Logo **AERONEF REMOTELY PILOTED**

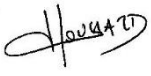
TECHNICAL FILE REF. Servidrone1000C5 V PIXHAWK

This outline applies only to remotely piloted aircraft with a maximum weight < 25 kg

Applicant						
Legal person (company, association):				**Natural person:** Not to be completed in the case of a legal entity		
Company name:	HOUSSARD François			Name:		
Name of a representative:	Houssard	Forename:	Francois	Forename :		
Address:	27 Bd des Vignes					
Zip code:	31370	Town:	Rieumes	Country:	France	
Telephone:	0624792347		Email:	F.Houssard@Orange.Fr		

Scope of the request					
Class:	☒ Multirotors ☐ Helicopter ☐ Airplane ☐ Dirigible ☐ Other:				
Constructor:	Francois HOUSSARD		Model (Type):	Servidrone900	
This case concerns:	☒ A type design certificate (valid for all aircraft of the same model/type)				
	☐ A special authorisation, valid only for the aircraft with serial number (*):				
Class	C5				
				☒ Captive	
	Maximum weight:	11 kg			

User Manual:	Ref. Servidrone1000-MU Rev. 1.0
Maintenance manual:	Ref. Servidrone1000-MU Rev. 1.0
Serial number ANSI/CTA-2063	UAS-FR-SER1000-0001 (the last number will change for each drone)

Declaration			
I declare that the information contained in this file is accurate and that the remotely piloted aircraft complies with the requirements of **2019/945** of 12 march 2019 relating to "unmanned aircraft systems and on third-country operators of unmanned aircraft systems."			
Date:	06/05/2025	Surname, first name, signature *(for legal persons: capacity of the signatory and stamp)*	HOUSSARD, FRANÇOIS, 

Update No.	Date	Description of the changes
Rev 1.0	05/05/2025	Creation

I. DESCRIPTIVE

I.1 Overview

Aircraft (air vector):

Appendix 1 : plan and photos of the captive aircraft, of the restraint system.

Ground station / remote control / transponder Id :

