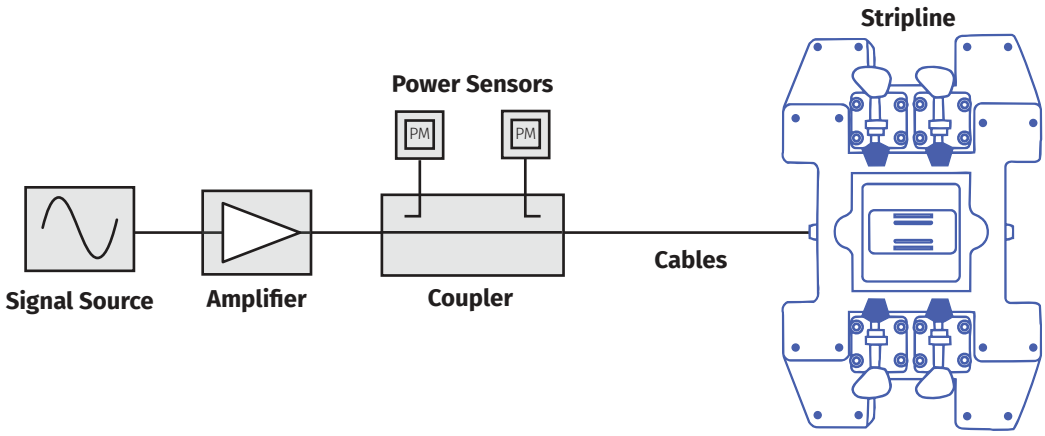
Maury Microwave Solutions for EMC Immunity Testing

Maury Microwave solutions support accurate and standards-compliant connectorized and over-the-air EMC immunity testing. High-power, solid-state amplifiers deliver linear output across wide frequency ranges, while phase-stable cables, low-loss couplers, and high video bandwidth real-time power sensors enable reliable signal transmission and power analysis.

EMC Test Configurations

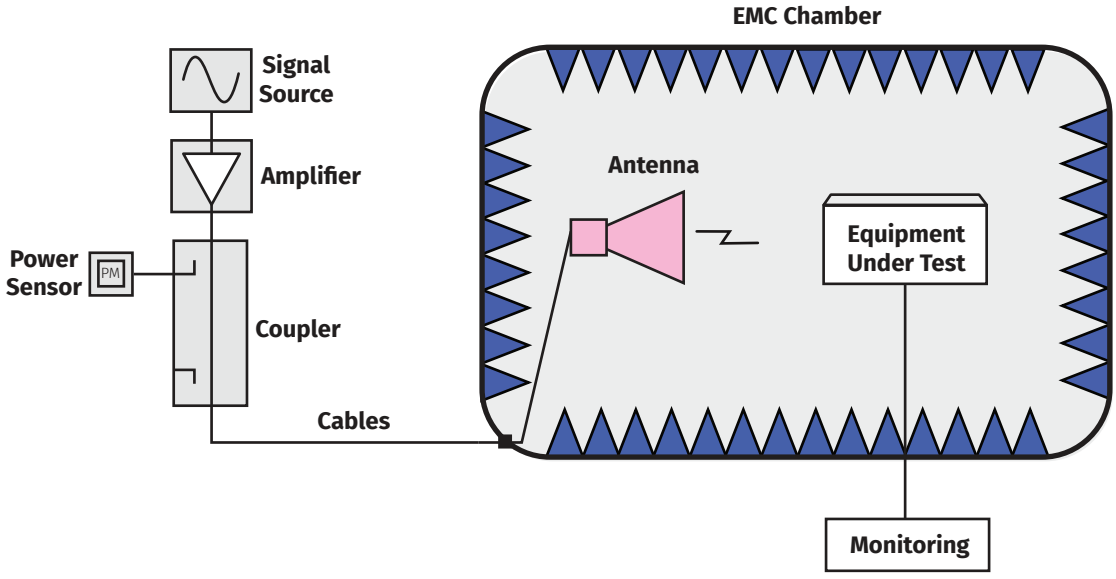
Connectorized (Stripline)

During stripline testing, RF energy is applied within a controlled fixture to expose smaller devices and subsystems to electromagnetic fields.



