



Build an Efficient Test Environment for Radar Manufacturing and Maintenance

Challenges in Radar Manufacturing, Inspection, and Maintenance

In recent years, C/X-band radar systems used in weather monitoring, aviation, and defense applications have continued to evolve, delivering higher performance. These improvements have put manufacturers under increasing pressure to reduce inspection times while maintaining product quality during production testing and maintenance operations.

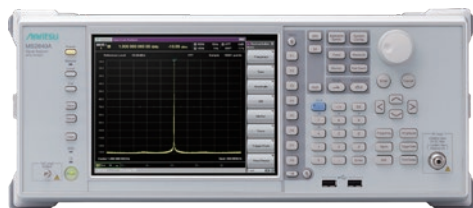
Typically, high-performance signal analyzers are required to support these test environments. However, deploying multiple units across manufacturing and maintenance sites can be prohibitively expensive. This has created a growing need for an alternative test environment that balances performance and cost.

Issue: Expand Test Capacity While Maintaining Inspection Quality

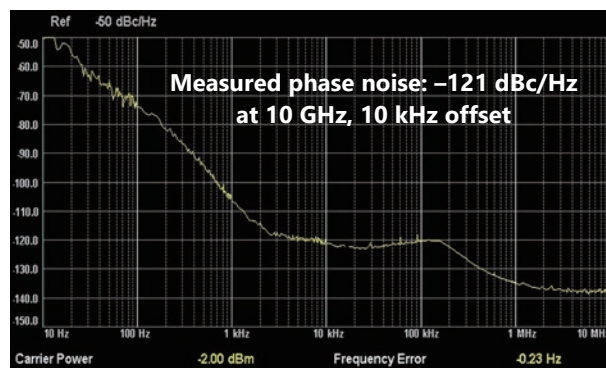
Solution

A Scalable Test Environment for Manufacturing and Maintenance Operations

The MS2840A combines high measurement performance with fast test execution, reducing inspection times while maintaining the quality required for production and maintenance testing.



Signal Analyzer MS2840A
(9 kHz to 6 GHz, 9 kHz to 26.5/44.5 GHz)



Excellent Core Performance: Phase Noise: ≤ -121 dBc/Hz (at 10 GHz, 10 kHz offset)

DANL^{*1}: ≤ -151 dBm/Hz (at 10 GHz, preamplifier off)

High-Speed Measurement: Up to 6× faster sweep speed in fast mode than in normal mode

Modulation Analysis: Built-in radar chirp signal analysis capability (Frequency vs. Time and Phase vs. Time displays)

^{*1} DANL: Displayed Average Noise Level

Deployable Test Environment for Manufacturing and Maintenance Operations

Customer: Radar System Manufacturer (Model: MS2840A Option-044)

■ Challenges:

As production of a new radar system increased, the customer evaluated signal analyzers for manufacturing inspections and maintenance operations.

The existing evaluation environment, based on a high-performance signal analyzer, offered excellent measurement capabilities, but deploying it across manufacturing and maintenance sites was cost-prohibitive. The customer therefore sought a test solution that could expand measurement capacity while maintaining inspection quality.

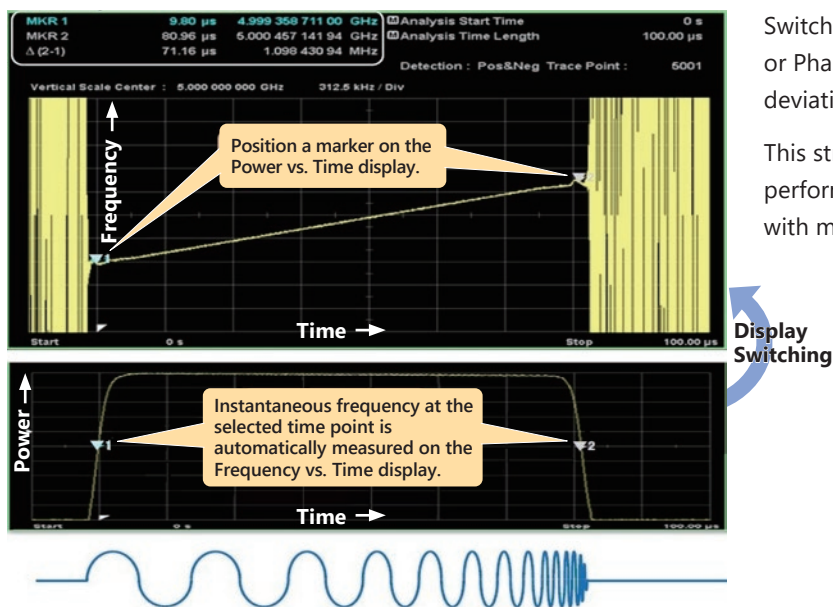


■ Solution:

Evaluations using the MS2840A verified the phase noise, DANL, and high-speed measurement performance required for radar testing in the C/X band (8 GHz to 12 GHz). Based on these results, the customer established a test environment suitable for manufacturing inspections and maintenance operations while maintaining the required measurement performance.

In addition, using the built-in chirp signal analysis function with external trigger support enabled radar chirp signal evaluation on a single instrument. This allowed the customer to expand test capacity and deploy the solution across manufacturing and maintenance sites without compromising inspection quality.

Radar Chirp Signal Analysis Example



Switch seamlessly from Power vs. Time to Frequency vs. Time or Phase vs. Time displays to visualize chirp signal frequency deviations and phase variations over time.

This streamlines chirp signal analysis required for radar performance verification, reducing the workload associated with manufacturing inspections and maintenance operations.

The contents of this document are subject to change without notice. The numerical results shown in each measurement screen example are not guaranteed values. Please refer to the catalog and data sheet for the standard values.