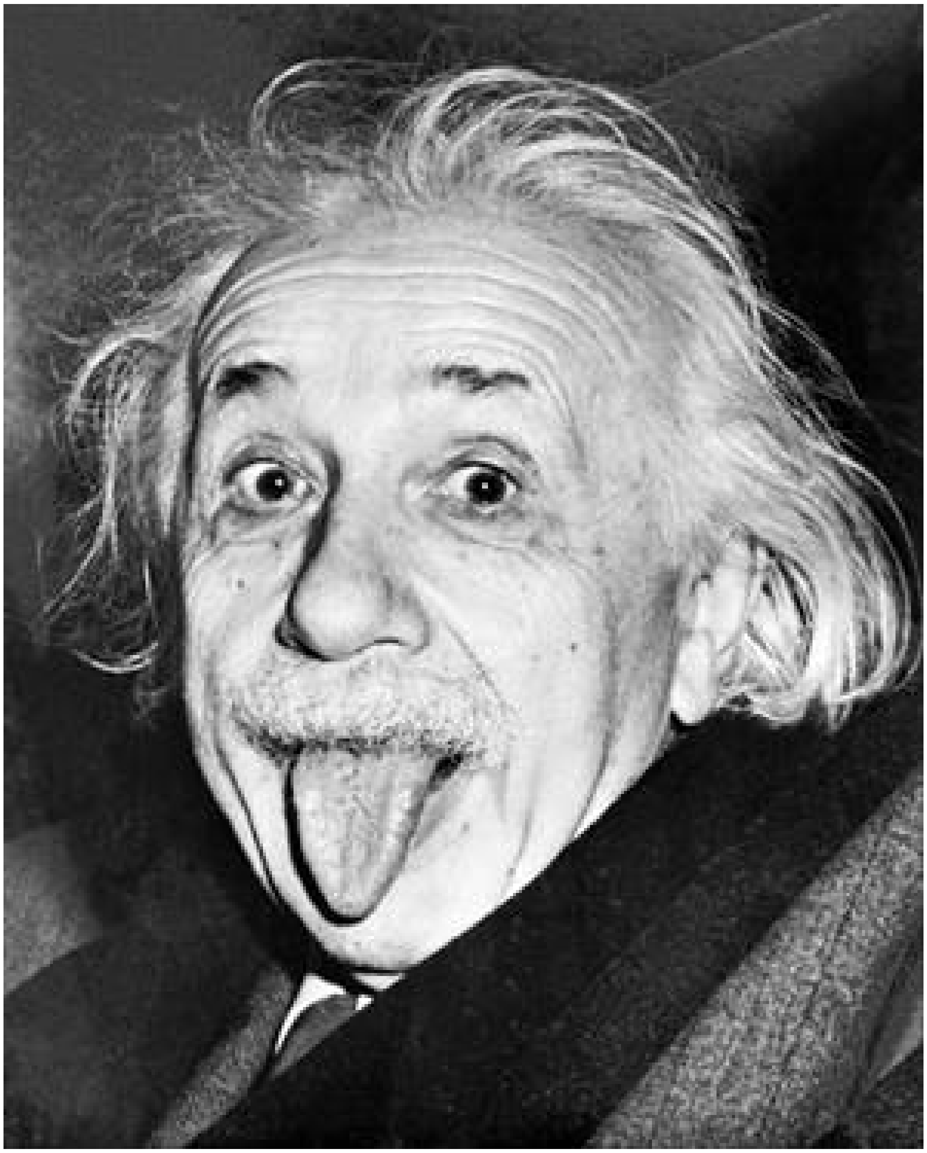
It Doesn't Take a Genius To Figure This Out!



Conventional Automatic Test Equipment (ATE) and scanning continuity testers are effective at troubling shooting hard failures, but are severely limited when applied to testing for intermittent problems. The intermittent failing event rarely synchronizes with the scanning measurement window during test time. This testing blind spot is a leading contributor to the extensive No Fault Found (NFF) problem in avionics.

The Intermittent Fault Detection & Isolation System (IFDIS™) circuit analyzers are specifically designed to overcome these testing limitations. The neural-analog IFDIS tests all lines individually, all the time, in a simultaneous and continuous manner. The result is that intermittent events are not missed. The sensitive analog technology detects low amplitude, high speed (nano-second) impedance changes. The neural architecture of the IFDIS™ monitors all of the potential failure points at the same time and in parallel, the number of circuits or channels that can be tested simultaneously is virtually unlimited.

