

# Specifications n° 2019095CB09100

## Purchase of transportable hyperspectral camera

Montpellier, France, September 2019

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This report has been written in the framework of RTBfoods project;

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Ethics: The activities, which led to the production of this manual, were assessed and approved by the CIRAD Ethics Committee (H2020 ethics self-assessment procedure). When relevant, samples were prepared according to good hygiene and manufacturing practices. When external participants were involved in an activity, they were priorly informed about the objective of the activity and explained that their participation was entirely voluntary, that they could stop the interview at any point and that their responses would be anonymous and securely stored by the research team for research purposes. Written consent (signature) was systematically sought from sensory panelists and from consumers participating in activities.

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# Specifications

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### Purchase of transportable hyperspectral camera

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This contract is submitted to CCAG-FCS as well as to CIRAD's general conditions of purchase (CGA), available at <http://www.cirad.fr/marches-publics/cga>

The procurement procedure used is the open adapted procedure. It is subject to the provisions of Articles L. 2123-1 and R. 2123-1 1 ° of the Public Order Code (CCP).

## 1 CONTRACTORS

The present market is between

The Cirad

**UMR Qualisud  
TA B95/16  
73 rue Jean-François Breton  
34398 Montpellier cedex 5**

**Head office:** 42 rue Scheffer  
75116 Paris  
SIRET: 331 596 270 000 16

And the company

Trade name / company name : Cliquez ici pour taper du texte.

Address : Cliquez ici pour taper du texte.

Phone number : Cliquez ici pour taper du texte.

Email : Cliquez ici pour taper du texte.

SIRET number : Cliquez ici pour taper du texte.

VAT intracommunity number : Cliquez ici pour taper du texte.

Name and position of signatory : Cliquez ici pour taper du texte.

## 2 THE CONTRACT AND SUPPORT DOCUMENTS

### 2.1 The Contract

**Object of this contract:** Purchase of transportable hyperspectral camera

#### **Contract details:**

The equipment is a hyperspectral camera that will be used in the RTBfoods project, for the internal and external characterization of new varieties of cassava, yam, banana plantain, potatoes and sweet potatoes. The main objective of this investment is to determine the spatial distribution of main components, and then, to define the quality of the products analyzed. This device must have the following characteristics:

## **Technical specifications:**

### **Mechanical characteristics:**

- Laboratory device, transportable and whose dimensions must be less than or equal to 400x150x200 mm;
- The weight of camera alone : **less than 6 Kg** ;
- The device must be equipped with the necessary equipments for the acquisition of images (Mobile scanner + laptop equipped with acquisition software + halogen lamps + white reference (Spectralon));
- The scanner must be transportable, with the **dimensions less than or equal to 800x400 mm** ;
- High resistance against external phenomena (humidity, heat, wind, vibrations..).

### **Optical and electrical characteristics:**

- Spectral range : **900-1700 nm** ;
- Number of wavelengths : **more than 200** ;
- Type of sensor : **VNIR Pushbroom** ;
- Spectral resolution : **less than or equal to 8 nm** ;
- Spatial resolution : **less than or equal to 600 µm** ;
- Frame rate : **more than to 200 Hz** ;
- Scanning speed capabilities : **between 60 and 80 mm/s** ;
- The height between camera and sample must be adjusted.

### **Application characteristics:**

- The device must be dedicated to tropical agro-food products (Roots, tuber and banana) on raw materials, semi -processed and processed ;
- The size of samples for scanning must be 20 cm of length and 7 cm of width at least;
- The device should be used for quality control in real time ;
- The physic-chemical traits investigated in the products :
  1. Internal characteristics: distribution of dry matter, carotenoids, b-carotene, protein, starch, amylose, sugars, fat, cellulose, Cyanogen, acrylamide, cooking time, fiber etc.
  2. External characteristics: origin, black heart, maturity stage, defects, texture, colours and firmness, etc.

### **Hardware proprieties:**

- The software of acquisition must be allow image export, to adjust acquisition parameters and to visualise the images in real time.

## **Health and safety:**

- Low noise level ;
- Scanner easy to clean;
- Resistance of the scanner against laboratory cleaning products.

## **Location of implementation:** Cirad, Montpellier

The services are performed on working days (Monday to Friday - between 9am and 4pm).

Annual closures: The CIRAD correspondent informs the candidate in case of closure of the site. Conversely, the candidate informs CIRAD, in case of annual closure.



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