Over-the-Air (Chamber)

In radiated immunity testing, an antenna generates controlled electromagnetic fields within a shielded chamber to evaluate DUT performance.



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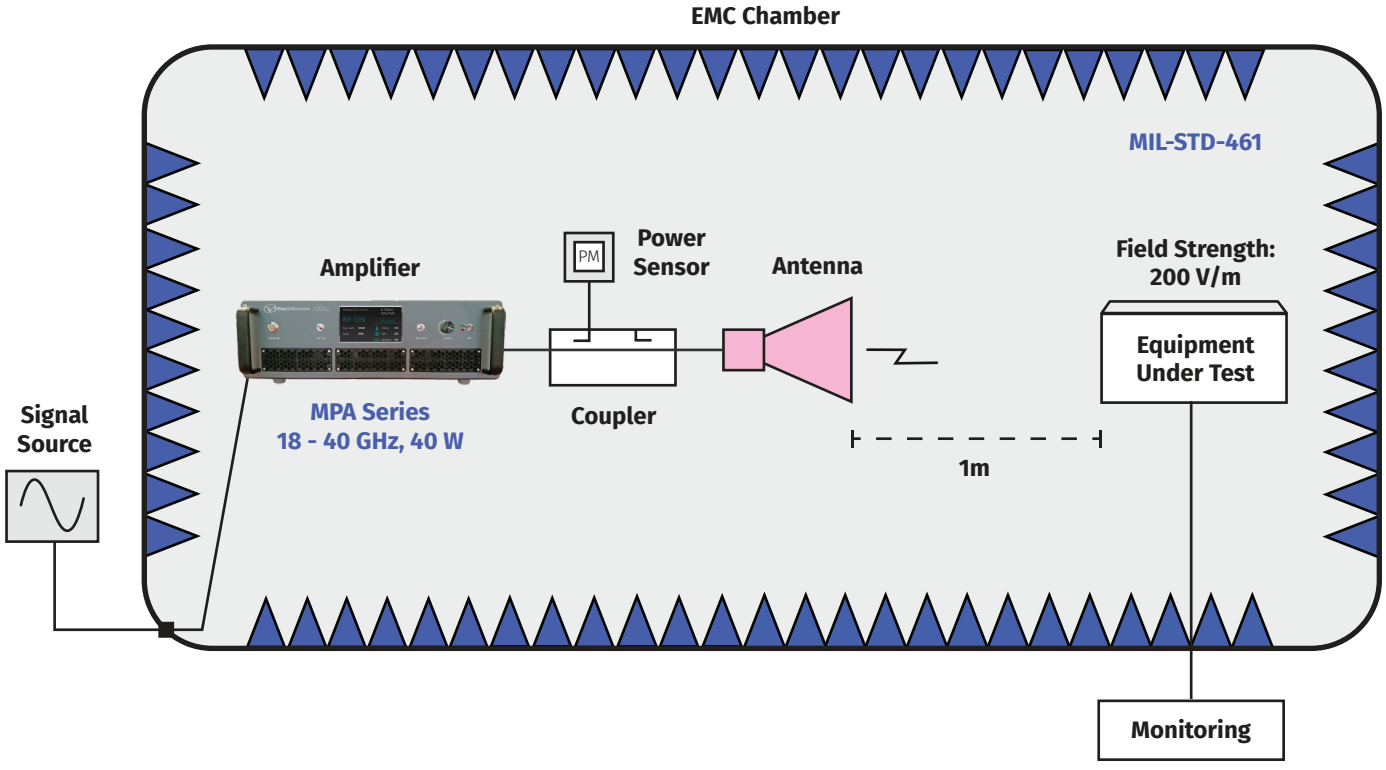
MIL-STD-461 Test Scenario: 200 V/m at 40 GHz