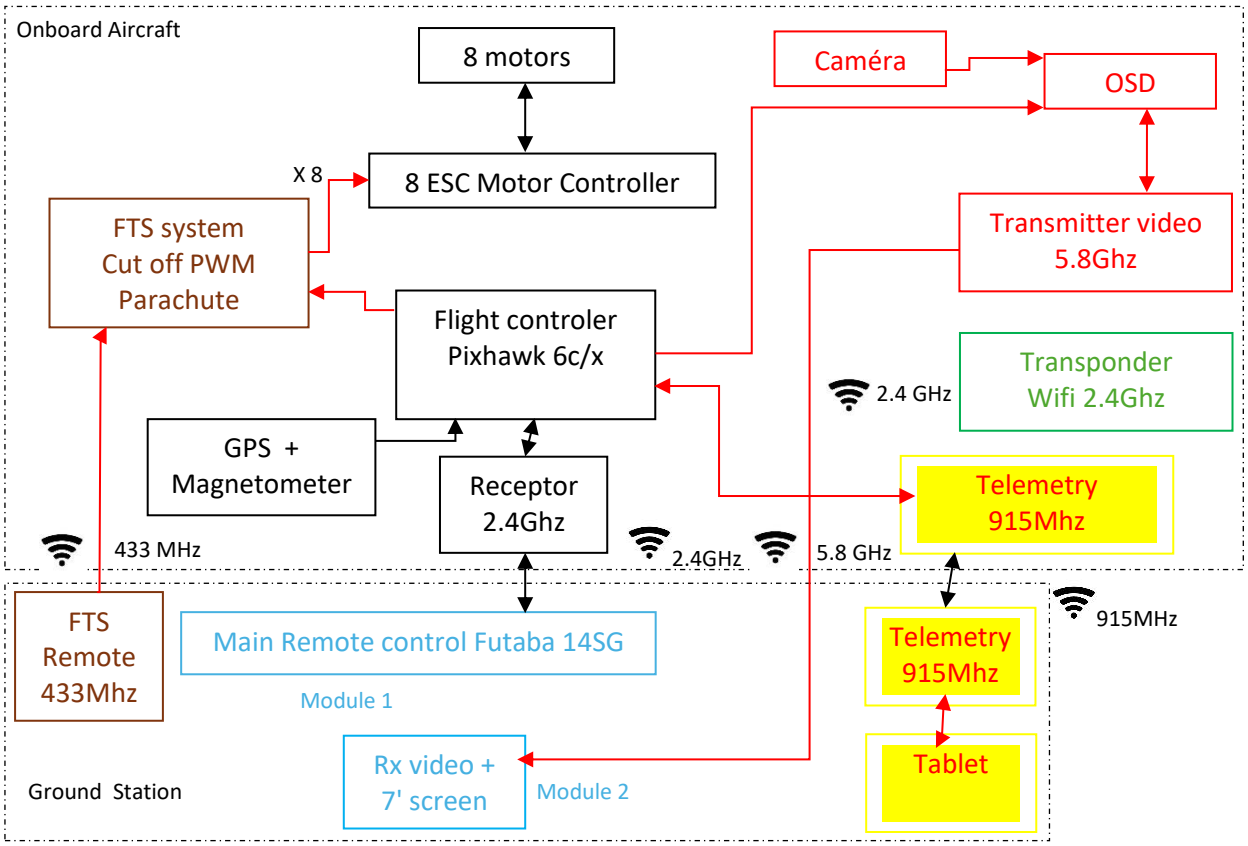
Designation of the different modules constituting the ground station		
Module No.	Required for class	Description (function, model, etc.)
1	☐ C5	Futaba 14sg remote control
2	☐ C5	Video monitor with built-in receiver 5.8Ghz
3	☐ C5	Transmission protocol used for the direct remote identification emission : drone operator's registration number (SER for servidrone31) + serial number of the identification system (compliant with the ANS/CTA-2063 standard and cannot be modified) + drone's position relative to its takeoff point + pilot's position or takeoff point (in WGS84) + The heading and speed in m/s ; powered by special battery 2s 1000mAh
4	☐ C5	Telemetry 915 Mhz 100mW + module in ground with tablet and on air module
5	☐ C5	FTS system with independent remote control, parachute and cut off motor circuit

Sound power level	
EN ISO 3744:2010 Measurement methods :	UA shall be hovering 0,5 m above the reflecting plane 90dB Enclosed in a hemispherical measurement surface 93 dB
highest value of the different UA configurations :	**93 dB**

	Regulations used
UAS	prEN 4709-006:2023, prEN 4709-007:2023
Radio Spectrum	EN 300 328 V2.2.2, EN 300 440 V2.2.1, EN 303 413 V1.2.1
Safety	EN 62368-1:2014+A11:2017
Health	EN IEC 62311:2020, EN 62479:2010
EMC	EN 55032:2015+A11:2020, EN 55035:2017+A11:2020, EN 301 489-1 V2.2.3, EN 301 489-3 V2.1.1, EN 301 489-17 V3.2.4, EN 301 489-19 V2.1.1, EN IEC 61000-3-2:2019, EN 61000-3-3:2013+A1:2019
RoHS	2011/65/EU (EU)2015/863
WEEE	2012/19/EU
REACH	2006/1907/EC

Schematic diagram of different module :

Describe the links between the main components of the aircraft and the different ground station modules:



I.2 Types of Flight

Manual:	☒ On sight ☒ Captive Ground control Cartography, software: Qground Control Google Map
Automatic:	☒ Flight plan tracking ☒ Go Home / Go To ☒ Other: Low Bat Lvl 2 - Go Home

Note: automatisms for maintaining altitude, attitude or position are considered here to be part of manual flights

I.3 Motorization

Propellers/Rotors			
Number (propellers or main rotor):	8	Number of anti-torque rotors (if applicable):	

Engines				
Technology:	☒ Electric ☐ Other:		Number:	8
Most powerful engine currently planned:	Constructor:	Model:	Unit power	
	DJI	Hp4114 – 350kv Brushless	360 W	

