QUADSAT

Optimizing The World's Radio Spectrum

Drone based Geolocation Solution to Detect and Locate Sources of Interference

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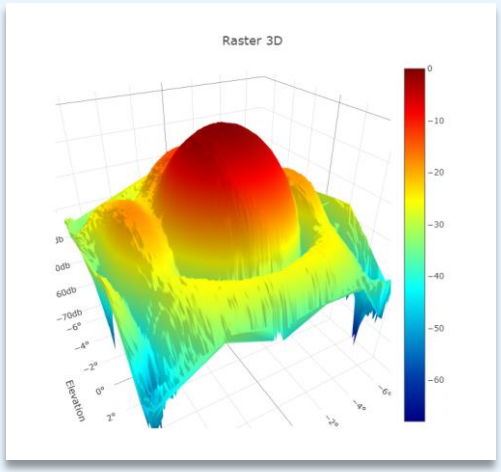
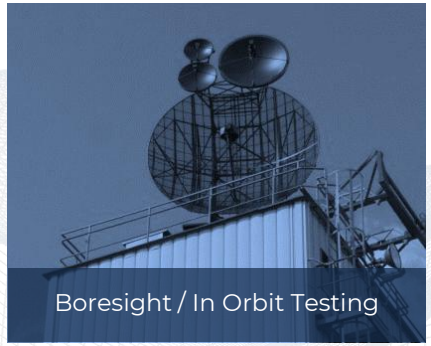
Founded in SATCOM

Quadsat provides mobile, flexible measurement solutions for antenna testing and calibration in real-world environments.



Making Antenna Testing possible, any time and anywhere

Quadsat's UAV-based measurement system is changing the status quo of RF testing by offering an accurate testing method with proven accuracy enabling antenna testing and satellite emulation anytime anywhere

