



# ENSURING TEST INTERFACE INTERCONNECT RELIABILITY FOR FLEXIBLE HV TEST SYSTEMS

*A major global manufacturer of military communications systems and electronics approached MK Test Systems with a challenging request for a modular, repeatable test solution suitable for several manufacturing sites.*

## THE CHALLENGE

The customer required a modular test system capable of testing a variety of different sub-assemblies with minimal disruption to production rate or manufacturing process.

They needed to deploy identical systems to 3 unique sites testing any one of 9 ELMS (Electrical Load Management System) sub-assemblies.

Each site had the ability to manufacture any one of the assemblies and, due to the modular nature of the end-product, needed the ability to change the mix of items being manufactured and tested at short notice.

The previous approach would have been to provide 9 test stations to each of the 3 locations. This wasn't suitable for several reasons including cost, time to build and floor space limitations.

A better proposal was therefore required, and **MK Test Systems** turned to **MAC Panel** to help create the best solution.

**CUSTOMER:** A global contractor of military communications systems and electronics. The end customer was a major US-based aerospace and defence manufacturer.

**REGION:** EMEA

**SOLUTION:** 3 x MK Test Multibus M2000 systems with MAC Panel Scout Mass Interconnect connector

**APPLICATION:** A flexible test system offering repeatable multi-site testing of a variety of military sub-assemblies.

**OUTCOME:** A modular, scalable solution allowed a core test station strategy to be used in conjunction with individual customization.

**BENEFITS:** Seamless integration to production line, reduced time to test, increased flexibility, repeatable testing.



## CUSTOMER REQUIREMENTS

3 clone test systems



Deployed to 3 facilities



Performance, modularity  
& fast build time



- ✓ Build multiple ATE systems using a “copy-exact” methodology, with each system maintaining the same high performance specifications.
- ✓ Standardised on a 19” subrack system coupled with an interconnection system that leveraged modularity, scalability and flexibility.

### Wiring tests:

- ✓ Continuity resistance down to 1mΩ
- ✓ Low voltage isolation / shorts test
- ✓ High voltage 1500VDC insulation test
- ✓ Insulation resistance up to 1GΩ
- ✓ High voltage dielectric HiPot up to 1500VAC
- ✓ Capacitance measurement from 0pF to 5uF

### Function test resource supplies:

- ✓ 0-2000VDC at up to 1A
- ✓ 0-50VDC at up to 30A
- ✓ 0-1500VAC at up to 20mA
- ✓ 0-270VAC 1000W
- ✓ Split across various stimulus switch points

## THE SOLUTION

The end user already had existing working relationships with both MK Test Systems and MAC Panel, so had identified them both as preferred suppliers for this project.

MK knew that sourcing interfacing which could eliminate error-prone custom cabling and ensure signal integrity was vital. As the recommended experts in high performance mechanical test interface technologies for ATE, MAC Panel were an ideal partner for this project.

An additional task for MAC Panel was ensuring that customer instruments could also be utilized in a particular chassis slot with only minimal disruption to the connectivity for the product being tested. This was achieved with particular care taken to ensure that signal mapping for different instruments of a particular style was consistent.



*“Harmonising the skills and experience of MK Test Systems and MAC Panel resulted in a truly high performance, future proof test system.”*

Gary Clayton, Sales Director EU, MAC Panel Company

### SCOUT Mass Interconnect

Each site needed to be able to change between testing different sub-assemblies on a regular basis, and it was envisaged that future product enhancements would require rapid system upgrades using additional instrumentation.

Only SCOUT could offer this built-in flexibility and modularity.

### High Performance Connection Modules (DAKs)

MAC Panel's DAK technology eliminated the need for traditional cabling between the instrumentation and interface by way of dedicated PCB and flex circuit connections.

*“MAC Panel’s SCOUT interconnect system enabled us to reduce build time and achieve the modularity, scalability and flexibility required by the customer.”*

Alan Wilson, Engineering Director, MK Test Systems



## RESULT

The architecture of the test systems – a 19” subrack system with modular slot-in boards, combined with MAC Panel’s SCOUT mechanical interconnect – enabled MK Test to deploy the 3 test systems with confidence.

Each high performing test station delivered repeatable measurement results no matter which system was in use.

The test system architecture enabled seamless integration, reduced test hookup time and increased test system flexibility.

The modularity and scalability of this approach allowed a core test station strategy to be used in conjunction with individual customisation.

Since implementation, the success of the new adaptable core tester strategy has been adopted on additional projects with even greater cost and time savings.

*3 systems deployed with confidence*



*Each with repeatable performance*



*Reduced time to test*



*Flexible & scalable*



## ABOUT MK TEST SYSTEMS

MK Test Systems have been a leading manufacturer and supplier of automatic harness testing systems since 1992.

We have successfully delivered and implemented over 3000 electrical test systems into 34 countries and have built an enviable reputation for excellence in Automatic Test Equipment (ATE) solutions and the way in which we support our customers.

## ABOUT MAC PANEL COMPANY

MAC Panel Company has been a leader in providing high performance, reliable, and customer specific connectivity solutions in the field of electronic test and measurement for over 60 years.

Our SCOUT line of mass interconnect products help our customers reach the full potential of their PXI and PXIe based test systems.



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