I.4 Flight Controller and Associated Sensors

Constructor:	Holybro	Model:	Pixhawk 6X
Firmware (if different controller designation):	PX4 FMUv6C	Version number (*):	V 4.2.3

Altitude sensor	
The aircraft has a sensor to determine a barometric altitude:	☒ Yes ☐ No
Altitude Reference 0 modalities:	Recording before take-off

Positioning sensors	
The aircraft has sensors to determine its position:	☒ Yes ☐ No

If yes:

Types of sensors used for positioning or navigation:	Sensor	Means of ensuring or controlling the integrity of information:
	☒ GPS	☒ GPS declared unavailable if less than 10 Available Satellites
	☒ Magnetometer	☒ Calibration to be carried out for each important trip
	☒ Other: 3-axis gyroscope and 3-axis axelerometers	Calibration before thirst flight

Processors & Sensors
FMU Processor: STM32H753 + 32 Bit Arm® Cortex®-M7, 480MHz, 2MB flash memory, 1MB RAM
IO Processor: STM32F103 + 32 Bit Arm® Cortex®-M3, 72MHz, 64KB SRAM
On-board sensors :
Accel/Gyro: 3x ICM-45686 (with BalancedGyro™ Technology)
Barometer: ICP20100 & BMP388
Mag: BMM150
Accel/Gyro: BMI088/ICM-20649
Accel/Gyro: ICM-42688-P
Accel/Gyro: ICM-42670-P
Barometer: 2x BMP388
Mag: BMM150

I.5 Flight Parameter Recording

The aircraft is equipped with a device for recording essential flight parameters, allowing an analysis of the last 20 minutes of flight:	☒ Yes ☐ No

Recorded informations	
Type of informations	List of Saved Settings
Localization	Longitude, Latitude, Altitude, Speed, Heading
Attitude	Gyroscope, Accelerometer, Temperature
Quality of the command and control signal	2.4 Ghz, Fasstest

I.6 Payload

This aircraft is used for clean the roof ; it's a captive aircraft

Can the payload be modified by the operator:	☒ Yes
The payload is powered independently of that of the other aircraft systems:	☒ Yes (dedicated battery)

I.7 Restraint (Captive aircraft)

Cable diameter:	0.7 mm with length 30m	Cable Material:	Polyamide 120LB
Tensile strength:	600N	- Aerodyne: > 10 times the weight at maximum weight. - Aerostat: > 4 times the resultant of the maximum static and dynamic (wind) thrusts	☒ Yes

Fixing to the floor:	☐ Directly on the ground	☐ to the remote pilot or an operator with a harness	
	☒ on a fixed ballast	Ballast mass:	25 Kg

The fasteners at aircraft level as well as at ground level (or ballast or remote pilot) have been adequately sized:	☒ Yes
Methods of blocking the cable to prevent unwinding in the event of an aircraft escape:	☐ None: the safety zone takes into account the total length of the cable ☐ The reel is equipped with a brake ☒ Manual Blocking The emergency blockade is carried out: ☐ Automatically ☐ By the remote pilot ☒ By an operator

I.8 Ground station / remote control

Altitude information (required)	
Barometric altitude displayed on the module(s):	☐ 1 ☒ 2 ☒ 3 ☐ 4

Positioning Information		
The remote pilot has information on the position of the aircraft:	Format	About the module(s)
	☐ Cartography	☐ 1 ☐ 2 ☐ 3 ☒ 4 ☐ 5
	☒ Distance to From the take-off position	☐ 1 ☒ 2 ☐ 3 ☒ 4 ☐ 5
	☐ Coordinates	☐ 1 ☒ 2 ☒ 3 ☒ 4 ☐ 5
	☒ Other: Heading, Speed	☐ 1 ☒ 2 ☒ 3 ☒ 4 ☐ 5
Ground speed information		

Velocity relative to the ground displayed on the module(s):	☐ 1 ☒ 2 ☐ 3 ☐ 4
Speed limit	☒ Yes programmable by software Qground control and limit to 5 m/s (18 km/h)

I.9 Radio links (command/control and payload)

