THP

Tester of passive THz cameras

Fig. 1. Photo of the THP-8D-A-ST test system

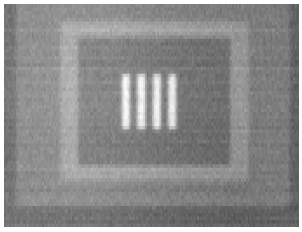

Fig.2. Image of the THP test system with 4-bar target

BASIC INFORMATION:

THP test system is a test system that enables testing of passive THz imagers using the same methodoloty as used for testing surveillance thermal imagers: analysis of quality of image of reference targets located at some distance from the tested imager (see LAFT test system https://www.inframet.com/Data%20sheets/LAFT.pdf).

The THP system is built on a concept of attaching a set of exchangeable target plates before emitter of a large area THz blackbody. The target plates are non transparrent metal sheets having holes of desired shape. Tested THz camera can see the blackbody through the holes and blackbody radiation passing through the holes creates image of the simulated target. The radiation emitted or reflected by the target plates creates image of the backgroud. The shield around target protects the target agains air fluctuation and increases thermal uniformity of simulated background.

Becasue temperature difference between the blackbody and the target is regulated then contrast of simualated target to the background can be varied (both positive and negative). It is possible to simulate targets of different shapes by manual exchange of the target plates. Angular size of simulated target is to be varied by changing distance between tested imager to the THP system.

The THP test set does not use collimator for image projection and the distance target-camera must be longer than the minimal focusing distance of the tested camera. Next, angular size of simulated targets must be sufficciently high to allow tested THz imager to resolve these targets. This conditions means practically necessity to use blackbodies of emitter area much bigger than typically used in systems for testing thermal imagers (see LAFT system).

Another major difference of THP system for testing THz cameras comparing to LAFT system for testing thermal imager is coating on the blackbody emitter. Typical paints used in infrared blackbodies becomes partially translucent for THz optical radiation (particularly at longer wavelengths over about 0.5 mm) and this effect reduces severely emissivity of blackbody emitter and and increase its reflectivity. Therefore, special MAB blackbodies having special coating optimized for Thz/microwave band is used as a part of THP system insted of typical TCB infrared blackbodies.

FEATURES:

- No limitations on optical aperture of tested THz cameras
- Distance target-camera must be longer than the minimal focusing distance of the tested camera
- Size of the blackbody and target should be sufficient to allow tested camera to resolve details of the targets
- Blackbody in different versions optimized for different bands of wavelengths from 0.01 mm to 10 mm (from 0.03 THz to 30 THz)
- Blackbody area from 200× 200 mm to 1000x1000mm
- Blackbody temperature: depens on version but typical +5ºC to +95°C

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SPECIFICATIONS

No	Parameter	Value
1	Modules	MAB blackbody, shield box, set of targets, frame grabber, portable PC, MAB Control program, TAS-TH program
	Blackbody	
2	Blackbody aperture	from 200× 200 mm to 1000x1000mm
3	Spectral band	see MAB data sheet
4	Absolute temperature range	see MAB data sheet
5	Emissivity	see MAB data sheet
6	Temperature uniformity	see MAB data sheet
7	Regulation stability	see MAB data sheet
8	Total temperature uncertainty	see MAB data sheet
9		
10	Computer control	USB 2.0
11	Power supply	115-230VAC 50/60Hz
12	Operating temperature	+5°C ÷ +45°C (non condensing)
13	Storage temperature	–10°C ÷ +60 °C
	Set of targets	
14	Dimension of the target	250x250 mm to 1200x1200mm (depends on selected MAB blackbody)
15	Target number	Set of eight 4-bar targets (for MRTD measurement), one edge target (for MTF measurement), one square target (for noise parameters measurement)
16	Bar width of 4-bar target	In range from 2 mm to 50mm (depends on blackbody size)
17	Target effective emissivity	> 0.95
	Frame grabber	
18	Standard type	Typically one of such frame grabbers: Analog video, CameraLink, GigE (other frame grabbers can be optionally delivered)
19	Non standard type	suitable to any type of electronic cameras if software driver for Windows 7 compatible with DirectX is delivered
	PC	
20	PC type	typical commercially available PC working under Windows 7 operating system
	Test capabilities	
21	List of measured parameters	MRTD, MTF, NETD, FPN, non-uniformity, FOV

*specifications are subject to change without prior notice

VERSIONS:

THP test system is offered in a series of versions that differ in following crucial parameters:

1. blackbody area
2. blackbody spectral band
3. blackbody optional parameters.

Practically it means that the same code used to define version of MAB blackbody is used to define THP system (see data sheet of MAB blackbody). Code THP-16D- A-ST means blackbody of active area 400x400mm, optimized for spectral band from 0.1 mm to 1 mm ,for temperature range +5°C to 95°C

Version 4.1

CONTACT:
Tel: +48 604061817 Fax: +48 22 3987244 Email: info@inframet.com

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