

LDACS Validation Activity in ENRI and Cooperation with DLR

Kazuyuki Morioka,^{1)†} Thomas Gräupl,²⁾ and Michael Schnell²⁾

¹⁾ *Electronic Navigation Research Institute (ENRI),
National Institute of Maritime, Port and Aviation Technology (MPAT), Japan*

²⁾ *Institute of Communications and Navigation,
German Aerospace Center (DLR), Germany*

[†] *email: morioka@mpat.go.jp*

The L-band Digital Aeronautical Communications System (LDACS) is currently being standardized at the International Civil Aviation Organization (ICAO) for the next-generation air-to-ground aeronautical communication system. The Electronic Navigation Research Institute (ENRI) in Japan is developing LDACS prototypes and contributing to the ICAO standardization. In this presentation, we introduce the validation activity in ENRI. Further, we have started cooperative work with the German Aerospace Center (DLR) in Germany on LDACS. This presentation also introduces our collaborative work, current status, and future plans.

Key Words: L-band Digital Aeronautical Communications System (LDACS), International Civil Aviation Organization (ICAO),

1. Introduction

The L-band Digital Aeronautical Communications System (LDACS) is currently being standardized at the International Civil Aviation Organization (ICAO) for the next-generation air-to-ground aeronautical communication system. The Electronic Navigation Research Institute (ENRI) in Japan is developing LDACS prototypes and contributing to the ICAO standardization. In this presentation, we introduce the LDACS validation activity in ENRI. Further, we have started cooperative work with the German Aerospace Center (DLR) in Germany on LDACS. This presentation also introduces our collaborative work, current status, and future plans.

2. Validation Activity in ENRI

Fig.1 shows LDACS prototypes developed by ENRI. The left one is the ground station (GS) and the right one the airborne station (AS). By using these prototypes, we are conducting validation activities [1]. In this presentation, we introduce our validation activity, current status, and future plans in detail.

3. Cooperation with DLR

DLR has played an important role for design, development, and standardization of LDACS [2][3]. In 2019, DLR successfully conducted the world's first LDACS flight campaign in the German national project MICONAV (Migration towards Integrated COM/NAV Avionics) [4].

DLR and ENRI has started collaborative work on LDACS since April 2022. In this presentation, we will introduce our collaborative work, current status, and future plans in detail.

4. Conclusion

In this presentation, we introduced the LDACS validation activity in ENRI and collaborative work with DLR.

Acknowledgments

The authors would like to thank DLR and ENRI colleagues for contribution to the collaborative work.

References

- 1) K. Morioka, S. Futatsumori, N. Yonemoto, J. Kitaori, Y. Sumiya, and A. Kohmura, "Rapid prototyping for a future aeronautical mobile communications system using software defined radio", The Proceedings of the 22nd Integrated Communications, Navigation, Surveillance Conference (ICNS), April 2022.
- 2) M. Schnell, U. Epple, D. Shutin, N. Schneckenburger, "LDACS: future aeronautical communications for air-traffic management," IEEE Communications Magazine, Vol. 52, No. 5, pp. 104-110, 2014.
- 3) T. Gräupl, C. Rihacek, B. Haindl, Q. Parrod, "LDACS A/G Specification," SESAR2020, Tech. Rep. PJ14-02-01 D3.3.030, Aug. 2019. [Online]. Available: <https://www.ldacs.com/>
- 4) M. Bellido-Manganell, et al., "LDACS Flight Trials: Demonstration and Performance Analysis of the Future Aeronautical Communications System," in IEEE Transactions on Aerospace and Electronic Systems, 2021, doi: 10.1109/TAES.2021.3111722.

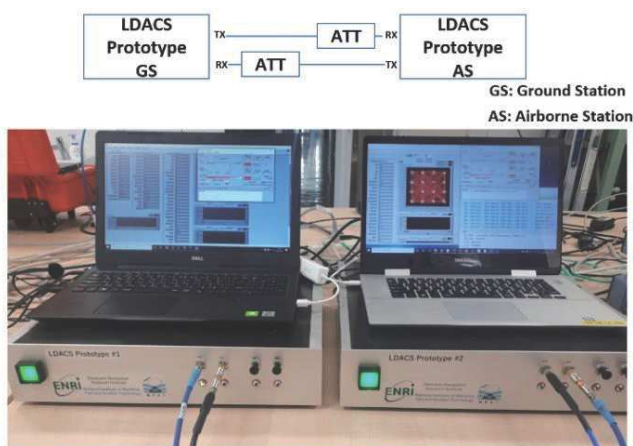


Fig. 1. The LDACS prototypes developed by ENRI.