VOR-TS
VHF Omnidirectional Radio Range Test System

- Replacement of the VHF Omnidirectional Radio Range ground station transponder signals to test airborne receivers
- Providing information of angle to VOR station dependent on the simulated aircraft position in real-time scenarios
- RF Signals according to ICAO standards
- Compatible with external dynamic flight model simulations (e.g. MATLAB/Simulink®, C/C++, Python)
- Flight simulations in the range of 0 NM to 25 NM or 130 NM
VOR Overview

The VOR ground system enables transmitting specific bearing information to determine the angular aircraft position in relation to the ground station. The crew can select any VOR frequency station within the operation distance and choose the course. This system is used for navigation and landing approaches.

Architecture

The VHF Omnidirectional Radio Range (VOR) operates continuously at carrier frequencies of 108 MHz to 118 MHz including the COM/ID code identification. The COM/ID uses up to four letters and is transmitted on a modulation of 1020 kHz. The 30 Hz reference (REF) signal is frequency modulated with a peak deviation of 480 Hz on a 9.96 kHz carrier. This frequency modulated subcarrier then undergoes amplitude modulation on the VOR carrier frequency. The variable (VOR) phase signal is amplitude modulated directly on the VOR carrier frequency. The angle information is determined by the phase shift of both 30 Hz signals. The displayed angle depends on the aircraft position to the VOR transmitter.

Technical Data

RF Signal Generator
- 19”-2U desktop case
- Frequency range: 108 MHz to 118 MHz
- Simulation of the angle aircraft position to VOR station
- COM/ID signals
- Power level: -80 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)

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