This test scenario illustrates an EMC immunity setup used for MIL-STD-461 radiated testing. To verify equipment performance in the presence of electromagnetic interference, the system must generate a field strength of 200 V/m at a distance of 1 meter at 40 GHz. Achieving these conditions presents several challenges, as higher frequencies experience increased losses throughout the RF signal chain, reducing the power available at the antenna. As a result, high-power broadband amplifiers become critical for generating the required field strength while minimizing system complexity.

Maury supports this requirement using the MPA Series solid-state GaN power amplifier with the following characteristics:

- **High Output Power:** 40 W
- **Broad Frequency Coverage:** 18–40 GHz
- **Single-Band Solution:** Continuous coverage across the full frequency range

The MPA Series provides the output power, frequency coverage, and high performance necessary to achieve the specified 200 V/m field strength at 40 GHz with confidence.



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Signal Amplification: MPA Series

Maury solid-state GaN power amplifiers are engineered for EMC testing, delivering the high output power needed to generate specified electromagnetic field strengths across test setups. Designed for continuous operation across broad frequency ranges, they offer high linearity, wide bandwidth, and efficient modulation handling. Their solid-state architecture enhances durability, reduces maintenance, and ensures stable, repeatable performance in demanding EMC environments.

- Based on state-of-the-art GaN PA modules
- Broadband frequency coverage up to 98 GHz
- High continuous power across the band
- High linearity for wideband testing
- Variable gain adjustment
- Integrated protection circuitry
- Low noise floor
- Remote control TCPIP/ RS485
- High-resolution display shows amplifier status
- Burn-in and ageing tested for long-term reliability
- Advanced electrical test using state-of-the-art measurement equipment

1-18 GHz, 20 W

6-18 GHz, 100 W

6-18 GHz, 250 W

0.6-6 GHz, 500 W

EMC Amplifier Standard Offerings

Maury standard amplifier offerings for EMC immunity testing provide flexible frequency and power coverage to meet the demands of EMC test environments.

**Semi-custom and fully custom amplifier solutions are available to meet specific frequency, power, and performance requirements.*

Frequency (GHz)	Maximum Psat (kW)
0.08 - 1	5
1 – 6	2
2 – 8	2
2 – 18	0.25
6 – 18	2
8 – 12	2
18 – 26.5	1
18 – 40	0.4
26.5 – 40	1
40 – 54	0.2

Maury Microwave Solutions for EMC Immunity Testing

Signal Routing: StabilityPower™ and StabilityPlus™

StabilityPower high-power, low-loss cable assemblies enable engineers to achieve required field strengths while reducing amplifier strain and extending system lifespan, while StabilityPlus phase-stable cable assemblies ensure accurate, repeatable signal transmission in high-frequency EMC test environments.

StabilityPower:

- High power handling
- Low insertion loss
- Robust construction supports long-duration testing

StabilityPlus:

- Amplitude and phase stability with flexure
- Durable, ruggedized, and crush-resistant
- Flexible for easy installation

Power Measurements: RTP5000 Series

Real-time peak power sensors to 40 GHz accurately measure and monitor RF power, enabling precise verification of CW and pulsed signals for high-confidence EMC testing.

- Frequency range up to 40 GHz
- 195 MHz video bandwidth with 3 ns rise time
- 100,000 measurements per second
- Real-Time Power Processing™ technology with zero measurement dead
- Crest factor, CCDF, and statistical measurements

Signal Sampling: LLC Series

Low-loss, high-power bidirectional couplers with high directivity provide accurate signal sampling and real-time power monitoring without disrupting the signal path.

- High power handling
- High directivity for improved accuracy
- Low insertion loss for maximum performance
- Broadband frequency coverage

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