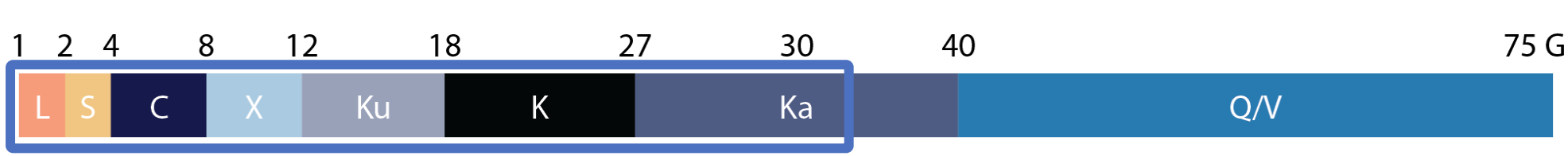

Boresight / In Orbit Testing


Outdoor Far field


Indoor Near-field

The Quadsat System

UAV antenna measurement



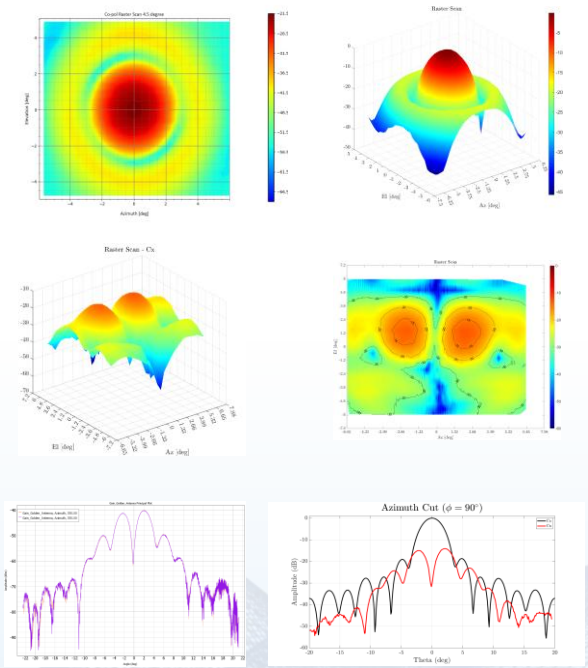
QUADSAT

PAYLOAD COMPARISON	CW DL PAYLOADS			SDR DL/UL PAYLOADS		
	QS 1-18 DL	QS 6-24 DL	QS 17-31 DL	QS 2-12 DL/UL	QS 6-24 DL/UL	QS 17-31 DL/UL
FREQUENCY RANGE	1-18 GHz (S-KU band)	6-24 GHz (X-Ka low band)	17-31 (Ka band)	2-12 GHz (S-KU band)	6-24 GHz (X-Ka low band)	17-31 GHz (Ka band)
FEED SYSTEM	Single circular polarized horn	Linear dual-polarized quadridged horn	Circular dual-polarized horn	Dual circular polarized horn	Linear dual-polarized quadridged horn	Circular dual-polarized horn
POLARIZATION	LHCP or RHCP	Full 360 degree feed rotation. VP, HP	LHCP, RHCP	LHCP, RHCP	Full 360 degree feed rotation. VP, HP	LHCP, RHCP
CROSS POLAR DISCRIMINATION	25-30 dB (2-18 GHz)	25-30 dB typical	25-35 dB	20-25 dB	25-30 dB	25- 35 dB
TRANSMIT POWER	EIRP -35 dBm to +15 dBm. Adjustable in 0,1 dB step.	EIRP -30 dBm to +20 dBm. Adjustable in 0,1 dB step.	EIRP -40 dBm to +10 dBm. Adjustable in 0,1 dB step.	EIRP -80 dBm to +5 dBm. Adjustable in 0,1 dB step.	EIRP -75 dBm to +10 dBm. Adjustable in 0,1 dB step.	EIRP -75 dBm to +10 dBm. Adjustable in 0,1 dB step.
RECEIVING POWER				EIRP +5 dBm to -105 dBm. Adjustable in 0,1 dB step.	EIRP +10 dBm to -100 dBm. Adjustable in 0,1 dB step.	EIRP +10 dBm to -100 dBm. Adjustable in 0,1 dB step.
DOWNLINK	✓	✓	✓	✓	✓	✓
UPLINK				✓	✓	✓
CONTINUOUS WAVE SIGNAL GENERATION	✓	✓	✓	✓	✓	✓
MODULATED SIGNAL GENERATION				✓	✓	✓

Radiation Performance Tests

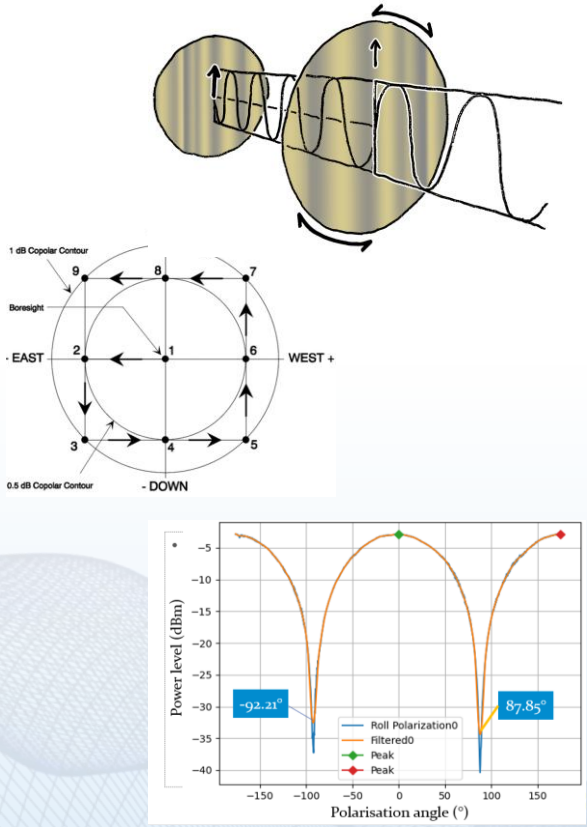
Patterns

2D raster & 1D cuts, RX/TX alignment, and multiple beam states.



