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COMMUNICATIONS SUBSYSTEM DESIGN AND OPERATIONAL DIFFERENCES BETWEEN
AISTECHSAT-2 AND AISTECHSAT-3**Abstract**

Few months after the successful launch of AistechSat-2, Aistech Space launched AistechSat-3 which was envisioned as a natural evolution of its predecessor. Among the few operational differences, the TTC communications subsystem was a key upgrade intended to improve the in-orbit operational performance despite both satellites communicating in the same UHF amateur frequency.

The same radio transceiver is integrated in both satellites, however, while Aistechsat-2 allocates a cantered turnstile antenna design, made of four rigid monopole elements which allow a circular polarized emission, AistechSat-3 has a flexible monopole antenna, that emits lineal polarized signals. The communication in both cases is half duplex and the two satellites are operated from the same ground stations, which are prepared to receive lineal horizontally and vertically polarized signals.

After several months of successful in-orbit operation, this paper describes the trade-off decisions taken during the redesign, the differences of the two communication subsystems and their operational in-flight performances during several flight scenarios (i.e. various satellite attitude configurations). This paper shows a real case of a satellite system optimization that leads to an enhancement of the satellite TTC subsystem performance. Moreover, the optimization was achieved using the same hardware components that were available in the market when Aistechsat-2 was designed.