Main link

Between the aircraft and the module ☒ 1 ☐ 2 ☐ 3 ☒ 4

☒ Ground connection → aircraft Max power: 100m W

Main data transmitted: ☒ Path controls, power ☒ Flight Mode Selection

☒ Aircraft link → ground Max power: 100m W

Main data transmitted: ☒ Alarms, active mode, position, altitude, speed, battery level …

Continuously monitor the quality of the command and control link and receive an alert when it is likely that the link is going to be lost (show in qground control APP on the tablet)

Operation:	☐ Analog ☒ Digital	Frequency(s):	**2.4 Ghz Fasstest**	Scope:	**2km**
Authorization:	☒ Free frequency(s) used within the authorized power limits				

Secondary Link No. 1 (if applicable)

Between the aircraft and the module ☐ 1 ☒ 2 ☐ 3 ☐ 4 Ground Station

☐ Ground connection → aircraft Max power: W

Main data transmitted:

☒ Aircraft link → ground Max power: 10m W

Main data transmitted: Video feedback, IOSD: Drone battery, position, speed, sat number ...

Operation:	☐ Analog ☒ Digital	Frequency(s):	**5.8 Ghz**	Scope:	**1km**
Authorization:	☒ Free frequency(s) used within the authorized power limits ☐ Authorisation has been obtained from the assignee of the frequency: (attach the authorization)				

Secondary Link No. 2 (if applicable)

Between the aircraft and the module ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☒ 5

☒ Ground connection → aircraft Max power: 100 mW

Main data transmitted:

☒ Aircraft link → ground Max power: 100 W

Main data transmitted: Telemetry Speed, battery level, altitud, position, cap, flight mode …

Operation:	☐ Analog ☒ Digital	Frequency(s):	**915Mhz 100mW**	Scope:	**2KM**
Authorization:	☒ Free frequency(s) used within the authorized power limits ☐ Authorisation has been obtained from the assignee of the frequency: (attach the authorization)				

Secondary Link No. 3 (if applicable)

Between the aircraft and the module ☐ 1 ☐ 2 ☒ 3 ☐ 4

☐ Ground connection → aircraft Max power: W

Main data transmitted:

☒ Aircraft link → ground, orther Aircraft Max power: 10 mW

Main data transmitted: Transponder, refer page 2 module 3

Operation:	☐ Analog ☒ Digital	Frequency(s):	**2.4ghz**	Scope:	**4kM**
Authorization:	☒ Free frequency(s) used within the authorized power limits ☐ Authorisation has been obtained from the assignee of the frequency: (attach the authorization)				

I.10 Lights

Lights :	☒ Each arm is equipped with a flashing LED (left red or right green) ☒ a powerful multi-color LED provides flight information based on color

II. SECURITY FEATURES

II.1 Altitude Limitation Function

An automatic device prevents the aircraft from exceeding a maximum altitude (virtual ceiling):	☒Yes ☒ The aircraft automatically stop

Activating the function:	☒ All the time on Feedback: Setup in Qground control application
This device works even if the aircraft is supposed to be following a flight plan in automatic navigation mode with one of the points above the selected ceiling	☒ Yes

II.2 Flight Area Limitation Function

This aircraft is held by a cable (captive)

A device prevents the aircraft from leaving a defined flight area, or informs the remote pilot:	☒ Yes with QgroundControl App

Device Type(s):	☒ Virtual barrier ☒ The aircraft stay in the flight volume ☒ Visual alert on the module ☐ 1 ☐ 2 ☐ 3 ☒ 4
Selectable boundary type	☒ The distance to a fixed point, defined as: Horizontal and Vertical ☒ Parameterizable polygon
Activation of the device:	☒ All the time active (no need to set it up because captive aircraft) ☐ Must be enabled in a configuration menu
This device works even if the aircraft is expected to be following, in automatic navigation mode, a flight plan with one point beyond the selected limits:	☒ Yes

II.3 Low speed mode

Activating the function:	☒ Selectable by the remote pilot, limiting the ground speed to not more than 5 m/s ; Setup in Qground control application

II.4 Impact energy limitation system (FTS system)

