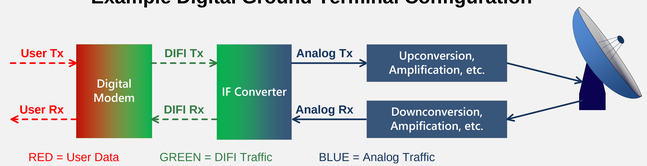
Testing Digital Ground Terminals and Their DIFI-Capable Components

Example Digital Ground Terminal Configuration



RED = User Data GREEN = DIFI Traffic BLUE = Analog Traffic

Testing a Digital Modem

Receive streams and analyze packets.

Generate & transmit new streams.

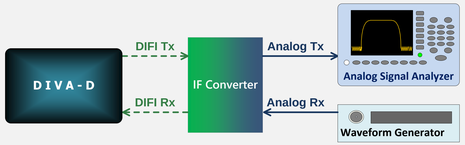
Apply channel effects on received streams and send back to modem.

Testing an IF Converter

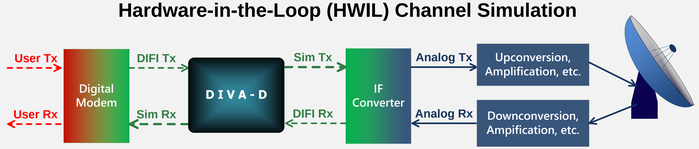
Receive stream, analyze packets.

Generate new streams.

Apply channel effects on received streams, send back to IFC.



Hardware-in-the-Loop (HWIL) Channel Simulation



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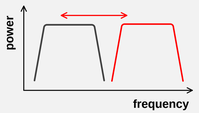
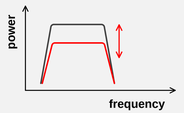
DIVA-D Channel Simulation Current & Future Features

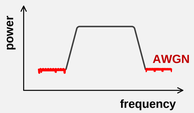
Time-varying Doppler Shift



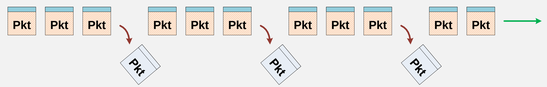
Time-varying Attenuation



Additive White Gaussian Noise

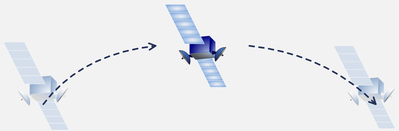


Network Impairment: N packets lost per T seconds



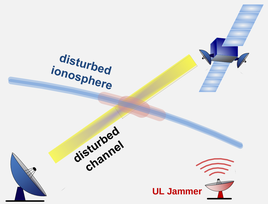
Future Sim: Scripted Doppler and Attenuation for Relative Satellite Motion

Use measured data or create your own motion scenario for the satellite and terminal.



Future Sim : Scintillation and Jamming Simulation

When strategic terminals employ DIFI, DIVA can emulate contested environments to certify Anti-Scintillation and Anti-Jam (AS/AJ) requirements.



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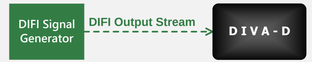
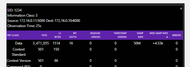
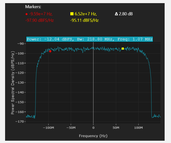
DIFI Certification with DIVA-D

Certifying DIFI Sources: Signal Generator, Digitizer-ADC





Check packet formats with Monitor feature.



View Power Spectrum and make measurements with markers.

Certifying DIFI Sinks: Recorder, Spectrum Analyzer, Digitizer-DAC

Configure stream parameters including:
- Stream ID
- Sample Rate
- Bit Depth

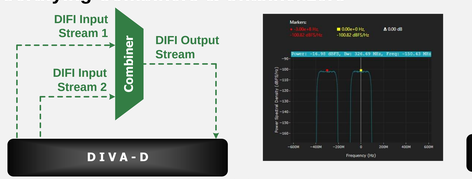
Configure desired waveform(s). DIVA can now generate one stream w/multiple waveoforms.

Certifying DIFI Modems

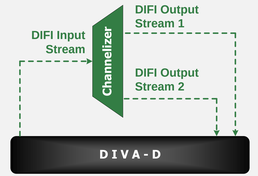
Modulator testing: use DIVA monitor feature to check packets, and analyze data with the power spectrum and/or constellation feature.

Demodulator testing: generate streams representing test waveforms; can also send back data received for loopback testing.

Certifying Combiners & Channelizers



Configure multiple streams and transmit them. Receive the combined stream and analyze the multiple carriers.



DIVA can create a single stream with multiple carriers. Receive the channelized streams and analyze each carrier.

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