

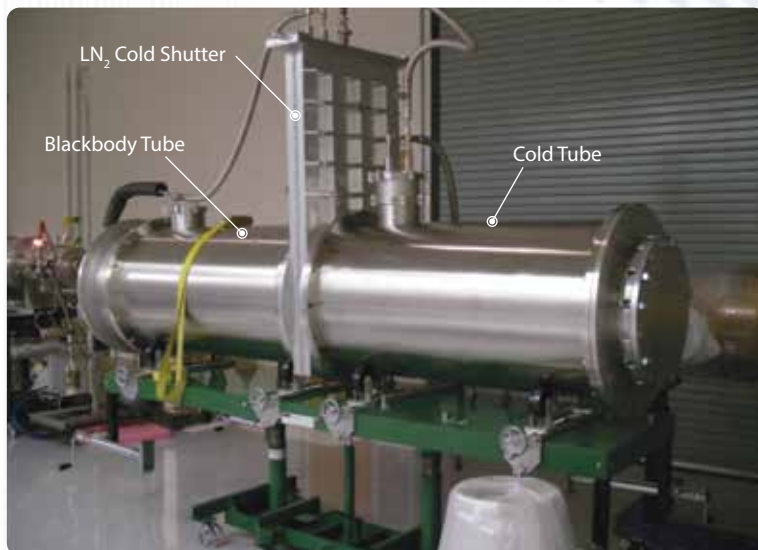
HAES15

HIGH ACCURACY EXTENDED SOURCE

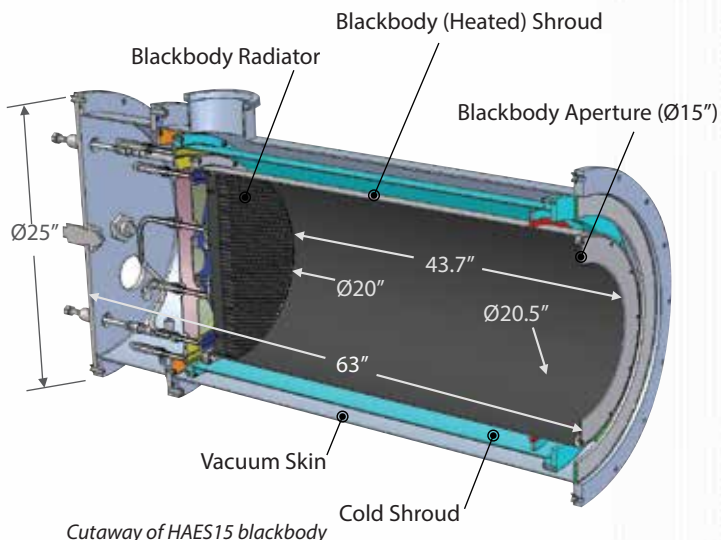
HAES15 is a large-aperture infrared source. It was built at the Space Dynamics Laboratory (SDL) as part of the Geosynchronous Imaging Fourier Transform Spectrometer (GIFTS) program in 2006 and has subsequently been enhanced and used on several IR sensor calibration programs.

HAES15 consists of the cavity-enhanced blackbody radiator at one end of the blackbody (heated) shroud and a 15" heated blackbody aperture on the other end. These components work together to reduce temperature gradients and increase effective emissivity of the blackbody radiator viewed by instruments under calibration. NIST-traceable temperature sensors, together with surface property measurements and analysis, are used to determine radiometric performance and uncertainty. This approach is reinforced with direct radiometric comparison to the NIST-calibrated LWIRCS blackbody (SDL's secondary NIST radiance standard).

An optional LN₂ cold shutter and cold tube are available to enable the measurement of a cold (77 K) scene.



HAES15 with optional cold shutter and cold tube installed



SPECIFICATIONS

OPTICAL

CAVITY ENHANCED RADIATOR (DIAMETER) 20"

The useful exit aperture diameter (currently configured for 15") depends on application & configuration

NORMAL EMISSIVITY (1 TO 20 µm) >0.996
(20-25µm) >0.994

THERMAL CONTROL

NIST TRACEABLE PRTs 5
THERMISTOR 1
CONTROL TEMPERATURE RANGE 100 K - 350 K
TIME TO COOL & STABILIZE ~16 hrs
TIME TO HEAT & STABILIZE (NEAR ~200 K) ~2 hrs

MECHANICAL

COLD TUBE (OPTIONAL) 25" diameter x 54" long
BLACKBODY TUBE 25" diameter x 67" long

An LN₂-cooled shutter sits between the two tubes so view to the extended source can be closed. The overall length with cold shutter & cold tube is 128"



Space Dynamics
LABORATORY
Utah State University Research Foundation