The aircraft is equipped with a third-party ground protection system in the event of an impact:		☒ Parachute(s) ☒ Motor cut off
This device limits the impact energy following a free fall from the maximum height of the operation to 69 joules:		☒ Yes Minimum flight height: 40 M
Activation of the device triggers an audible alarm on the aircraft to signal the fall of the aircraft:		☒ Yes
The proper functioning of the device's activation mechanism can be checked on the ground by the remote pilot before the flight:		☒ Yes (Visible servomotor movement in the absence of CO2 cartridge
The device can be activated manually at any time by the remote pilot (except in the event of loss of link):		☒ Yes via module ☒ 5
The manual activation of the device automatically causes the propulsion of the aircraft to stop:		☒ Yes 6 motors stop and parachute ejection
Manual pilot control works even in the event of controller failure (separate receivers or separate channels of a common receiver):		☒ Yes ☐ No
If yes:	The control link of the device is independent of the main command and control link of the aircraft (separate transmitters/receivers on the aircraft and ground station):	☒ Yes ☐ No
	The power supplies to the device and its remote control are independent of the aircraft's main power supplies and its command and control system:	☒ Yes (special battery 3s 1000mAh) ☐ No
Case of the parachute		
Triggering:		☐ Passive (by severity) Active: ☐ Spring ☐ Pyrotechnics ☒ Compressed gas CO2
Number of parachutes:		1
Front area (total):		9m²
Stabilized Fall Speed After Deployment:		2.6 - 3.9m/s

II.5 Engine shutdown in flight

The remote pilot can manually control the engine shutdown at any time during the flight:	☒ Yes, via module ☒ 5 ☐ No

If yes:

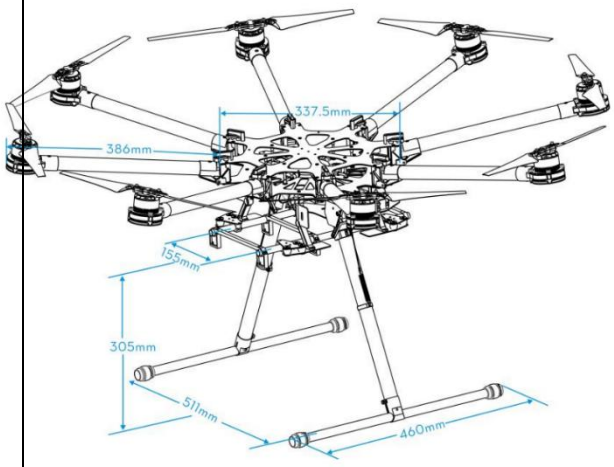
The control of this function can be tested on the ground by the remote pilot before the flight:	☒ Yes ☐ No
Manual pilot control works even in the event of controller failure (separate receivers):	☒ Yes ☐ No
Aircraft equipped with an impact energy limiting device	
The manual switching off of the motors automatically triggers the energy limiting device:	☒ Yes ☐ No
Are there automatic engine shutdown modes in flight?	☐ Yes ☒ No

II.6 Case of loss of command and control link

In the event of a loss of the command and control link, the aircraft automatically initiates a "fail safe" procedure:	☒ Yes ☐ Automatically sits vertically ☒ Automatically returns to a predefined point ("Go Home / Go To" function) at preprogramed altitude and lands afterwards 5s dry. ☐ No
The above procedure:	☒ Starts 5 seconds after link loss In the meantime, the aircraft: ☐ Continues on its trajectory or continues its flight plan ☒ Maintains its position
"Go Home / Go To" function (if applicable)	
The height of the automatic return flight is programmable	☒ Yes ☐ No, the rule is as follows:
Procedures for designating the point of return:	Memory Position When Take-Off
In the event that positioning information is not available and does not allow for the return flight, the aircraft:	☒ Automatically sits vertically, after 5s dry.

APPENDIX 1: VIEWS OF THE AIRCRAFT

Servidrone1000C5



Hose

attachment on the sprayer side:

Attachment on the pump side:

Parachute system with remote and motor cut off circuit :

Cut off circuit will set PWM signal to Low Level.

Direct remote identification emission transponder :

Independant power with battery 3S 500mAh

Futaba transmitter T14SG with LCD 7’ HD color

Qground Control :