Winner of the 2010 Department of Defense Maintenance Symposium "Great Ideas" Competition, IFDIS™ has provided over 18 times return on investment (ROI) to the U.S. Air Force and nearly tripled MTBF in two years (and climbing) on IFDIS tested avionics.

Solve your intermittent / NFF issues today – contact Universal Synaptics Corp. at (801) 731-8508 or visit us at
www.USynaptics.com - www.NoFaultFound.com

Universal Synaptics

Universal Synaptics' Law of Intermittent Fault Detection Effectiveness:

$E=SC^2$

E is the **Effectiveness** or advantage that our **IFD™** / **IFDIS™** / **Ncompass™** Intermittent Fault Detection technologies provide for detecting the most evasive of intermittent malfunctions (those causing No Fault Found **NFF**) in any Unit Under Test (UUT) versus any other type of single-point-in-time or scanning test technology (measured in a **ratio:1**).

S is the native **single circuit** intermittence detection speed **advantage** that the IFD has over the native single circuit intermittence detection speed of any comparable testing technology. For the IFD / IFDIS / Ncompass, use 50ns, 50 nanoseconds, (0.00000005 seconds). Simply stated, what is the ratio of the shortest glitch detectable by any two pieces of test equipment when testing just a single circuit under test?

Example: 100us divided by 50ns = **2000:1** or 17ms divided by 50ns = **340,000:1** or 100ms divided by 50ns = **2,000,000:1**

C^2 is the number of Circuits in the UUT device that require testing for intermittence and this value is squared.

Note: The reason the number of circuits under test (C) is squared in this formula is; while every other single-point in time or scanning-type tester is measuring just one circuit at a time, the IFD is simultaneously testing all of the other circuits at that same time, individually, for the same duration. As the conventional scanning continuity tester then moves on to test the next circuit, the IFD continues to test all the connected circuits in parallel at the same time, for the same period.

*Intermittence by its very definition occurs randomly in time, place, amplitude and duration. Therefore, the detection of NFF intermittence is a condition of **detection probabilities** and the ability to detect it is measured in **test coverage**.*

The following chart demonstrates the squaring effect of simultaneous and continuous testing using just a simple 9-pin cable. Conventional scanning test equipment, while physically connected to all of the cable's circuits, still only measures one individual circuit or wire at a time. While this technology might measure test point 1 for one second, the IFD all-lines, all-the-time test technology, simultaneously and continuously tests all nine of the circuits individually for that same one second, providing nine total seconds of **intermittence test coverage**. When conventional equipment then moves on (scans) to measure test point 2, also for one second, the IFD again tests all nine circuits for another second each, giving you nine more seconds of **intermittence test coverage**. Conventional equipment then moves on to test point 3 for another second, and once again, the IFD again tests all nine circuits for that same one second. When conventional testers finally complete their testing of each of the nine circuits for just the one second each (nine seconds total), the **IFD** has simultaneously tested all nine circuits for nine seconds each, (9 x 9) for 81 total seconds **test coverage**.

Test Points	Duration	Conventional Test Coverage	IFD™ Test Coverage
1	1s	1 Second	9 Seconds
2	1s	1 Second	9 Seconds
3 thru 8	1s	6 Seconds	54 Seconds
9	1s	1 Second	9 Seconds
Total Coverage	**9s**	**9 Seconds**	**81 Seconds**

So what does this test-coverage advantage buy you in the real world? Assume a scanning-type continuity tester with a scan rate of 3500 test points per minute. This calculates to an approximate single circuit test rate of 17ms per circuit in that one minute. Compared to the IFD 50ns single circuit detection speed, the intermittence detection advantage is already 340,000:1. Throw this into the $E=SC^2$ Effectiveness formula and you'll see why IFDIS is the only rational choice!

Device (UUT)	#of Circuits	$E=SC^2$	IFD Advantage
100 Pin Cable	100	E = 340,000 x 100 x 100	3,400,000,000 **:** 1
F-16 MLPRF Radar LRU	1,000	E = 340,000 x 1000 x 1000	340,000,000,000 **:** 1
F/A-18 Radar Receiver WRA	3,000	E = 340,000 x 3000 x 3000	3,060,000,000,000 **:** 1
F-16 PSP Radar LRU	9,000	E = 340,000 x 9000 x 9000	27,540,000,000,000 **:** 1

Unleash the Power of $E=SC^2$ to solve your intermittent / NFF issues today!

Universal Synaptics