

WaveCore™ TRM TEST SET

TEXTRON Systems



Comprehensive, high-speed testing for design verification and production

Demand for transmit/receive (TR) modules has increased dramatically with the widespread use of dense, multi-element phased array antennas for modern radar systems serving land, sea and air applications. With this comes the need for fast, accurate and repeatable TR module testing. AAI's WaveCore Transmit/Receive Module (TRM) Test Set performs the accurate measurements needed for engineering characterization along with the speed demanded by high-volume production environments.

FAST, ACCURATE AND REPEATABLE TR MODULE TESTING

The WaveCore TRM is based on a combination of next-generation commercial, off-the-shelf instrumentation and AAI's extensive test system software, hardware and systems integration experience. They incorporate the ease of use and flexibility required for engineering characterization applications, as well as the high throughput necessary for volume production.

Providing test throughput an order of magnitude better than previous generations, the series also offers an optional unique, triple-head fixture allowing users to test two TR modules while loading a third. This further reduces test time on the production line. The test sets incorporate several features for ease of use, including a graphical user interface for troubleshooting during design verification, as well as interfaces for thermal plates and chambers, interface test adapters or fixture relays, and other external devices.

In addition, the system is designed for convenient removal of confidential program data to enable testing of classified modules.

Included with the systems are automatic calibration and calibration verification software, which increase accuracy while reducing calibration cycles and enabling confidence checks. The systems' self-test software also can verify test station setup quickly and easily.

The WaveCore TRM Test Set includes TR module communication integration software for quick interface between the tester and new TR modules. Further, AAI provides customers complete source code, documentation and training on the systems' preprogrammed test library, enabling customers to modify or add new test routines for their own unique requirements.

The WaveCore TRM Test Set includes a 24-hour response time to keep systems up and running.

Additional features and benefits

The WaveCore TRM Test Set can perform a comprehensive array of TR module tests such as:

- S-parameters (pulsed and continuous wave)
- Attenuation and phase control error
- Noise figure
- Gain and compression
- Isolation and cross modulation
- Spectral measurements (harmonics, spurious and third-order intercept)
- Timing measurements (delay and recovery time)
- Pulse profiling (pulse width variation, rise and fall time, amplitude and phase droop/ripple, pulse-to-pulse amplitude and phase stability)
- Power supply measurements (average and peak)
- Module control (commands, address, status and calibration)

Ordering options:

- 9050A, 0.5-50 gigahertz (GHz) (low frequency to 0.1 GHz extension available)
- 9040A, 0.5-40 GHz (0.1 GHz extension available)
- 9026A, 0.5-26.5 GHz (0.1 GHz extension available)

Typical performance:

Frequency (GHz)	S21 Amp. Uncertainty Abs. (+/-dB)*	S21 Phase Uncertainty Abs. (+/-degrees)	S21 Amp. Uncertainty Rel. (+/-dB)	S21 Phase Uncertainty Rel. (+/-degrees)
0.1-3	0.1	0.5	0.01	0.05
3-18	0.15	1	0.02	0.10
18-26.5	0.2	1.5	0.02	0.15
26.5-40	0.2	2	0.02	0.20

*Assumes power range of -10 to -40 dBm

Typical test times:

Measurement	Test parameters	Test time
Pulsed attenuator/phase shifter measurements	All permutations of three frequencies, 32 phase states, 64 attenuator states (6,144 total measurements)	2 seconds (sec)
Pulsed S-parameters	1,001 frequency points	1 sec
Pulsed compression level	201 frequencies	1 sec
Noise figure (NF)	10 frequencies at 2 dB DUT NF	3 sec
Time delay measurements	256 delays: - Overlapped test execution - Non-overlapped execution	2 sec 6 sec
Time delay adjustments	8 delays	3 sec



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