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An Improvement in Blackbody Cavity Design

The problem:

In the construction of conventional conical blackbody cavities, machining and coating the interior result in an unavoidable imperfection—a fillet at the apex of the cone. This fillet acts both as a nonuniformity in the radiance source and as a reflector of energy from the radiometer, causing performance degradation, particularly when the cavity is used with a warm radiometer.

The solution:

Move the apex of the cone from direct view of the radiometer.

How it's done:

By setting the axis of the conical cavity at an angle to the axis of observation, the imperfection at the apex of the cone is removed from the direct observation area of the radiometer and no longer behaves as a nonuniformity in the blackbody.

Note:

The following documentation may be obtained from:

National Technical Information Service
Springfield, Virginia 22151
Single document price \$3.00
(or microfiche \$0.65)

Reference:

NASA-CR-1583, Emittance Measurement Study

Patent status:

No patent action is contemplated by NASA

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