Tektronix®

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REAL-TIME OPTIMIZATION FOR SIZE, WEIGHT AND POWER (SWAP)

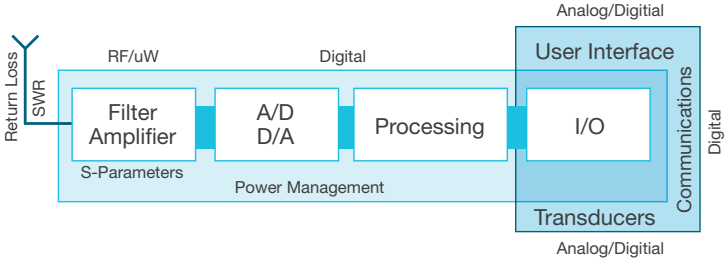
Complete analysis of power, analog, digital and RF sub-systems for radio designs – all in real time

Designs are becoming more integrated, driving to the next level of size, weight and power requirements. Optimizing the design for maximizing radio frequency (RF) and sensor performance is critical. You also need to minimize resource requirements such as supply voltage stability and current sinking under multiple operating conditions.

A typical system, or line replaceable unit (LRU), will consist of the following sub-systems:

- Power supply and management
- Sensor and processing
- Radio
- Amplification
- Antenna system

Using Tektronix/Keithley expertise in time domain analysis we can measure, monitor and drive to root cause the system's behavior during initialization.



Tektronix bench instruments allow testing of all key parameters shown.

INITIALIZATION

Does the system power up-correctly? A source measure unit, such as a 2400 Series SMU instrument, allows you to measure and control voltage and current. The 5/6 Series MSO Oscilloscope can monitor up to eight analog lines or 64 digital lines simultaneously. Together they provide an accurate assessment of the performance of the system's sensors, power supply lines and/or serial communications systems such as MIL-STD-1553, ARINC 429, Inter-Integrated Circuit (I^2C) protocol, and Serial Peripheral Interface (SPI).

How does the RF behave during power-up? Are there transient conditions created that can cause high RF output power, causing a large current draw and supply line drop? RSA300/RSA500 Spectrum Analyzers can measure and record the RF output through the power-up sequence.

SYSTEM OPTIMIZATION

The key to a well-optimized system is to transmit maximum power with minimal distortion and current draw. The TTR500 Series USB Vector Network Analyzer allows you to verify that maximum power is transferred to the antenna. Antenna matching and tuning will fine-tune the filters and verify connectors and cables. RSA300/RSA500 Spectrum Analyzers can measure output power and verify intermodulation performance, while the 2400 Series SMU provides power and insight into voltage and current draw.

STEADY-STATE OPERATION

During steady-state operation, do any transducers cause an overcurrent condition? How does this affect the RF output? How does this affect the power supply lines? Utilizing the 5 Series MSO 8-Channel Oscilloscope provides the ability to monitor multiple power supply lines and sensor inputs/outputs in real time. An added advantage of the oscilloscope is the ability to trigger RF measurements on RSA300/RSA500 Spectrum Analyzers based on analog or digital (serial and parallel) events.

POWER DOWN AND FAILURE CONDITIONS

How does the system perform during power down or a fault condition? Does it gracefully shut down? Do you lose key mission data? Can you recover to a known stable state? The 5/6 Series MSO Oscilloscope, the 2400 Series SMU and RSA300/RSA500 Spectrum Analyzers can give you the insight to verify power down and failure conditions in power, analog, digital and RF domains.

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Mixed–Signal Oscilloscopes

5 Series MSO up to 2 GHz; 6 Series MSO up to 8 GHz

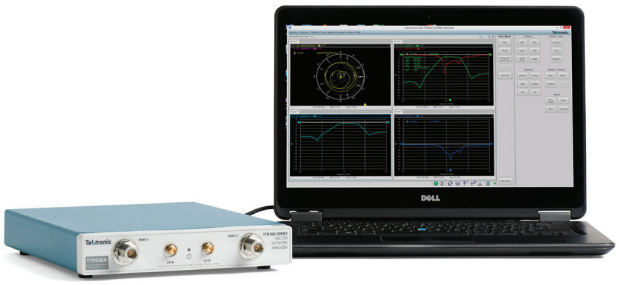
- 5 Series MSO - up to 8 Channels with 12-bit Resolution
- 6 Series MSO - 4 Channels with 12-bit Resolution
- Any Channel Can Be 1 Analog or 8 Digital Inputs
- Power Supply Analysis
- Digital Protocol Analysis

Keithley 2400 Series Source Measure Unit (SMU) Instruments

- Highly-Integrated Precision Power Supply, Multimeter, and Electronic Load
- Simplify Power Supply Design and Verification
- Validate Transducer Performance

Time–Selective Real–Time Spectrum Analyzers

- Optimize Output Power vs. Distortion
- Eliminate Transient Events with DPX® Real-Time Analysis Provided by SignalVu-PC
- Trigger Measurements from the 5/6 Series Mixed-Signal Oscilloscopes



TTR500 Series USB Vector Network Analyzer (VNA)

- Maximize Power Transfer
- Accurately Characterize RF Components in Real-World Test Conditions

UPGRADE AND PREPARE FOR THE NEXT GENERATION OF RADIOS

Talk to your Tektronix representative about upgrading your oscilloscopes, power supplies, spectrum and network analyzers to a Tektronix real–time system.

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