

## Minimum Radiance Observations Related to Temperature

**Summary:**

*This note provides some observed values that may help you to determine the minimum temperature at which objects can be observed with various model infrared viewers. These values are based on the emitted energy of the target itself, not reflected energy of any separate source such as a laser, etc.*

The FIND-R-SCOPE® viewer is a qualitative heat measurer (not quantitative). It does not display the temperature values of the target. Instead, relative radiance levels and “hot-spots” are determined through visual observation. Within the instruments field of view, hotter areas of emitted or reflected energy appear brighter than a cooler background. Our units can be thought of as real-time video cameras that see most objects that are greater than approximately 440-510 degrees Fahrenheit, (260°C).

The following table relates target temperature values to various models of our infrared viewers.

| FJW Model # | Spectral Response | Threshold Temperature |       | Recommended Minimum Use Temperature |         |
|-------------|-------------------|-----------------------|-------|-------------------------------------|---------|
|             |                   | °F                    | °C    | °F                                  | °C      |
| 84499A      | 350-1350 nm       | 510°F                 | 266°C | ≥ 535°F                             | ≥ 279°C |
| 84499A-5    | 350-1550 nm       | 490°F                 | 254°C | ≥ 515°F                             | ≥ 268°C |
| 85400/86400 | 400-1800 nm       | 440°F                 | 227°C | ≥ 465°F                             | ≥ 240°C |
| 85345/86345 | 400-2200 nm       | 430°F                 | 221°C | ≥ 450°F                             | ≥ 232°C |

The above observations were of a hot plate style “blackbody” calibration source with a rated emissivity of 0.95. The viewer was at a distance of about 1-meter from the source.

Remember that when viewing objects that are emitting energy based on their own temperature, objects with lower emissivities (higher reflective surfaces, or those with significant transmission), will need to be hotter to be detected than a higher emissivity object.

Our viewers are used by organizations such as Walt Disney and Voice of America to check high voltage connections (busses), and corning glass to observe molten glass. Our units are often an inexpensive alternative to higher cost thermal imagers.

Please contact FJW if you have any further questions.