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14. ABSTRACT
Flight test results on a novel approach to Aeronautical Mobile Telemetry (AMT) employing 4G Long Term Evolution (LTE) Cellular Technology are presented. In this system, very high Doppler shifts due to the high speed of the Test Article (TA) and a custom frequency channel in C-Band are handled by an appliqué providing a front-end to a COTS LTE modem. The appliqué handles Doppler compensation via real time analysis of LTE signals and allows seamless operation of LTE signaling, including connection setup and handover events. The flight test results clearly demonstrate the capability of the system to sustain an uninterrupted LTE connection at varying aircraft speeds that produce Doppler shifts that are significantly higher than what typical commercial LTE systems can support. In the flight tests, the radio link delivered substantial bi-directional data rates up to a maximum range of 60km, while the combination of Doppler compensation and handovers at the TA provided an uninterrupted radio link in both directions. Overall, the flight test confirmed that an airborne COTS LTE transceiver in combination with a Doppler compensation appliqué can successfully operate at high aircraft speeds. This proof-of-concept flight test also forms a basis from which to further refine test-range AMT solutions based on 4G, and the newly available 5G technologies.

15. SUBJECT TERMS
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