

# RIEGL LMS-Q780



The *RIEGL* LMS-Q780 full waveform airborne laser scanner offers great versatility, accuracy, and data quality. The scanner enables you to successfully deliver your projects with industry leading efficiency.



colored point cloud

## The Versatile, High Altitude Airborne LIDAR Sensor

### Typical Applications

- High Altitude Wide Area Mapping
- Glacier & Snowfield Mapping
- Topography & Mining
- Flood Zone Mapping
- Corridor Mapping
- Large Scale National Mapping
- Mapping of Lakesides & River Banks
- Agriculture & Forestry



Scan this QR code with your smartphone to get further information about the *RIEGL* LMS-Q780.

[www.riegl.com](http://www.riegl.com)



RIEGL LMS GmbH, Austria

RIEGL USA Inc.

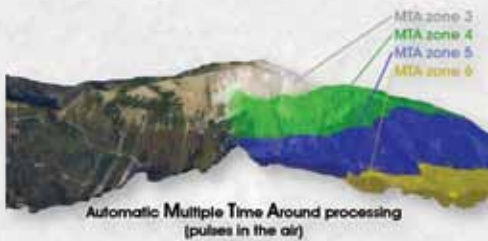
RIEGL Japan Ltd.

RIEGL China Ltd.

## Take off with the RIEGL LMS-Q780!

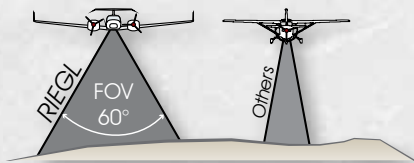
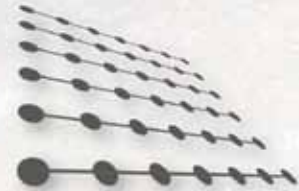
The **RIEGL LMS-Q780** is the versatile high altitude airborne LIDAR sensor for all projects: from corridor to wide-area, and large-scale national mapping. **RIEGL** delivers unrivaled efficiency at low operating costs.

### Highlights



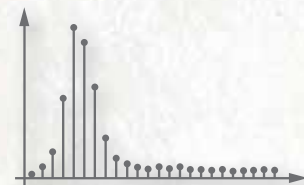
The *RIEGL LMS-Q780*, with up to 10 simultaneous pulses in the air, results in the most effective spacing on the ground. This eliminates the need of terrain following while retaining a high effective rate. Industry leading digital signal processing, combined with the comprehensive *RIEGL* software suite, delivers high-quality LIDAR data.

The *RIEGL LMS-Q780* delivers straight parallel scan lines and more equally spaced laser footprints on the ground. Even small objects can be detected by the high-resolution Matrix Scan Pattern.



The *RIEGL LMS-Q780*, operated at up to 15,500 feet above ground with its full Field of View of 60 degrees, provides both a wide effective swath width and a narrow point spacing simultaneously. This minimizes operating costs.

The *RIEGL LMS-Q780* digital full waveform sensor provides access to detailed target characteristics by digitizing the echo signal online during data acquisition and subsequent full waveform analysis.



The instrument is ideally suited for tightly coupled GNSS/IMU integration for acquiring position and orientation of the platform within a global coordinate system.

### Conclusions

- Great versatility, accuracy and data quality
- Up to 10 pulses in the air handled simultaneously, offering industry leading digital signal processing
- The *RIEGL LMS-Q780* delivers perfectly straight parallel and high resolution scan lines - described as Matrix Scan Pattern
- With a very wide effective swath width, the *RIEGL LMS-Q780* delivers unrivaled operating efficiency
- Applicable from high altitude wide area mapping to low flight altitude corridor mapping

