# Converged Application Score

- Traditional testing methods on LAN cabling do not reflect real-world conditions.
- Testing must incorporate converged applications.
- Increasing bandwidth, high power PoE, and evolving wireless technology are stressing network infrastructure.
- The Converged Application Score is a more accurate measure of the user experience when multiple applications and power are being transmitted simultaneously.

The Nexans Converged Application (CA) Score is calculated using a unique algorithm that combines the results of multiple tests over a 100-meter four-connector channel (see side 2 for details):

**Mean Opinion Score (MOS)** – A quality of service metric used mainly to measure VoIP.
**Frame Error Rate (FER)** – A very rigorous test for IP data integrity.
**Media Loss Rate (MLR)** – A quality of service metric used to measure IP video (IPTV).
**Heat Rise from PoE** – A measurement of how efficiently cabling can dissipate heat.

Additional factors such as channel bandwidth, 5 Gbps and 10 Gbps Ethernet reach, and SNR are combined with these test results into an algorithm that weights the results according to how sensitive the IP traffic is to each measurement. A channel's CA Score is an indicator of how well IP traffic is protected, as well as how efficient the cabling is in dissipating/minimizing temperature rise when the cable undergoes PoE testing. The score is represented by a numeric value between 1 and 30, with 1 being the lowest and 30 being the highest. In reality, a score of 1 is not possible because it would represent no connection and catastrophic heat rise. Likewise, a score of 30 is unattainable because it would mean perfect performance and zero heat rise with high power PoE. The graphic below provides a synopsis of the performance and heat dissipation capabilities as a function of the CA score.

### Converged Application (CA) Score Results for LANmark Channels
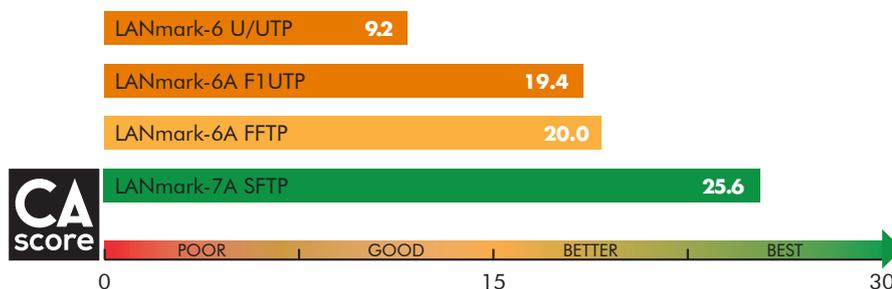


**What does the CA Score tell you?** A performance rating of "Unacceptable" (less than 3.6) means that there are consistent noticeable flaws (dropped frames, media loss, etc) in the applications tested. As you move towards higher scores, you notice fewer flaws until you reach a score of 25+, which is almost flawless. PoE testing is also an important factor; cables that experience less temperature rise can achieve higher CA Scores. The CA Score algorithm weights the results of MOS and MLR higher than FER due to the time- sensitive protocols used within VoIP and video applications, such as RTP and UDP, where lost frames are not retransmitted.

*Essentially the CA Score represents the User Experience on a scale of 1 – 30 in the real world.*

**Application:**

Measuring Infrastructure Performance

**Challenge:**

Traditional testing methods do not accurately measure the performance of cabling under the strain of increasing bandwidth demand, high power PoE, and environmental noise.

**Solution:**

The CA Score goes beyond standard decibel-based testing to real-world scenarios that are designed to measure how well channels perform under the stress of converging applications. The testing shows that channels with higher CA Scores perform better by protecting your IP traffic from the effects of heat and noise.
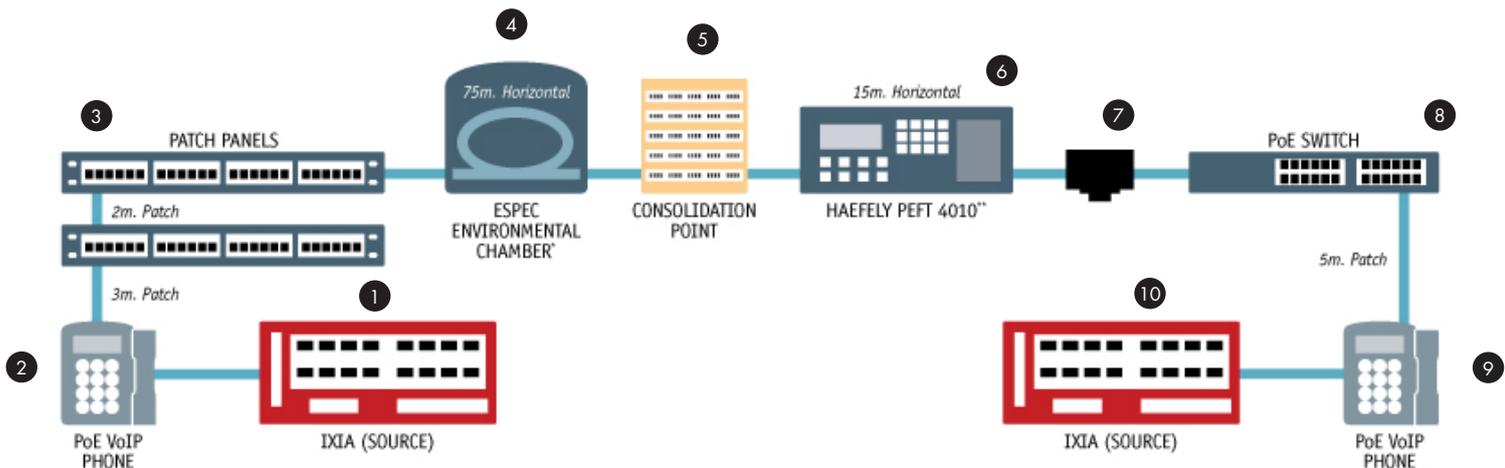
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## About the Converged Application Score Test:

The four-connector, 100-meter channel configuration used for CA Scoring is not the same as what the industry has used for category compliance for the last 20 years. The CA Score test looks like this:



1. IXIA – IP Traffic Generator used to transmit real VoIP, Data, and IP Video traffic at either 1Gbps or 10Gbps

2. VoIP phone

3. Two Patch Panels (1st two connectors)

4. Environmental Chamber heated to 75C° with 75 meters of the channel in loose coil

5. Consolidation Point (3rd connector)

6. EFT Generator – 15 meters of channel exposed to 250V spikes from adjacent power cables to simulate outside noise

7. Outlet (4th connector)

8. PoE Switch – Transmit PoE to power VoIP phones

9. VoIP phone

10. Return to IXIA