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## Terasense THz imaging cameras successfully tested by Imperial College London, supported by the U.K. Space Agency's Center (CEOI)

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Benchmarking a Commercial	(Sub-)THz
Focal Plane Array Against a C	ustom-Built
Millimeter-Wave Single-Pixe	Camera
SANG-HEE SHIN <sup>O</sup> , (Graduate Student Member, IEEE), AND STEPAN LUCYSZYN <sup>O</sup> , (Fellow, IEEE) Dynami of Brotatan Bouner Bignents, Hynrid Chip, Leaha, Lucks XY? Comporting and the Styra Lucystop (Liveyry Bigneid as ki)	az uz
This work was supported in part by the U.K. Space Agency's Conre for Earth Ok 1910/064354.202, and in part by the U.K. Space Agency under Grant NSTPJ-FT	servation Instrumentation (CEOO) under Grass 046.
ADSTRACT For the first time, the charactenistics of an ece operate at unillument-wave frequencies the been independent the TenSense canon against a curson-built niggl-poil of an infectance. It is comon that the TenSel TenSense canons with significant levels of systematic spatial noise. In a poor maken some exceedure aptical against against poiled identificating spatiations which gives important converse spectrum is investigated and a A timpfer Manual in devidepoil, to determine the levels of reflexance for both derived from filter integrident – generating a low-cost solving	dy jonotzigated. In this work, we benchmark en at Wand, for image quality and operate exhibite limited image rendwisen and fading, inglob-coorder units, for a datafiliare of the start of the start of the start of the start of the start of the start of the start of the start of the start of the start of the start of the output of the start of the start of the on-sport quasi-optical colute attract the start start of the start of the start of the start of the start of the start of the start of the on-sport quasi-optical colute attract the start of
General tasks task panelopen – providing a novecco source la is found what the TenSingue carenes (with additional RAM), have measured inflectance values of 27% and 3%, respectiv- ding approximately 17.41. While or imiglio-pixel carners per it inflerently affers from very dow native-canning peeds a reason, the TenSingue canners taskshology is incellent for pert with the carveats outlined in this paper.	nd single-pixel camera (having default RAM) vely, over a corresponding sperture area ratio vides excellent image resolution and fidelity, ad operational bandwidth limitations. For this
It is found that the TenSense camera (with additional RAM), have measured reflectance values of 27% and 5%, respecti of approximately 714.1. While our single-pixel camera pro- it inherently suffers from very slow ratter-caming speeds as reason, the TenSense camera technology is excellent for per	nd single-pixel camere thaving definit RAM) why, over a comparating approximate area tatio risker excellent image modulion and fidelity, ad operational basebath in institution. For this running qualitative measurements in real time,

The number of our customers in various fields of science and industry

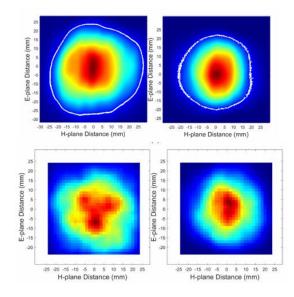
around the world is steadily growing. No wonder that some of our most active and inquisitive scientific customers may want to subject certain of our THz products to substantial trial intended to verify their performance and operating parameters. In fact, we are used to it and welcome such efforts. Researchers and scholars take nothing for granted, which, in its turn helps the mankind evolve and survive. Of course we are extremely grateful to our customers who invest their time and resources and take the trouble of sharing the results of such experiments with the research community by publishing them in the scientific papers.

This time we are especially proud to hit the pages of *IEEE Access* edition under the article title 'Benchmarking a Commercial (Sub-)THz Focal Plane Array Against a Custom-Built Millimeter-Wave Single-Pixel Camera'.

The authors of the paper Sang-Hee Shin, Graduate Student Member, IEEE, and Stepan Lucyszyn, Fellow, IEEE, represent the Department of Electrical and Electronic Engineering, Imperial College London that purchased one of our <u>THz imaging camera (Tera-1024</u>) a couple of years ago.Obviously, they've put it to a good use.



Basically, the article confirms that Terasense THz imaging camera (with a pixel pitch 1.5mm, spectral range 50GHz – 0.7THz) proved to be an excellent tool for <u>THz beam measurement and profiling</u>. Moreover, our counterparts at Imperial College London used their own custom-built single-pixel camera at W-band with the purpose of benchmarking the TeraSense camera against it for image quality and aperture reflectance. Needless to say that authors elaborately described the most ideal conditions and the most optimal setup for beam profile measurement, which many other users may find very useful. So, the article is worth while reading.



Well, we are not surprised that our THz cameras successfully stood up to the test and demonstrated outstanding results. The conclusion made by the researchers explicitly state that while their own "custom-made non-pre-amplified direct-detection single-pixel camera ...suffers from very slow raster-scanning speeds and operational bandwidth limitations" ... the <u>TeraSense technology</u> is superior in these respects and THz imaging camera (Tera-1024 proved ' excellent for performing qualitative measurements in real time" with the caveats outlined in this paper.

It gives us special pleasure, confidence and inspiration to know that their efforts were supported in part by the U.K. Space Agency's Centre for Earth Observation Instrumentation (CEOI) under respective Grant and therefore we are at liberty to state that Terasense can now enjoy a sort of endorsement from both of these esteemed organizations.