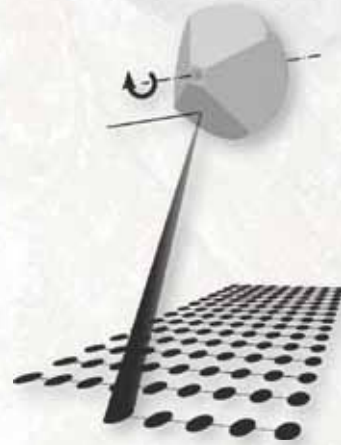
**The *RIEGL LMS-Q780* is your versatile airborne sensor solution!**

## Leading Technology in Airborne Scanning

- **Rotating Polygon Mirror** - resulting in straight, parallel scan lines on the ground
- **RiSOFTWARE** - complete data acquisition and processing software suite for airborne mapping
- **Reliability** - trust in the high quality of *RIEGL* products and software solutions

### Rotating Polygon Mirror

The clear advantage of polygon mirrors compared to other currently used techniques on the market is the continuous and smooth rotation of the mirror which leads to straight parallel scan lines on the ground. The achievable scan rates are high and allow flexible adjustment for obtaining an even distribution of points on the ground. Furthermore low vibrations and low stress on the deflecting mirror surfaces and the scan mechanism maintain constant and replicable measurement accuracy and reliability.



### RiSOFTWARE

#### RiACQUIRE

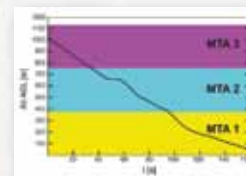
- Project-oriented scan data acquisition and scanner control
- Online visualization of geo-referenced monitoring data during acquisition
- Quality assurance with detailed history of events, system parameters and operator's interactions
- Status feedback for fast recognition by the operator
- 3D visualization
- Simplifies the acquisition process effectively

#### RiPROCESS

- Project-oriented scan data software for managing and processing *RIEGL* ALS and MLS data
- Operation in a multiple-workstation environment, parallel task processing
- Fast access to data for inspection in different visualization formats
- System calibration and scan data adjustment
- Statistical analysis of referencing, matching quality
- Interfacing to third party software packages
- Resulting in a very high quality geo-referenced point cloud

#### RiMTA – handling multiple pulses in the air, simultaneously!

- Automatic resolution of range ambiguity in time-of-flight ranging
- Unlimited number of MTA zones
- Smoothly integrated in the *RIEGL* data processing workflow
- No terrain following required



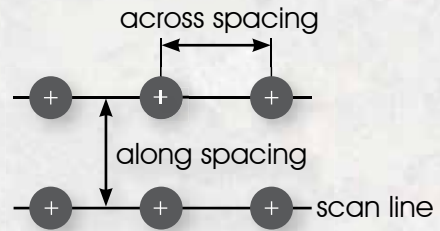
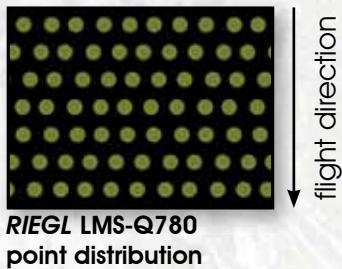
### Reliability

Our customers rely on the *RIEGL* LMS-Q780 to work smoothly in demanding environments. The overall system design and quality of manufacturing provides the legendary *RIEGL* reliability.

## Scan Performance - Maximum Operating Efficiency

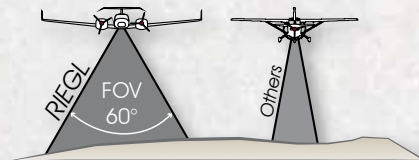
- **Matrix Scan Pattern** - stands for equally spaced laser footprints on the ground
- **Wide Effective Swath Width** - results in a very low number of necessary flight lines

### Matrix Scan Pattern



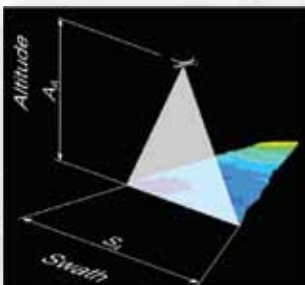
The *RIEGL LMS-Q780* scanner delivers straight parallel scan lines and an equally dense laser footprint pattern on the ground. Even small objects may be detected by the high resolution Matrix Scan Pattern. The parameters “across spacing” and “along spacing” refer to the point distance within a scan line and between the scan lines, respectively. The shorter the maximum distance between measurements on the ground, the better small objects are detected.