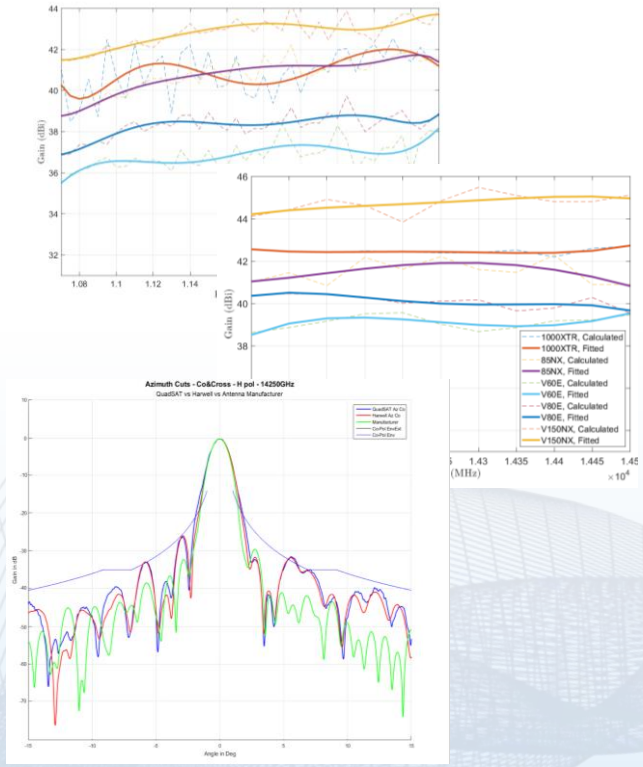
Polarization

On-axis and Off-axis, cross polar discrimination, and axial ratio.



Gain

EIRP and G/T.



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Tracking & pointing verification

Pointing verification

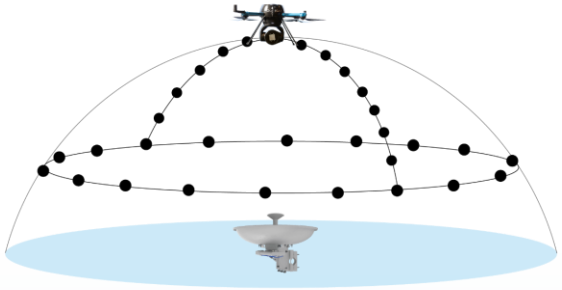
Pointing accuracy

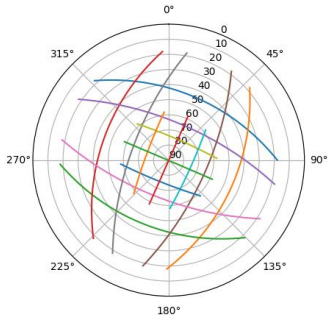
Tracking verification

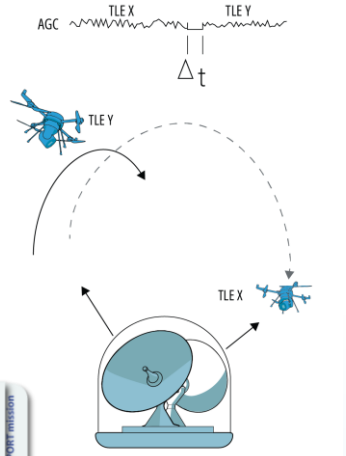
Emulation of LEO/MEO trajectories with a satellite payload in the loop

