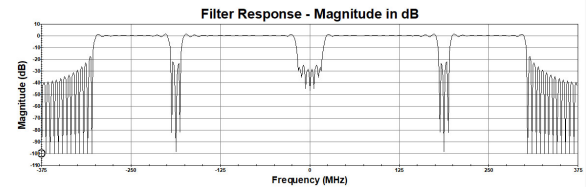
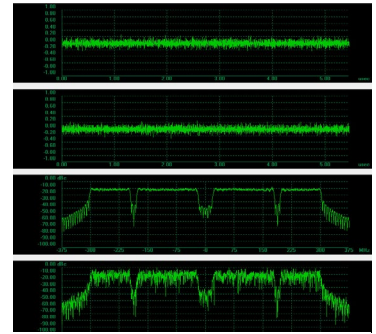


Advanced Channel Emulation for Satellite Communications

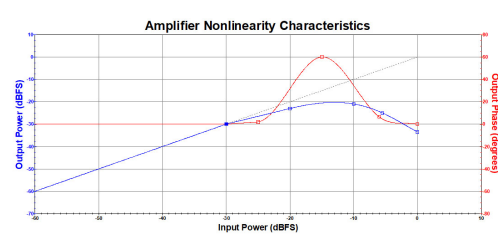
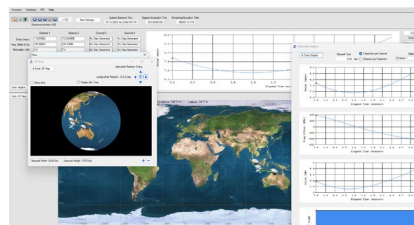
The demonstration from Maury Microwave will showcase the leading-edge capabilities of the ACE9600 Advanced Channel Emulator, a non-terrestrial RF channel emulation solution that simulates link and hardware-based impairments on a signal's path.

The ACE9600 will use additive white Gaussian noise (AWGN) from one of its channels as a signal source to demonstrate the hardware-in-the-loop (HIL) capability and how easily it is to program signal passband (IMUX/OMUX) and amplifier compression (AM/AM & AM/PM). The "spectrum capture" capability of the ACE9600 control software (ACE Client) will display the impaired signal.

In addition, an orbit profile using ground stations in Asia and a typical Starlink satellite will be modeled to generate dynamic orbital data files, which will be uploaded and executed on the ACE9600. While the ACE9600 is modeling the orbit impairment effects, the HIL impairments (payload) will also be enabled, showing a powerful emulation model.

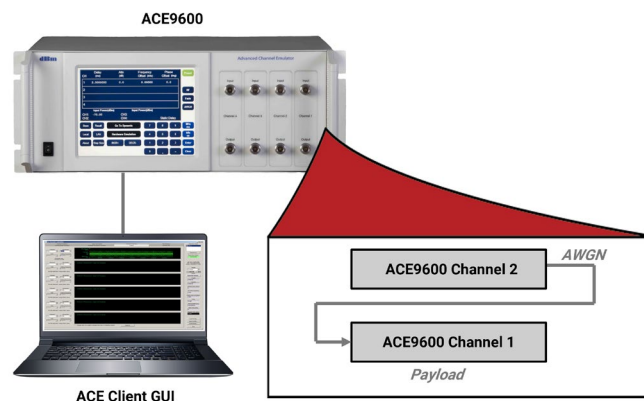


Passband setup, showing the magnitude vs. frequency passband characteristics, and captured system performance.



Amplifier compression analysis and orbital data using the SATGEN orbit modeling software.

Demo Setup



Target Users

Target users include design engineers and system integrators for satellite communications systems and non-terrestrial networks (NTN).

Product Overview

ACE9600 Advanced Channel Emulator

The ACE9600 Advanced Channel Emulator (ACE) of the dBm Channel Emulation product line is the most advanced non-terrestrial RF channel emulation solution to date. The emulated impairments include delay, signal Doppler, attenuation, phase offset, AWGN, frequency hopping, payload, and multipath fading. The instrument can house up to four 600 MHz instantaneous bandwidth channels. Impairment emulation can be set to fixed values in Static Mode, or continuously changed in real time in Dynamic Mode without any phase discontinuities.

KEY SPECIFICATIONS AND FEATURES:

- 600 MHz of instantaneous bandwidth per channel
- Timing synchronization up to 16 channels
- Link emulation including:
 - Phase continuous delay, Doppler, and attenuation changes
 - AWGN and Eb/No
 - 12 tap (path) multipath fading with Rayleigh, Rician, and CW. Angle of Arrival (AOA), k-factor, and correlation controls
 - RF frequency-agile up/down converters
- Payload emulation including:
 - IMUX/OMUX amplitude and group delay distortion
 - Amplifier compression (AM/AM and AM/PM)
 - Phase noise
- Static and dynamic link emulation
- Ephemeris data generation using SATGEN
- Remote instrument control through ACE Client application

ACE Client Application

The ACE Client is a comprehensive application that enables the remote control of all ACE9600 functions, graphically displays impairment file contents, and provides wizards for creating custom profiles for payload impairments. The ACE Client also enables signal capture, which generates both time and frequency domain plots of the excitation signal and the output signal after the application of impairments.

More Resources

Visit info.maurymw.com/mapcon-2024 to learn more about Maury Microwave solutions.

