Replacement of the Distance Measuring Equipment (DME)

Ground station transponder signals to test airborne receivers

Real-time simulation for approach and landing operations

RF signals according to ICAO standards

Hardware-in-the-loop architecture

Compatible with external dynamic flight model simulations (e.g. MATLAB®/Simulink®, C/C++, or Python)

Flight simulations up to 200 NM
DME Overview

The Distance Measuring Equipment (DME) is an airborne system to determine the slant distance of an aircraft (=DME interrogator) to a ground station (=DME transponder). For this purpose, shaped RF double pulses are transmitted by the aircraft to the ground station. After a defined delay (= reply delay), the ground station sends pulses back to the aircraft. The airborne receiver uses the round-trip time of the double pulses to determine the distance to the ground station.

Architecture

The TechSAT DME Test System receives the requested RF pulse-pair signals from the airborne UUT interrogator and creates time delays of the reply pulse-pairs dependent on the simulated slant distance to the ground station. The test system transmits a new pair of pulses at a frequency of 63 MHz above or below the interrogator’s frequency according to ICAO standards.

The TechSAT DME Test System is implemented as hardware-in-the-loop architecture and performs a real-time complex simulation of a DME ground station, including the associated squitter pulses and identification pulses. It also allows simulating the UUT environment and analyzing DME signals by using the ADS2 platform of the SIBs.

Technical Data

**RF Signal Generator**
- 19"-2U desktop case
- Frequency channels: X, Y
  - 962 MHz - 1213 MHz
- Squitter pulses
- COM/ID signals
- Power level: -85 dBm to +30 dBm
- Remote control via Ethernet

**Integration Bench**

The navigation system solution can be integrated in all TechSAT SIB products, which include:
- Real-time PC
- I/O interfaces:
  - Analog
  - Digital
  - ARINC 429
  - AFDX®/ARINC 664
  - CAN/ARINC 825
- Windows 10 or CentOS RT
- Avionics Development System (ADS2)

**Part Number**

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