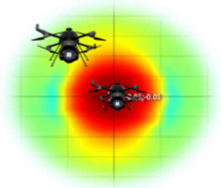
On-the-Move performance

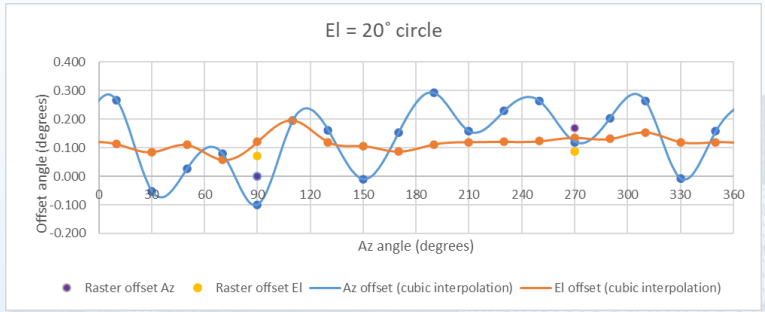
Depointing performance during on the move scenarios

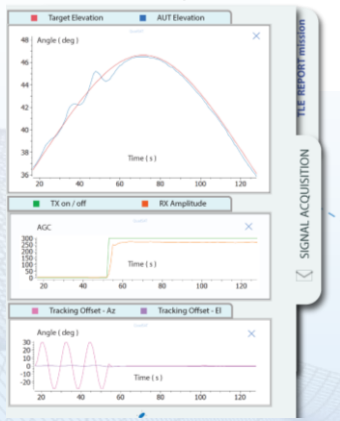












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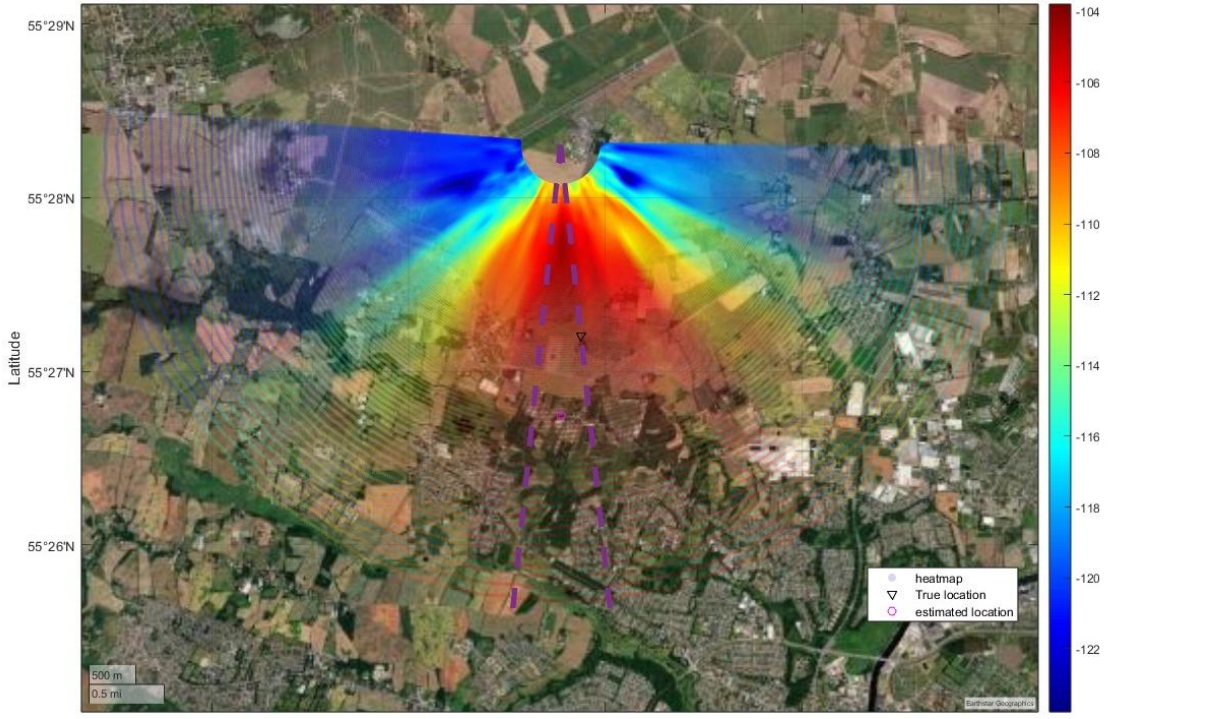
How It Works

