Canopy + Drone Detection System
powered by SElink™

DF Antenna #1 + Receiver Unit

Interface plate

DF Antenna #2

Receiver Unit #2

Tripod
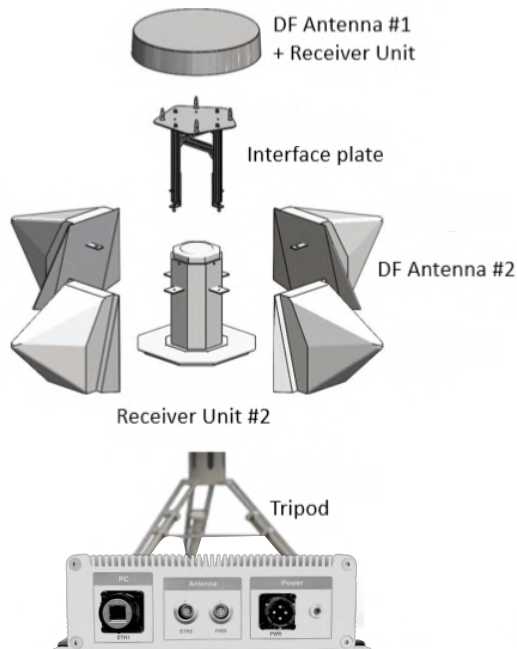
- Detection Of UAS
- Identification of Type
- Tracking of Controller

Canopy+ consists of :
- SE*link*™ Canopy+ Core & Security System;
- UAS Detection Equipment;
- UAS Identification Software Application;
- Cables & Accessories

In complex and densely congested Radio Frequency (RF) environments such as large scale events, the Radio Frequency Directional Finder (RFDF) must anticipate and able to securely manage high computational power in signal processing with minimum setup time, simple and easy to operate.

Canopy+ Drone Detection System comes complete with SE*link*™ Canopy Core & **Security** System processing resources with proven operational references in urban environment. In terms of **Safety** aspect, the Canopy+ utilises passive sensors to detect commercial drone threats. No electromagnetic interference causing bodily harms to the users are being generated from the use of Canopy+.

The Canopy+ comes integrated with benefits to **Detect**, **Identify** and **Tracking** of **UAS** & **Remote Controller's** locations. Canopy+ identification application allows the display of UAS i) Manufacturer; ii) Model number.

It has the capability to locate drone remote controller, even before the drone is flown or while it is in close proximity to the remote controller. Database updates are also available when new drone manufacturers / models are being made available.

Canopy+ can also be integrated to drone effectors such as UAV Jammers. Accurate frequency and directional information of drone threats detected can be delivered to UAV Jammers.

Frequency range covers from 300MHz - 6GHz with real time bandwidth of 120MHz to ensure the detection of frequency spectrum. Canopy+ has been deployed and tested in local urban environment with proven capability greater than 1km (Operating frequencies : 433MHz, 800MHz, 915MHz, 2.4GHz and 5.8GHz).

Blu5 Group
info@blu5group.com
www.blu5group.com

Canopy + Drone Detection System

Specifications

System Function Main Capabilities & Benefits

- Detect and direction finding, locate of the drone
- Identify drone frequency, manufacturers and model
- Support GIS map mark and setting of the designated areas
- With a customisation satellite map and updatable
- Display drone trace, direction finding, log report, etc.
- Historical records, easy for signals replay and future analysis
- Real time spectrum waterfall display
- Built-in automatic compass suitable for mobile vehicular deployment.
- Multiple detection system stations with centralised management for location of drone and remote control through triangulation
- Built-in scanning frequency table, scanning mode can be customised
- Built-in security and encryption for authentication and links between command centre to Canopy+ sites

Detection Frequency Range	300MHz - 6Ghz
Direction Finding Frequency Range	Option A : 2.4GHz and 5.8GHz Option B : 433MHz, 800MHz, 915MHz
Detection Range	1km to 2.5km (Environment Dependent)
Detection Angle	360°
Direction Accuracy	5° to 15° (Environment Dependent)
Antennae Quantities	4 group of sector antennae in parallel
Real time Detection Bandwidth (Each Channel)	120MHz
First Time UAV Detection time	≤ 2 Seconds
Total System Power Consumption	≤ 200W

* Secure SEcube™ Chipset Hardware Specification

- STM32F4 - ARM® 32-bit Cortex®-M4 CPU with FPU, Adaptive real-time accelerator (ART Accelerator™) allowing 0-wait state execution from Flash memory, frequency up to 180 MHz, MPU, 225 DMIPS/1.25 DMIPS/MHz (Dhrystone 2.1), and DSP instructions - FLASH 2 MB - RAM 256 KB
- Security Controller SLJ52G - JavaCard Platform, including ePassport and eSign applets
- Supported Standards / Compliances :
    - JC 3.0; GP 2.2; ICAO BAC; SAC, AA; BSI-TR03110 v1.11 EAC;
    - ISO 18013 BAP; EAP config 1-4 - 128 Kbyte EEPROM - DES; 3DES; AES up to 256-bit - RSA up to 2048-bit;
    - ECC up to 521-bit;
    - Certified Common Criteria CC EAL5+ (Up to EAL6+)
- FPGA - MachXO2-7000 - 6864 LUTs - Ultra Low Power Device (65 nm process, 19 µW standby power, programmable low swing differential I/Os, Stand-by mode and other power saving options)
- Embedded and distributed memory
    - 240 Kbits SysMEM™ embedded blocks RAM
    - 54 Kbits distributed RAM
    - Dedicated FIFO control logic
- 256 Kbits On-Chip User Flash Memory
- Wide Frequency range (10 MHz to 400 MHz)
- Non-Volatile infinitely reconfigurable
- In-field logic configuration while system operates
- Interfaces
    - USB 2.0 high-speed/full-speed device/host/OTG controller with dedicated DMA, on-chip full-speed PHY and ULPI
    - 47 FPGA I/Os

Enhanced/Optimised Firmware & Libraries

- Smart Boot-loader, multi interface, fast and safe FW injection
- 100Mb/s USB and SDCard communication drivers
- Low power management libraries (dynamic, stop, standby)
- Key Management libraries (generation, update, storage, etc.)
- Communication libraries (vocoders, negotiation, etc.)
- SHA256, CMAC-AES256, Elliptic Curves (up to 521-bit), RSA (up to 2048-bit)
- JavaCard *Proprietary* Crypto Applet (based on EAL5+/6+ security chip)
- Ultra Fast, Configurable HW AES256 ECB/CBC/CFB/OFB/CTR
    - 1.6 Gb/s, 6 pipeline levels
    - 8 independent sessions, 8 SBOX
    - enhanced CTR mode (customisable polynomials)
    - SEfile™ high speed libraries, for data at rest protection 2 cache levels, ultra-low overhead
    - libraries, for data in motion protection unlimited sessions, full set of security policies