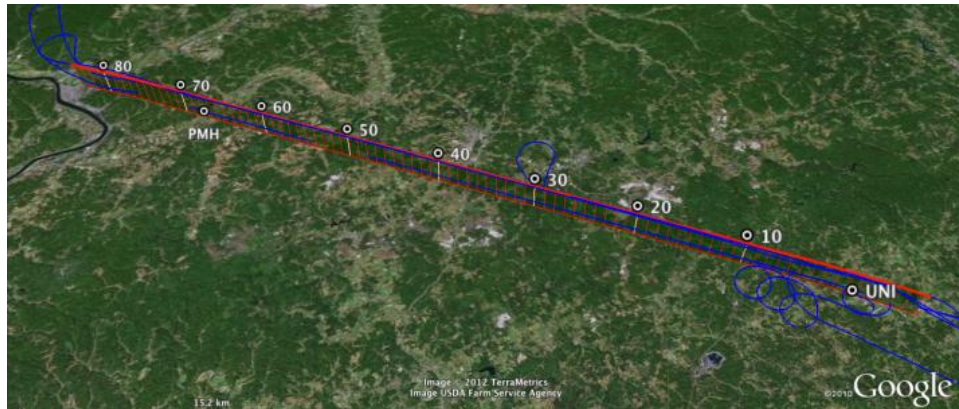


Enhanced DME Flight Test Performance

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Sponsor: Federal Aviation Administration



This project investigates the performance potential of enhanced Distance Measuring Equipment (eDME) by using current DME transponder equipment and RF data recordings of both the transmitted and received DME signals. Collected DME flight test data is analyzed for received DME signal level, noise level, and legacy half-amplitude ranging performance. The concept of carrier-phase DME is evaluated to enable ultra-accurate displacement measurements. The measured DME carrier phase tracking performance is compared with the theoretical carrier phase performance. Successive changes in DME carrier phase can be used to provide ultra-precise velocity, which enables significant performance improvements of collision avoidance applications and integrated DME-inertial systems.

Further Reading:

Li, K. and W. Pelgrim, Flight test Performance Assessment of eDME for APNT, Proceedings of ION International Technical Meeting 2012, Newport Beach, CA, January 2012.

Li, K. and W. Pelgrim, Optimal Time-of-Arrival Estimation for Enhanced DME, Proceedings of the 24th International Technical Meeting of The Satellite Division of the Institute of Navigation (ION GNSS 2011), Portland, OR, September 2011, pp. 3493-.