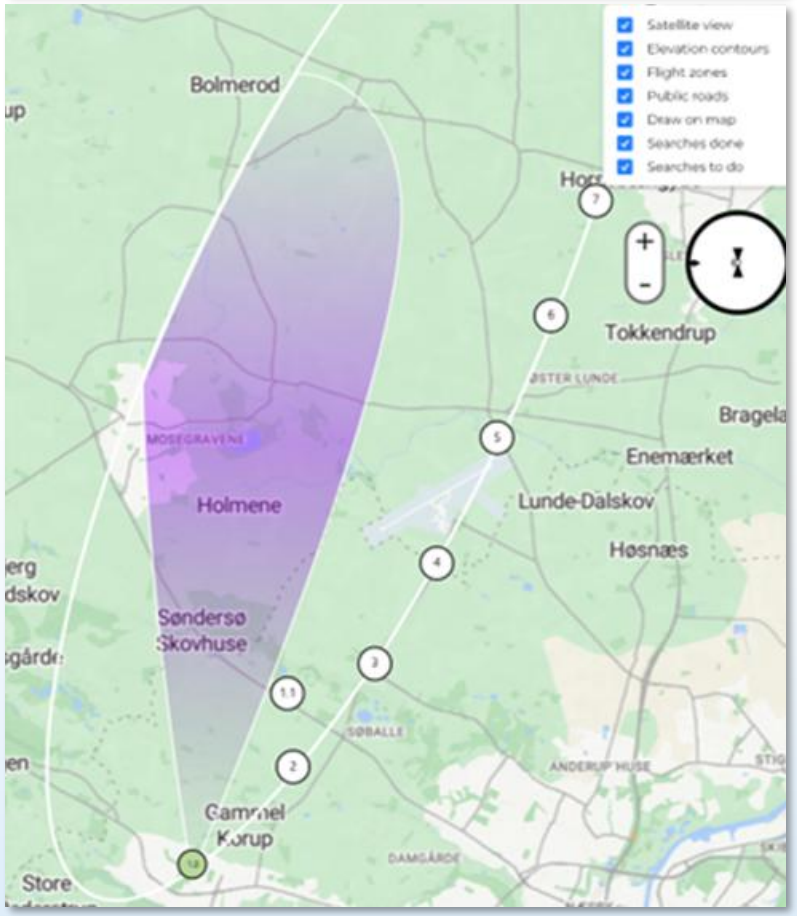
Payload is directional and provides hence high receive capabilities

Its robotic gimbal can point with high accuracy and provide a mechanical angle

Combine signal, angle and position to locate an RF source.



