



# VisionMap A3 Digital Mapping System Tested by IFP

The University of Stuttgart's Institute for Photogrammetry (IFP) is a prominent and highly esteemed research establishment that has been researching the fields of photogrammetry and computer vision, photogrammetric image processing, and geoinformatics for almost 50 years.



IFP operate a photogrammetric test site, where they investigate the performance of various photogrammetric systems. The test site is located in Vaihingen/Enz, a hilly area near Stuttgart, Germany, providing several types of vegetation and land use. Based on comprehensive testing, the esteemed organization determines and publishes their findings on the tested systems. Today's major digital aerial camera systems have been tested by IFP.

## The Test

VisionMap's A3 Digital Mapping System faced the challenge of being tested by the IFP, and measuring up to the institute's stringent standards for quality. In this test, the A3 Camera was flown over the test field with the following parameters:

- Test area: 7.5 km (east-west) x 4.7 km (north-south)
- Average altitude: 1972 m
- Flight line direction: east-west, bi-directional
- GSD: 6 cm
- Number of flight lines: 8
- Average forward overlap: p = 52%

The test field contains up to 200 signalized control points with geodetic accuracy of 1-2 cm. VisionMap received the full accuracy of only ten ground control points (GCP). The remaining GCPs were received with 1m accuracy. VisionMap's main challenge was to process this flown block with only 10 GCPs, and to calculate the true coordinates of the remaining 190 GCPs.





## The Results

IFP tested two different flight configurations – 8 and 5 flight lines in the block, which correspond to 86% and 73% side overlap respectively. Additionally, the adjustment was carried out with 5 and 10 GCPs. The accuracy was estimated on 136 check points.

The following table presents the typical results:

Camera	Forward overlap (p%)	Side overlap (p%)	Strips	GCP	RMS East (m)	RMS North (m)	RMS Z (m)
A3 (Case 5b)	52%	86%	8	5	0.020	0.023	0.052
A3 (Case 6b)	52%	86%	8	10	0.015	0.018	0.030
A3 (Case 7b)	52%	73%	5	5	0.017	0.023	0.050
A3 (Case 8b)	52%	73%	5	10	0.016	0.017	0.035

The results clearly depict that the typical absolute accuracy of VisionMap’s A3 Camera is well under 1 pixel.

The complete report can be found on:  
[www.visionmap.com/files/IFP\\_Visionmap\\_A3\\_Report.pdf](http://www.visionmap.com/files/IFP_Visionmap_A3_Report.pdf)

## IFP’s Conclusion

The A3 Digital Mapping System received the IFPs stamp of approval, as they noted, “VisionMap’s A3 System obtained very satisfactory empirical accuracy results from this Vaihingen/Enz test.” IFP’s report concluded that A3 offers high accuracy, which along with the high flying altitudes and high image resolution yields very high productivity for photogrammetric image capturing and processing.

With regard to the A3 camera’s unique sweep methodology, IFP wrote that the concept of stepping frame cameras is completely controlled by the VisionMap workflow and offers high geometrical accuracy.



**VisionMap Ltd.** is a leading provider of digital automatic aerial survey and mapping systems. Its flagship A3 solution, comprised of a large format camera and automatic processing system, is known for its capability to capture and process areas 2-3 times larger than other available systems in significantly less time, while reducing operational costs.

The system supports extremely large scale projects and automatically produces Aerial Triangulations, DSM and Orthophoto mosaic as well as Stereo Models and Geo-referenced Oblique images. VisionMap systems are successfully deployed around the world.

For more information, visit [www.visionmap.com](http://www.visionmap.com)