

WAVECORE™ PTS SATELLITE TEST EQUIPMENT



WaveCore Satellite Panel Test Set (8040A)

ACCURATE, RELIABLE AND TRACEABLE TESTING

Testing is a major expense when manufacturing and introducing new satellite products. Repeatable, accurate and traceable test data is critical through multiple assembly stages and environments. Test results at the subassembly level must correlate with those at the next assembly level so problems can be identified quickly, and so costly additional calibration and testing can be prevented. Textron Systems' WaveCore Satellite Panel/Payload Test Set (WaveCore PTS) features advanced instrumentation and measurement capabilities to minimize test time and ensure repeatability and test-to-test data correlation.



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TEXTRON Systems

FAST, ACCURATE AND REPEATABLE TESTING WITH COTS INSTRUMENTATION

The WaveCore PTS is part of Textron Systems' WaveCore family of standard test systems. Based on the latest commercial, off-the-shelf (COTS) instrumentation, the WaveCore PTS is designed to provide the lowest level of measurement uncertainty with unprecedented reliability, maintainability and supportability. The systems can be deployed affordably for both production and engineering applications, providing industry-leading levels of data correlation with high system mean time between failures (MTBF) and low mean time to repair (MTTR).

TRACEABLE DATA

Textron Systems' software environment utilizes industry-standard test sequencers for consistent, easy-to-access results and calibration data.

REDUCED TEST TIME

The WaveCore PTS utilizes the latest commercial test equipment for test time reductions an order of magnitude or more over legacy testers.

STANDARD AND FAMILIAR INTERFACE

The WaveCore PTS features a standard test conductor interface that is compatible with previous-generation payload testers including the N1891A and 85121, allowing efficient and low-risk integration of Textron Systems' next-generation test systems.

TYPICAL PERFORMANCE

Measurement Type	Uncertainty(2 σ)
AM to PM	10 percent of measurement or 0.3 degrees per decibel (dB)
Absolute delay	± 5.0 nanoseconds (nsec)
Downlink power	Frequency less than 18 GHz, ± 0.25 dB Frequency greater than 18 GHz and less than 32 GHz, ± 0.3 dB
Uplink power	± 0.25 dB
Gain transfer	± 0.3 dB at 32 GHz
Group delay (relative)	1.2 nsec above 26 GHz
Noise figure – NPR	± 0.5 dB
Phase – less than 3 GHz	± 1.0 degree
– less than 21 GHz	± 2.0 degrees
– less than 32 GHz	± 3.0 degrees
Phase versus frequency	± 0.5 degree
Time delay	± 0.2 nsec

TYPICAL TEST TIMES

Measurement	Number of points	Time (seconds)
Amplitude isolation	5	1
AM to PM conversion	30	5
Delay versus frequency	100	10
Gain transfer	30	1
Gain versus frequency	100	1
Noise figure	2	1
Power and frequency	2	2

STANDARD HARDWARE CONFIGURATION

TSES	200050 High Speed Digital Controller	Interface controller
TSES	200200 Radio Frequency Interface Unit	RFIU
Agilent	N5244AS 43.5 GHz PNA-X Network Analyzer with options 200, 285, 010, 080, 083, 084, 086, H85	PNA-X
Agilent	N4692A ECal Module, 10 megahertz (MHz) to 40 GHz, 2.92 millimeter, two ports	ECal module
Agilent	E8267D 31.8 GHz PSG vector signal generator with options 532, 1EH, UNX, 016 (alternate option UNY)	PSG RF Vector Source
Agilent	N8241A 15-bit Arbitrary Waveform Generator with options 016 and 125	1.25GSa/s ARB
Agilent	N1914A Dual-Channel Power Meter	Power Meter
Agilent	E4413A-H33 – Continuous Wave Power Sensor, 50 MHz to 33 GHz, -70 to 20 dBm	Power Sensor
Agilent	N9030A PXA Signal Analyzer with options 526, LNP, B1X, N9068A, N9068A-2FP	PXA

FAST, REAL-TIME CALIBRATION CYCLES

Included with Textron Systems' WaveCore PTS is automatic calibration and calibration verification software, which ensures the achievement of uncertainty targets, reduces calibration cycles and enables easily correlated confidence checks in real time. The system's self-test software can verify test station setup and stability quickly and automatically.

MODULAR AND SCALABLE

The WaveCore PTS features modular, scalable hardware and software, which allow users to populate a subsystem tester, satellite panel or satellite payload tester with only the instruments needed for the test sequences. Users may add additional instrument resources as test requirements change.

Test source code, documentation and training are available, enabling customers to modify or add new tests for their own unique requirements.

Textron Systems also offers support plans to ensure 24-hour repair time and keep systems up and running within the available support budget.

ADDITIONAL FEATURES AND BENEFITS

The Textron Systems WaveCore PTS can perform a comprehensive array of panel and payload tests, including:

- Frequency response
- Gain transfer (compression, X-Y and back-off)
- Delay (group/absolute)
- Out-of-band attenuation
- Repeater isolation (channel isolation)
- Spurious (in/out-band and adjacent channel power ratio, or ACPR)
- Gain transition monitor
- Multi-carrier
- Spectrum measurements
- Translation frequency
- Noise figure/noise power ratio (NPR)
- Intermodulation (passive/channel)
- Effective isotropic radiated power, or EIRP
- Amplitude modulation/phase modulation (AM/PM) conversion (phase linearity)
- Automatic level control (ALC) characteristics
- Fixed mode gain step/deltas with telemetry, ALC mode gain step/deltas with telemetry
- Relative amplitude and phase
- Phase versus frequency
- Gain/phase transition monitor
- Radio frequency output power with or without modulation
- Ranging (phase delay, modulation index)

The standard 8040A system supports vector-based testing up to 40 gigahertz (GHz). Various equipment options are available to support testing at different frequency ranges and unique test requirements.

WARRANTY AND SUPPORT

Textron Systems' WaveCore testers include a standard one-year, return-to-factory warranty on all components. Optional extended warranties also are available. Textron Systems provides both standard and tailored support contracts upon request to address customer needs for 24/7 up time, application support, quick repair and maintenance. Systems can be customized to provide solutions to specific customer measurement requirements.

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