Spectrum Monitoring



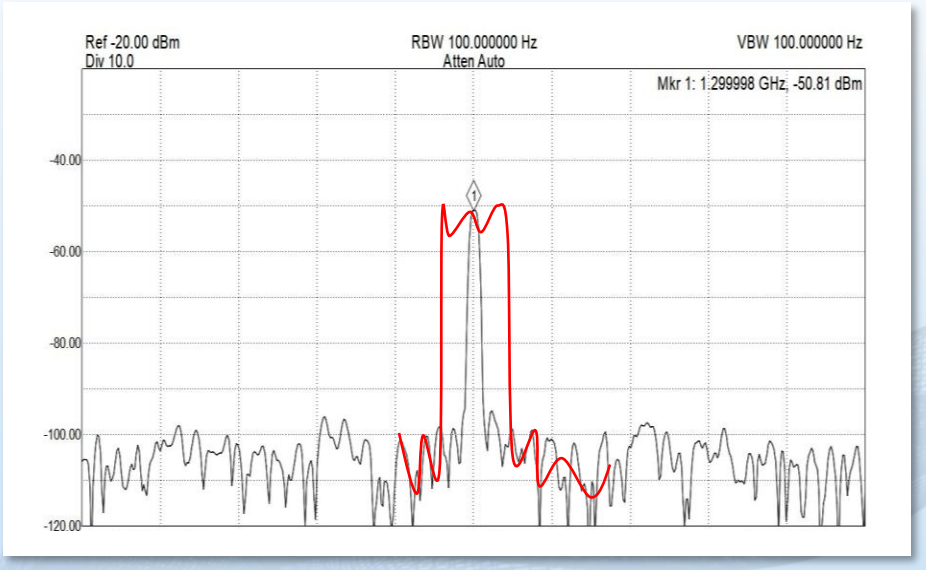
Scan & Monitor Areas

Scan area, sweeping across frequencies for signal detection and generate Line of Bearing.

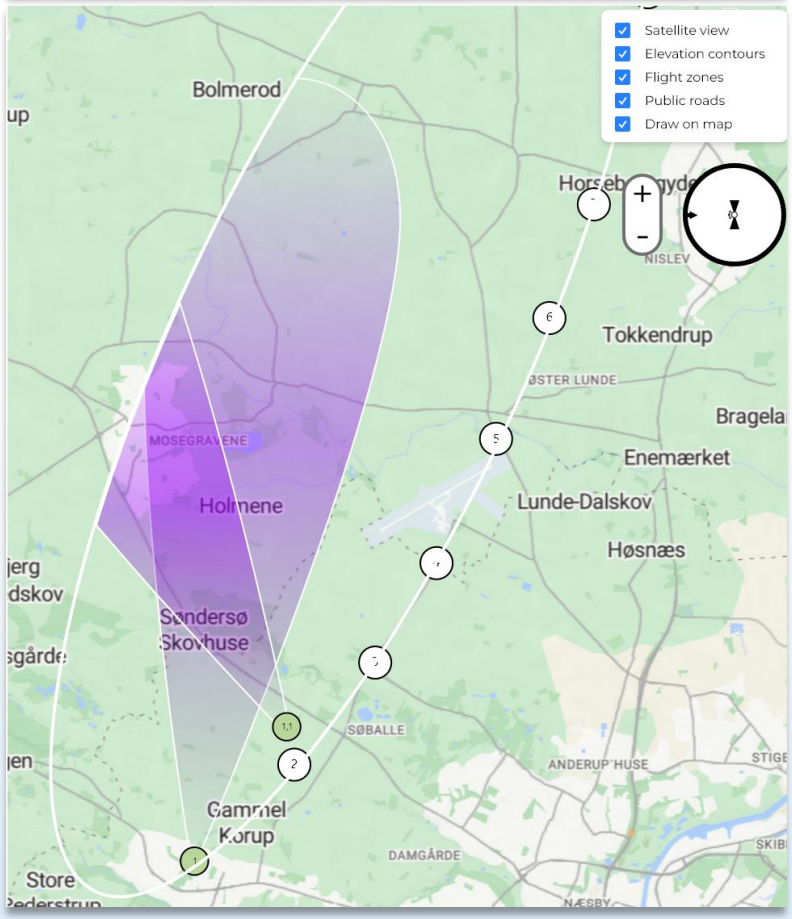
Frequency Bands of Interest

The integration will enable detection of signals from high-value targets (HVT) in the spectrum between 2-18 GHz. Examples of high-value targets in the electromagnetic spectrum are listed below (open source).

