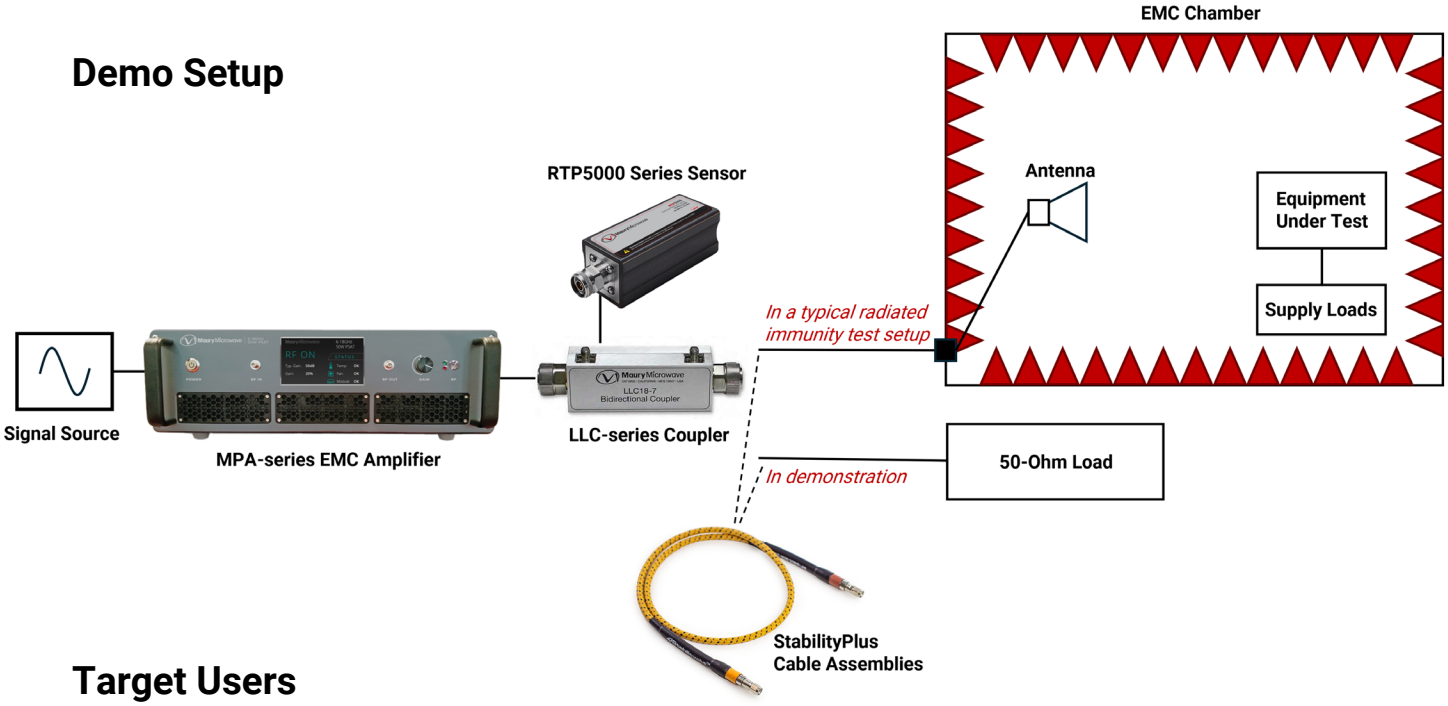
EMC Immunity Testing for Emerging Standards

Electromagnetic compatibility (EMC) immunity testing evaluates device performance under different levels of electromagnetic interference. Amplifiers are critical for generating power levels strong enough to drive antennas to required field strengths, facilitating appropriate testing of equipment within EMC chambers. To ensure test accuracy and compliance with emerging high-frequency standards (6 GHz to 40 GHz), amplifiers must meet wideband range requirements, maintain linearity for signal integrity, and handle modulated signals efficiently.

This demonstration highlights how Maury Microwave amplifiers, power sensors, and interconnects support precise and reliable EMC immunity testing. An MPA-series amplifier, specifically designed for EMC applications, amplifies a waveform from a signal source. With a frequency range from 600 MHz to 67 GHz, these state-of-the-art solid-state GaN power amplifiers provide the wideband ranges and linearity required for modern EMC testing.

The LLC-series low-loss, high power bidirectional airline coupler receives the amplified signal and directs a portion to a 50-ohm load for termination and to the RTP5000 Series Real-Time Peak Power Sensor for analysis. With industry-leading performance, the RTP5000 Series sensors measure, monitor, and verify power levels to maintain high-integrity testing. Additionally, StabilityPlus™ cable assemblies, which provide consistent phase and amplitude characteristics, are used to ensure highly accurate signal transmission in demanding, high-frequency EMC test environments.

Demo Setup



Target Users

Target users include design and test engineers who need to measure and validate device performance in electromagnetic environments to adhere to industry-specific EMC standards.

Product Overview

Test & Measurement Amplifiers for EMC Immunity Testing

The MP-series of T&M instrument amplifiers (600 MHz to 67 GHz) ensure EMC immunity testing meets industry standards, offering high reliability, outstanding wideband ranges, and linear performance. All units support full CW, pulsed, AM, PM, FM, or complex modulation such as OFDM. The user-friendly remote-control features, integrated couplers, and power detection enable close positioning to the radiating object for minimal cable insertion loss.

KEY SPECIFICATIONS AND FEATURES:

- State-of-the-art solid-state GaN PAs
- Broadband design for modulated signals
- Psat from 10W to KW
- Integrated protection circuitry and coupler
- Remote control; TTL and LVTTL options

RTP5000 Real-Time Peak Power Sensors to 40 GHz

The RTP5000 Real-Time Peak USB Power Sensors of the Boonton product line address challenges faced by engineers and technicians who design, verify, and maintain systems utilizing pulsed signals. The RTP5000 series incorporates Real-Time Power Processing™ and offers faster rise times; better time resolution; the fastest measurements (100,000 per second); and a complementary, simple, intuitive, and powerful graphical user interface.

KEY SPECIFICATIONS AND FEATURES:

- Accurate pulse measurements
- Industry widest video bandwidth of 195 MHz
- Fastest rise time of 3 ns and finest resolution of 100 ps
- Crest factor, PAPR, CCDF, and statistical measurements
- Synchronized multi-channel measurements

StabilityPlus Phase-Stable Cable Assemblies

StabilityPlus (SP-series) sets the standard for high-performance ruggedized microwave/RF cable assemblies. Designed specifically for phase-stable and amplitude-stable applications, the SP-series offer excellent measurement repeatability even after cable flexure.

Low-Loss, High-Power Bidirectional Airline Couplers

Combining precision machining with stellar electrical characteristics, the LLC-series of bidirectional airline couplers represent high-power coupler technology and offer unmatched performance with high directivity and low insertion loss for broadband performance.

More Resources

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