INTRODUCTION
Wide spread use of light cured materials in dentistry has led to the development of sophisticated visible light curing (VLC) units for both intraoral and extraoral materials. The success of visible light cured restorations is not only dependent on the preparation by the dentist but on the light intensity generated by the visible curing light and the amount of time of the exposure. Undercure is the most common cause for failure of composite resin restorations. Visible light curing units, depending on type, age and frequency of use, etc., can lose significant curing intensity. This loss is impossible to determine visually. The CURE RITE Visible Curing Light Meter from Caulk provides accurate information on the curing intensity of tungsten halogen curing lights. The Caulk radiometer is designed to measure only the energy between 400 and 525 nanometers weighted to the 440-500nm range which is the optimal energy to cure dental composites.

Caution: U.S. Federal Law Restricts This Device To Sale By Or On The Order Of A Dentist. For dental use only.

DESCRIPTION
The Cure Rite casing is molded of a flame-retardant ABS plastic. Inside there is a replaceable 9-volt battery, a printed circuit board and Liquid Crystal Display (LCD). The LCD provides the digitally rendered output reading in milliwatts per square centimeter.

INDICATIONS
The Cure Rite Visible Curing Light Meter is used to provide accurate information on the curing intensity of visible light curing units. It allows the dentist to monitor the performance of light curing equipment and check replacement parts and repairs for effectiveness.

CONTRAINDICATIONS
1. None Known

WARNINGS
1. Persons who have a medical history indicating photobiologic reactions (including persons with solar urticaria or erythropoietic protoporphyria) or who are using photosensitizing drugs should not be exposed to light from the lamp in visible curing lights which are used when using this device.
2. In cases where an operator has been fitted with an implanted heart pacemaker and has been cautioned against the use of small electrical appliances (such as electric shavers, hair dryers, etc.) the Cure Rite Visible Curing Light Meter should not be used.

SAFETY PRECAUTIONS
1. Users of all curing lights and of the Cure Rite Visible Curing Light Meter should wear suitable eye protection during operation.
2. DO NOT IMMERSE UNIT IN WATER.

OPERATING INSTRUCTIONS
Note: Upon receiving the Cure Rite Visible Curing Light Meter check the packaging and parts for any possible damage that may have occurred in transit. If damage is apparent please contact a sales representative immediately.

Ideally it is best to test a visible curing light when it is new. The output reading can be used as a reference to which future readings can be compared. To establish a reference reading on an older curing light it is recommended that the following maintenance steps be performed prior to testing.

1) Replace the bulb
2) Inspect and clean filter (refer to curing unit manual)
3) Inspect the light guide (refer to curing unit manual)

Note: There will be differences in output between new lamps.

1) To activate the Cure Rite Visible Curing Light Meter turn power on using the slide switch on the side of the unit
Note: Always activate curing light for 10 seconds prior to taking an output reading. This allows the filter and fiberoptics to warm up and will prevent false high readings. Always take readings with the same diameter light guide.
2) Make sure the aperture of the meter is maintained in a clean condition. Contamination will reduce the effectiveness of the unit by reducing the amount of light it reads.
3) Place light guide tip perpendicular over the aperture utilizing the centering rings. For larger light guides more than one measurement can be taken over the diameter of the probe and then averaged.
4) The Cure Rite, with its unique “High Latch” feature, will freeze and display the highest output. Record this reading for future comparison.
5) To take another reading push slide switch off to clear prior information then push slide switch on.
6) Once all readings have been taken, push slide switch to turn unit off.

INTERPRETING THE RESULTS FOR TUNGSTEN HALOGEN CURING LIGHTS

300 mW/cm² OR HIGHER
This level of energy should provide for proper polymerization of materials up to 2mm depth following the material manufacturer’s recommended exposure time.

Note: Carefully follow the manufacturer’s recommended exposure times. Some darker shades of composite require longer exposure times.

BELOW 300 mW²
If the output registers in this level, do not use the curing light unless the energy can be increased to 300mW/cm² or above by means suggested in the trouble shooting section of the curing light manual. If the energy cannot be increased, contact the composite curing light manufacturer for service or replace it with a new curing light.

Note: The primary function of the Cure Rite Visible Curing Light Meter is the monitoring of the performance of your tungsten halogen light curing equipment and to check replacement parts and repairs for effectiveness.

TROUBLE SHOOTING
Should the output of curing lights decrease prior to bulb failure, examination of the following is suggested for potential causes. Most of the remedial steps suggested here can be performed in-house. If this does not improve results contact the dealer or the unit manufacturer for service.

1) Light Bulb: Under typical curing conditions, a quartz halogen light bulb will maintain much of its original intensity until failure. If the curing conditions are such that the bulb is running too hot the output can decrease drastically over the shortened life of the bulb. This is indicated by a frosting or bubbling of the bulb or reflector. Replace immediately.

2) Filter: Every curing light has a wavelength selector filter which eliminates unwanted energy below 400 nanometers and above 500 nm. Under extreme heat conditions over time this filter may crack or blister. Everyday use may result in the filter getting dirty and thereby reducing transmission. In either case replace or clean as you would a camera lens.

3) Fiber Optics: Curing lights deliver light energy to the teeth. In the majority of units by fiber optics; flexible bundles, as in the older style units or rigid probes, as in the gun type units. The efficiency of the lightguide system can be visually checked by holding the distal end of the lightguide up to a dim light source and checking for black or darkened areas which indicate loss of transmission. A build-up of composite material on the curing end can drastically affect output. Attempt to remove this material being careful not to scratch the surface. Similarly the receiving end of your light guide or probe may lose its ability to transmit light due to the effects of heat over time. On some curing probes the effect of glutaraldehyde disinfecting solution can drastically affect curing light efficiency. Should any of these conditions occur either replace or have the parts refinished.

CARE AND MAINTENANCE
The outside of the Cure Rite can be cleaned with a soft cloth dampened with 70% isopropyl alcohol. Never immerse the unit in any liquid. The unit should be stored in such a way as to prevent damage to the aperture.

BATTERY REPLACEMENT
The unit is powered by a 9-volt battery. Should the words “lo bat” appear on the LCD display or the unit fails to turn on replace the battery immediately to insure proper readings. Using a screwdriver simply remove the 4 screws in the back of the unit. Lift off cover. Replace old battery with a new one. Replace screws.