FREQUENCY RANGE	APPLICATION
2700 MHz to 2900 Mhz	Radar and Navigation Systems
2900 MHz to 3100 Mhz	Radar and Navigation Systems
3100 MHz to 3300 Mhz	Spaceborne Radars
3100 MHz to 3410 Mhz	Airborne Surveillance Radars
4200 MHz to 4400 Mhz	Airborne Radio Altimeters
5250 MHz to 5725 Mhz	Tactical, VTS, Weapon Control, Weather Radars
5725 MHz to 5850 Mhz	Weather Radars
8500 MHz to 10000 MHz	Precision Approach Radars, Air Defense Radars
8850 MHz to 9000 MHz	Maritime Navigation Radars, Shore-based Radars
9200 MHz to 9300 MHz	Maritime Navigation Radars, Shore-based Radars
9300 MHz to 9500 MHz	Airborne Weather and Military multifunction Radars
9500 MHz to 9800 MHz	Spaceborne Radars
10.0 GHz to 10.5 GHz	Civil and Military Radars
13.25 GHz to 14.0 GHz	Military Radars, Ship Berthing Radars
15.4 GHz to 15.7 GHz	Ground Movement Radars
15.7 GHz to 17.2 GHz	Military Radar Applications
17.2 GHz to 17.7 GHz	Missile Control Radars

