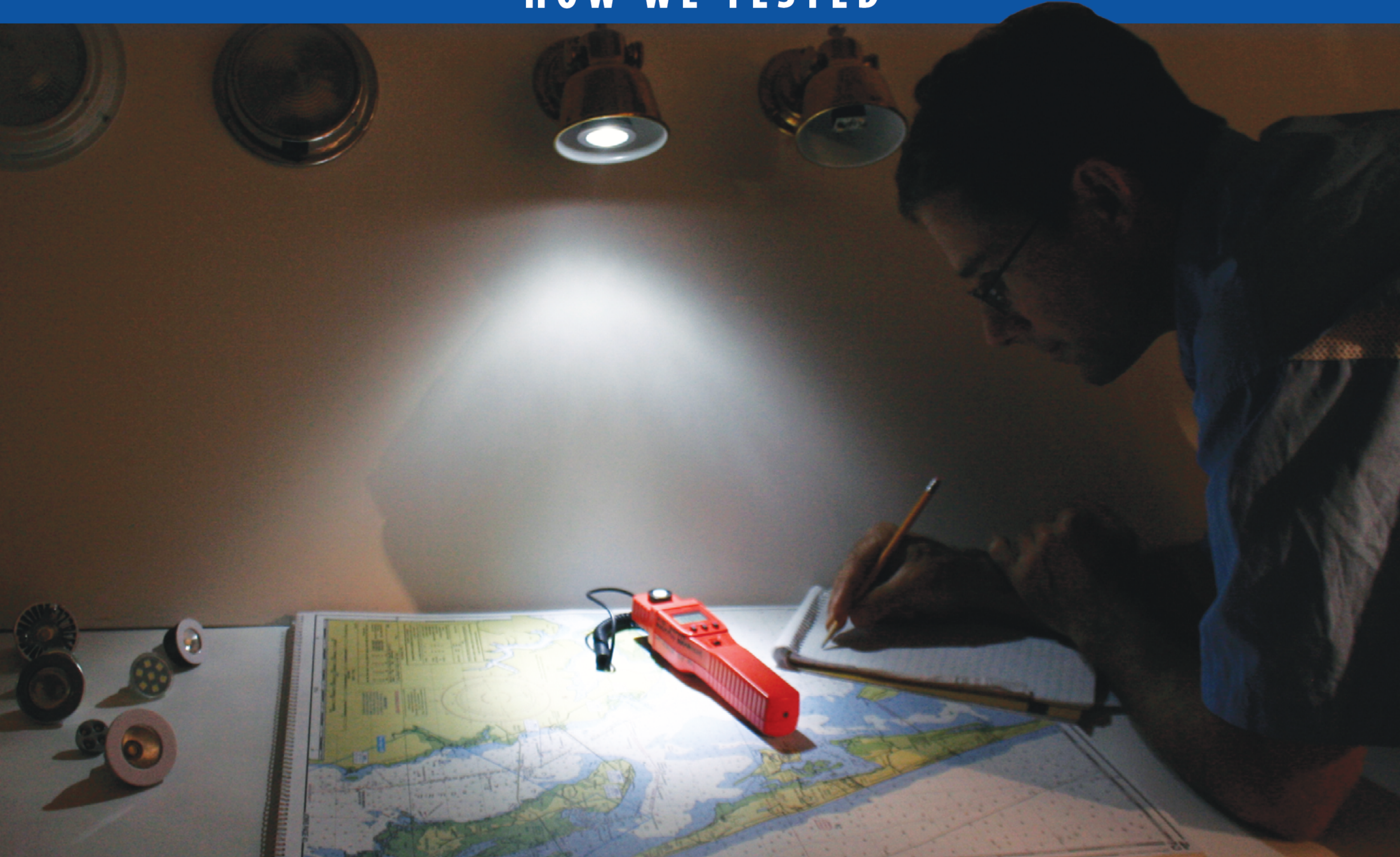


HOW WE TESTED



Testers compared brightness, beam angle, and power consumption. Subjective observations regarding brightness and color temperature also were recorded.

Testers Check Brightness, Color, Amps

Various calibrated meters were used to evaluate the lights in this test. When possible, the data was supplemented with independent visual observations. All tests were conducted in a dark room with the test lights mounted in a ABI brass fixture (part no. 1812). Other fixtures will affect bulb performance, but *PS* does not expect that using another common bulkhead fixture would alter the conclusions. The highest rated bulbs in this test will advance to long-term testing, to be reported on in a later issue.

- **Usable beam angle and intensity (for reading):** The lights were focused on a white wall 12 inches away, and testers measured the diameter of the usable beam plus the diameter of any bright spot. Maximum intensity within a 5-degree cone at 15 inches was measured with a Meterman # LM631 digital light meter. The table data (at left) expresses this light output in FC (foot candles). It also lists the factory specifications of light output in lumens, the quantity of light cast in all directions (as in illuminating a cabin).

- **Power consumption:** Lights were connected to a regulated 12-volt power source, and power consumption in amps was measured by an Actron CP7677 digital multimeter.

- **Color temperature:** Four testers independently ranked lights from coolest (1) to warmest (10). The rankings averages appear in the table. The chart also shows factory specs for color temperature in Kelvin (K). A lower Kelvin number indicates a more yellow or soft “warmer” light output.

- **Radio frequency interference:** Most LED drivers include a switching-type voltage regulator circuit to deal with voltage drops. These can exacerbate a radio frequency interference (RFI) problem if not properly filtered out. We tested for RFI by holding a small battery-powered AM radio operating at various frequencies about 12 inches from the bulbs. None of the bulbs produced noticeable RFI beyond a 3-foot radius. However, if considering LEDs for mast-head lights near antennas, check out the RFI before installation.

- **Reading and cabin illumination ranks:** Four testers gave their opinion on the relative brightness while reading a chart 4 feet from the light. Lights were rated from 1 to 9, brightest to dimmest. The same comparison was carried out with regard to general room illumination.