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What Makes a Thermography Report Hold Up in Court

The chain from image to method to written standard, and the documentation gaps that most often break it under cross-examination.

In litigation, the thermal image is rarely the problem. The report is. A hot spot everyone can see on a screen means nothing to a court if you cannot show, in writing, how you got from that image to the sentence that matters: “this connection was a fire risk.” The picture is not the evidence. The reasoning behind it is.

A report holds up when it forms an unbroken chain: a qualified person, using a calibrated instrument, with correct settings under documented conditions, applying a recognized method, referenced to a written standard, reaching a conclusion the record actually supports. Break any single link and the opinion becomes, in the language courts use, the expert’s say-so.

01 The court is not judging your image, it is judging your method

Before a jury ever sees a thermal image, a judge decides whether the expert’s opinion is even admissible. Under the framework from *Daubert v. Merrell Dow* and its progeny, codified in Federal Rule of Evidence 702, the judge acts as a gatekeeper. The question is not whether the picture looks alarming. It is whether the method behind the opinion is reliable and was reliably applied to the facts of this case.

Two points make this pointed for thermography. *Kumho Tire v. Carmichael* extended that gatekeeping beyond lab science to technical and experience-based experts, which is exactly what a thermographer is. And the 2023 amendment to Rule 702 raised the bar: the party offering the expert must now show it is more likely than not that the testimony rests on sufficient data, is the product of reliable principles and methods, and that the expert reliably applied those methods to the facts. A confident conclusion built on an incomplete record no longer clears that gate.

02 The evidentiary chain, link by link

A defensible thermographic opinion is only as strong as its weakest documented link:

- **Qualification:** a demonstrably competent, ideally independent, thermographer made the call.

- **Instrument:** a radiometric imager with current, traceable calibration produced the data.
- **Conditions and settings:** emissivity, reflected temperature, and load were correct and recorded.
- **Method:** a recognized examination and comparison method was followed, not improvised.
- **Standard:** the method and criteria trace to published standards, not to personal preference.
- **Conclusion and record:** the opinion follows from the data, and the underlying files are preserved.

Opposing counsel does not need to disprove your finding. They only need to find one link you cannot document and pull on it.

03 Qualification and independence

The first thing a cross-examiner probes is the person, not the picture. “Qualified” in this field means documented competence, typically training and certification under the Infrasppection Institute or ASNT SNT-TC-1A framework at Level I, II, or III, with the relevant level current at the time of the work. “I have used a thermal camera for years” is not a credential a court weighs the same way, and a certification that lapsed before the survey is an easy opening.

Independence is the quieter half, and where many reports are vulnerable. An expert who also sells inspection contracts, or who represents an equipment manufacturer, has a commercial interest that opposing counsel will surface to argue bias. The most defensible posture is the one with nothing to protect: no inspection contracts, no equipment sales, no manufacturer affiliations. When the person offering the opinion has no financial stake in the outcome, the opinion is harder to impeach and easier for a court to credit.

04 The instrument and its calibration

Every temperature in the report is a measurement, and a measurement is only as trustworthy as the instrument behind it. The imager must be **radiometric**, recording calibrated temperature data per pixel rather than a false-color image alone, and its calibration must be **current and traceable** to recognized national standards, with a certificate to prove it. A screening tool with no traceable calibration cannot support a temperature you intend to testify to.

Instrument performance also speaks to a Daubert factor courts weigh directly: the known or potential error rate of the method. Imager sensitivity and resolution, addressed through practices such as ASTM E1213, bound how small a temperature difference the equipment can actually resolve. An honest report states the equipment used, its calibration status, and the limits of what it can measure. A report that quotes temperatures to a tenth of a degree from an uncalibrated device invites exactly the cross-examination it should avoid.

05 Settings, conditions, and the recognized method

This is where technique and admissibility meet. A surface temperature is meaningless without the inputs that produced it: emissivity set for the actual surface, reflected apparent temperature measured and entered, and the load present at the time of the survey documented or corrected. The measurement and comparison method should follow recognized practice, principally ASTM E1934 for examining electrical and mechanical equipment, with severity expressed through temperature difference (ΔT) against a like reference and against ambient, keyed to a published scale.

The court's test for all of this is **reproducibility**. Could another qualified thermographer, handed your report, understand what you did and reasonably arrive at the same conclusion? If the settings, conditions, load, and reference are in the record, the answer is yes, and the method looks reliable. If they are missing, the answer is no, and a colorful image is all that remains.

06 From data to a defensible opinion

The last link is the one experts most often overreach. Rule 702 now asks specifically whether the opinion reflects a *reliable application* of the method to the facts. Courts have long been skeptical of the analytical gap, the leap where data sits on one side and a conclusion sits on the other, connected only by the expert's assertion. The finding has to follow from the record, step by traceable step.

Two disciplines keep that link intact. First, match your certainty to your method. For subjective severity judgments, the guidance behind the 2023 amendment cautions experts away from claims of absolute or one-hundred-percent certainty; a severity call tied to a recognized ΔT scale, stated with appropriate limits, is stronger than an unqualified pronouncement. Second, preserve the underlying evidence: the original radiometric image files and their metadata, the matching visible-light images, and the as-found and as-left records. Chain of custody for those files is part of the report's credibility.

07 Where reports break under cross-examination

These are the gaps opposing counsel looks for first. Any one of them can be enough:

- ☐ The thermographer's certification level and its currency at the time of work are not stated
- ☐ The imager's calibration certificate is expired, missing, or not traceable
- ☐ Emissivity and reflected temperature settings are not recorded
- ☐ Load at the time of the survey is not documented
- ☐ No reference, like component or ambient, supports the stated ΔT
- ☐ Severity is asserted rather than tied to a recognized scale
- ☐ The conclusion claims a certainty the method cannot support
- ☐ Original radiometric files and metadata were not preserved

A report that closes all eight is difficult to impeach, because every conclusion traces back to a qualified person, a calibrated instrument, a documented method, and a written standard. A report that leaves several open is not wrong so much as undefended, and undefended is where cases are lost.

Look Management Group provides expert-witness support on matters involving infrared thermography: case review, report and methodology analysis, deposition, and trial testimony. Engagements begin with a conflict check and a scoping conversation. Because we hold no inspection contracts and sell no equipment, the analysis is independent, which is precisely what makes it useful in front of a court.

Standards and authorities referenced: NFPA 70B (2023 edition); ASTM E1934 (examining electrical and mechanical equipment with infrared thermography); ASTM E1933 (emissivity) and E1862 (reflected temperature); ASTM E1213 (imager performance); the Infraspction Institute Level I / II / III framework; Federal Rule of Evidence 702 (as amended December 1, 2023); and the “Daubert trilogy” (Daubert v. Merrell Dow, Kumho Tire v. Carmichael, General Electric v. Joiner). This is general educational information about how technical evidence is evaluated, not legal advice; admissibility standards vary by jurisdiction, and some state courts still apply the Frye general-acceptance test.

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