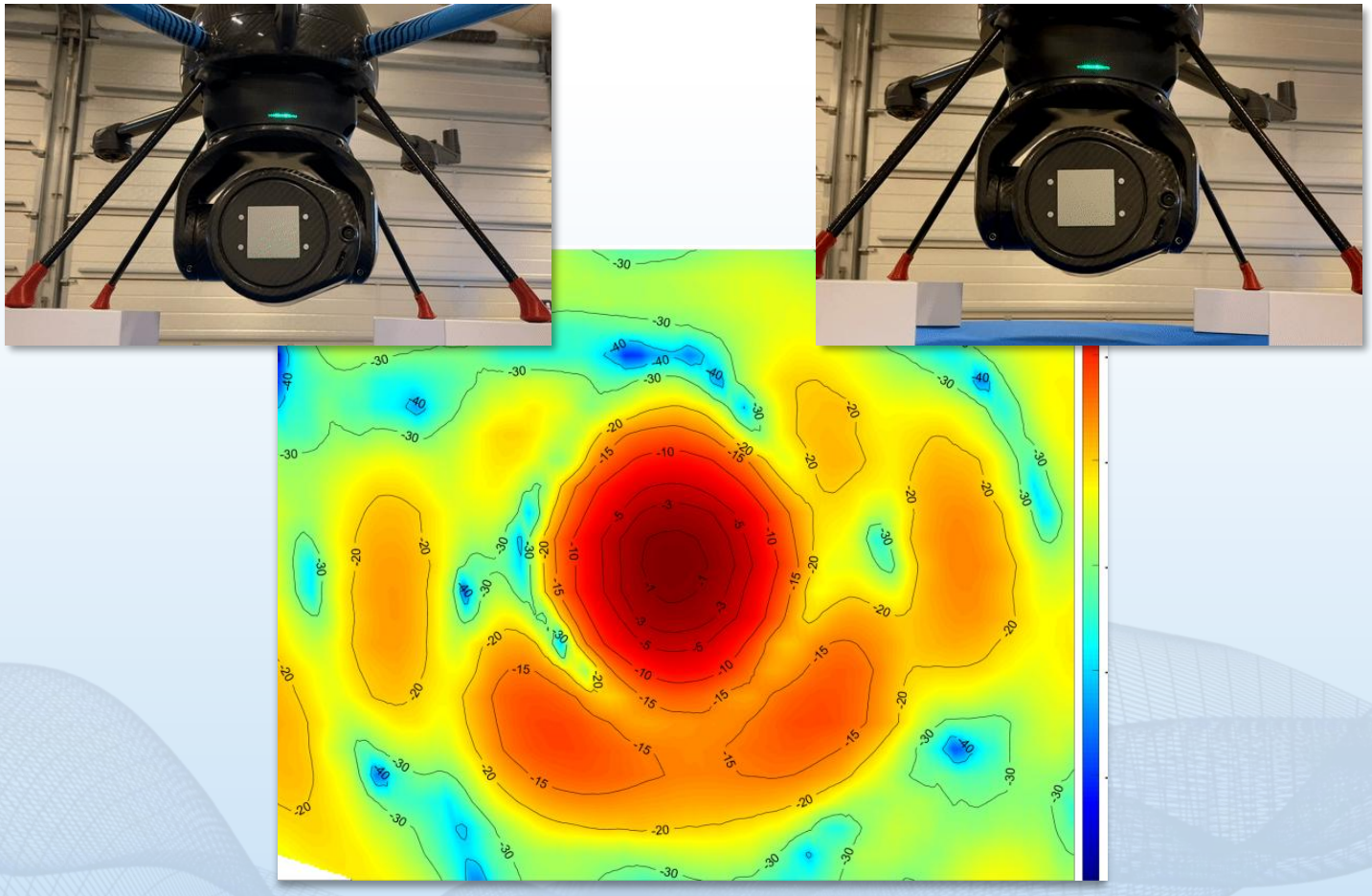


Investigation

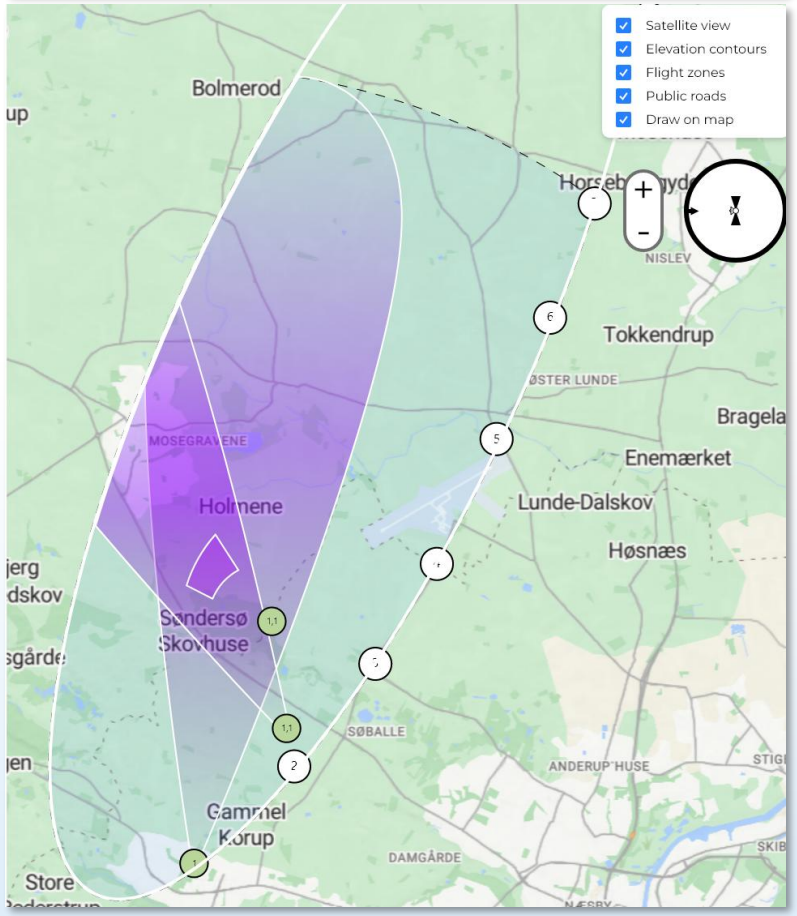


Detect Signals of Interest

Locate signals by utilizing the jaw, pitch and roll of the robot arm.



Geolocation



Track and Geolocate the target

Lock on to the signal of interest to track and triangulate of last mile geolocation.

SUMMARY GEOLOCATION – RF MONITORING

- Single platform Angle Of Arrival based geolocation.
- Scalable search area size.
- Signal detection capabilities up to 100 km.
- High Geolocation Accuracy (~100m)
- QS RF Locator enhances traditional geolocation workflows by providing efficient UAV-based last-mile geolocation – narrowing down broad interference