SkEyesBox

The SkEyesBox is a unique laser detection and ranging (LADAR) system that creates high-fidelity 3D representations of landscapes, cities, buildings, transmission lines, pipelines, etc. When mounted under the fuselage of an aircraft the SkEyesBox also flies the aircraft while mapping the terrain below. When mounted on a ground vehicle, usually attached to a hitch receiver, the SkEyesBox can map the vicinity of the vehicle's path, including any poles, trees, etc. A real-time processor on-board generates and can transmit maps on-the-fly without lengthy post-processing steps. The complete data set is also available on a Flash memory card after the mapping run.

The SkEyesBox is based on an open hardware and software platform where the sensors and processing algorithms can be configured to meet user needs. The default configuration incorporates a custom-built laser rangefinder that in conjunction with a state estimator localizes objects in the world with a scanning rate of 80,000 samples/s. The scene color and illumination are sensed by a wide-field-of-view camera. The resolution of the data is within 10 cm, depending on aircraft or vehicle speed. Range is on the order of 200 m. The default system incorporates a rotating mirror that scans the ground in a push-broom configuration. The state estimator is composed of an inertial measurement unit (Northrop Gruman LN-200 or Honeywell HG-1700, depending on desired accuracy) and two GPS receivers.

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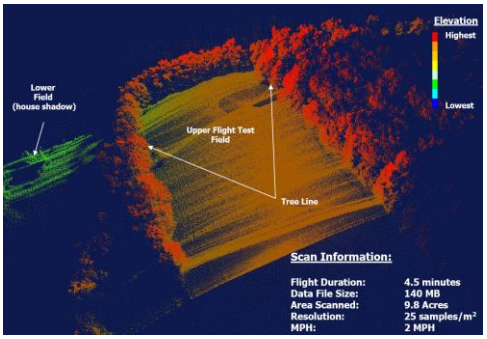
The SkEyesBox mapping system.

SkEyesBox onboard the RMAX.



Typical SkEyesBox 3D terrain map.

SkEyesBox Specifications	
Mapping Capabilities:	**Laser System:**
Range: 200 m	First/last pulse time of flight unit
Resolution: < 10 cm (dependent on vehicle speed)	Measurement rate: up to 80 KHz
Maps stored on compact Flash memory card	Wavelength (typical): 0.9 mm (near infrared)
Navigation System:	Eye safety class 1M for the unscanned laser beam.
High accuracy IMU (angular drift rate of 0.1 deg/h)	Eye safety class 1 achievable for the scanned beam
Two Novatel OEM4 GPS receivers	**Physical and Electrical Characteristics:**
Differential GPS transmitter at ground station	Weight: 24.5 pounds
	Power: 7 A @ 14 V (start-up), 5 A @ 14 V (steady state)

Sales of the SkEyesBox are subject to the rules of ITAR, the US International Traffic in Arms Regulation (22 CFR 120-130). Prospective buyers must certify that they will not export or reexport the SkEyesBox without explicit written authorization from the US Department of State.

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