**Small distances result in high sampling quality, which is enabled by *RIEGL's* Matrix Scan Pattern.**

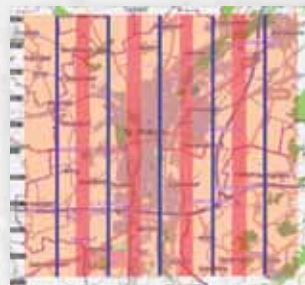


### Wide Effective Swath Width

The broad swath width of the *RIEGL LMS-Q780* results in a low number of necessary flight lines for surveying a designated area. It takes about twice the number of flight lines to survey the same area with other instruments on the market, because the user is forced to apply a quite narrow FOV and hence to fly for considerably longer time. A side effect of this is that with a smaller swath also the straightness of the lines is more critical in order to provide sufficient overlap which poses higher demands on the pilots or requires the use of stabilized platforms.



The *RIEGL LMS-Q780* offers a wide effective swath width from different altitudes.



The necessary flight lines for surveying a designated area are reduced to a minimum.



The acquisition time to cover a certain area of 10 km x 10 km with at least 4 measurements per square meter, will take with the *RIEGL LMS-Q780* only a shade more than one hour.

**The *RIEGL LMS-Q780* offers outstanding operating efficiency.**

## Colored Point Cloud Ötscher, Austria, 2012

### Acquisition Parameters:

Scanner: *RIEGL* LMS-Q780  
Data Recorder: DR680  
Field of View: 60°  
PRR: 400 kHz  
Scan Area: 57 km<sup>2</sup>  
Scan Points: 716 million  
Scan Time: 0:27 h

Average Point Density:  
13 points/m<sup>2</sup>

### Flight Parameter:

997 m - 2420 m AGL  
(3000 m above MSL)  
110 knots  
Flight Time: 0:45 h



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## Key Facts

- **Technical Data**
- **Main Features**
- **Complete Data Acquisition & Processing Software Suite**



## Technical Data



max. operating flight altitude AGL



pulse repetition rate PRR (peak)



waveform data output



full waveform analysis



multiple target capability



not intrinsically eye safe

<b>Eye Safety Class</b>	Laser Class 3B*
<b>Max. Range Target Reflectivity 60%</b>	5800 m
<b>Max. Range Target Reflectivity 20%</b>	4100 m
<b>Minimum Range</b>	50 m
<b>Accuracy</b>	20 mm
<b>Effective Measurement Rate</b>	up to 266 000 meas./sec
<b>Field of View (FOV)</b>	up to 60°
<b>Max. Operating Flight Altitude AGL</b>	4700 m / 15,500 ft

\*Class 3B Laser Product according to IEC60825-1:2007

## Main Features

- up to 266 000 measurements/sec on the ground
- operating flight altitude up to 15,500 ft AGL
- multiple time around processing: up to 10 pulses (MTA 10) simultaneously in the air
- full waveform analysis for unlimited number of target echoes
- high laser pulse repetition rate up to 400 kHz
- high ranging accuracy up to 20 mm
- wide scan field of view up to 60°
- suited for measuring snowy and icy terrain

## Complete Data Acquisition & Processing Software Suite

- RIACQUIRE
- RIANALYZE
- RIWORLD
- RIPROCESS
- RIMTA ALS



RIEGL LMS-Q780 Datasheet



RIEGL LMS-Q780 White Paper



RIACQUIRE ALS Software



RIPROCESS ALS Software



RIMTA ALS Software



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Visit our website to read the datasheets, white paper, and get further information, also about the broad RIEGL product line.

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