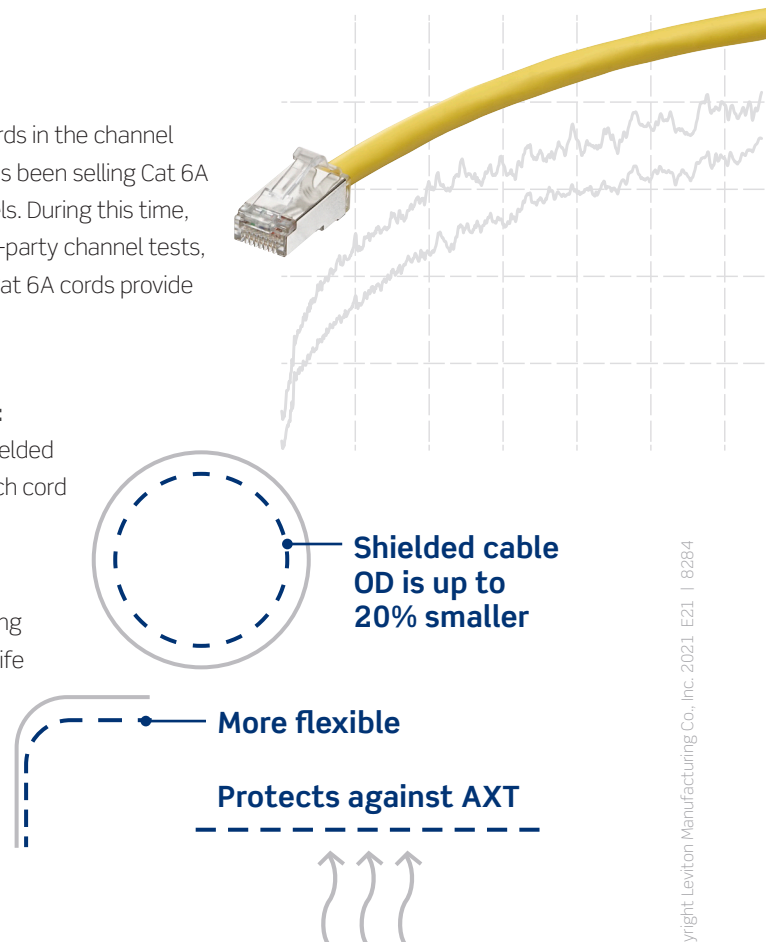
Also, ground loops are not any concern with a shielded patch cord in a UTP channel. Ground loops can occur due to a difference in voltage potential between a shielded cabling system's ground connection, causing excessive common mode current that can adversely affect data transmission. As the patch cord itself is not grounded on both ends, any potential for ground loops is eliminated.

Performance comparison

Ultimately, the key issue comes down to whether using shielded patch cords in the channel yields consistently good performance. For more than ten years, Leviton has been selling Cat 6A patch cords that are shielded only, and they are often used in UTP channels. During this time, we have collected many sets of channel performance data including third-party channel tests, internal testing, and field test data that demonstrates that our shielded Cat 6A cords provide outstanding channel performance.

Shielded patch cords offer several advantages over UTP patch cords:

- **Smaller cable** outside diameter (OD) compared to UTP — a typical shielded cord is 15-20% smaller in cable OD compared to an equivalent UTP patch cord
- **More flexible** cable for easier installation
- **Enhanced protection** against alien crosstalk (AXT)
- **Longer flex life** over UTP patch cords, which use solid conductor cabling that is not recommended for use in patch cords due to its shorter flex life
- **Simplified specification**, logistics and planning



Leviton copper patch cords are designed to ensure the highest levels of performance, reliability, and longevity. To see our full range of copper patch cords, including Cat 5e, 6, 6A, and 8, visit [Leviton.com/CopperPatchCords](https://www.leviton.com/CopperPatchCords).