



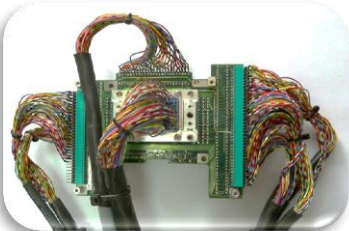
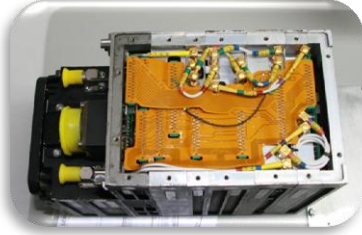

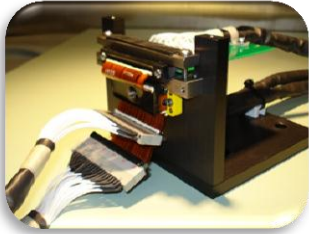




Project	Description	Technical/Financial Benefits
<p>Avionics System Data Analysis & EWIS¹ Testing</p> 	<p>This ongoing project covers availability data analysis of a mission critical avionics system, to identify system availability issues, trends and opportunities; and corresponding integrity testing of the system's EWIS</p>	<ul style="list-style-type: none"> • NFF rate is now known for this system • Data analysis identified a potential serviceability problem which was then detected by integrity testing using the Ncompass™ • Ncompass™ testing of RF coax cables and other specific connector types has identified maintenance issues with their designs that cause intermittent faults – now under investigation by the DA
<p>Undercarriage EWIS Testing</p> 	<p>The RAF Tornado fleet suffers regular Nose-Wheel Steering (NWS) faults This project created the ability to test the integrity of the system's EWIS</p>	<ul style="list-style-type: none"> • The project successfully identified the contribution of the NWS EWIS to NWS faults, for which repairs were mainly attempted by LRU replacements • This project successfully created a solution to fully test the integrity and continuity of the NWS EWIS on the aircraft in under 30 minutes
<p>Secondary Power System EWIS Testing</p> 	<p>This aircraft had suffered numerous NFF for uncommanded cross-drive clutch engagements in flight for over 5 years This project directly enabled the detection of the root cause within days</p>	<ul style="list-style-type: none"> • Project analysis of the fault data successfully ruled out the LRUs from the fault diagnosis • Ncompass™ testing of the system's EWIS found specific intermittency, continuity and stability faults which could not be detected with conventional equipment – and follow-up testing confirmed their successful repair • These actions ruled out LRUS and EWIS enabling the diagnosis to be expanded to parallel systems, which directed the customer to isolate the fault to an intermittent circuit-breaker • Ncompass™ testing of the CB successfully detected intermittency

¹ EWIS – Electrical Wiring & Interconnection System. EWIS comprises wiring and electrical interconnection components, such as circuit-breakers and relays.

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<p>Turret System Slip-Ring Testing</p>	<p>The client used their own Ncompass™ to confirm the build integrity of pre- and post-mod slip-rings for a vehicle turret system</p>	<ul style="list-style-type: none"> • Intermittency discovered in suspect unserviceable item in under 15 minutes • These faults had not been detected by repeated testing with conventional equipment • The integrity of all other assets successfully confirmed
<p>Display LRU Graphics Card Testing</p> 	<p>This project investigated the effectiveness of PCB testing for a flight deck display LRU, because it is an obsolete LRU that requires long-term support</p>	<ul style="list-style-type: none"> • The most vulnerable parts of a PCB to intermittent faults that cause NFF, are all the external connections to the board: this project successfully confirmed the integrity of all these connections on the LRU's graphics card by using Ncompass™ testing – this could not be assessed with conventional equipment • Intermittent faults were detected and isolated on a specific card under flexing and vibration, leading to suspicion of damaged tracks – this was confirmed by follow-up X-ray testing
<p>Display LRU Back-Plane Testing</p> 	<p>This project tested the Rear Interface Assembly, or 'back-plane', because of its likely role in 'rogue' LRUs</p>	<ul style="list-style-type: none"> • 3 back-planes tested from 3 'rogue' flight deck display LRUs, and intermittent faults detected and isolated in all 3 items • Intermittent shorts detected in one of the LRUs when the back-plane was installed, due to the compression on the components in the installed position • Degradation of transformer performance was detected and the client is now investigating modification solutions • None of these faults could be detected with conventional equipment

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<p>Radio LRU Ribbon Cable Testing</p> 	<p>This radio LRU is employed on 3 different helicopter fleets, and the system was suffering a 45% NFF rate</p> <p>This project identified the ribbon-cable back-plane as the most likely source of problems and successfully tested a wide sample</p>	<ul style="list-style-type: none"> • The project generated a repeatable and standardised test solution for the ribbon-cables, so they can be tested/repaired/tested when removed from the LRU • Intermittency & continuity faults were detected and isolated in 57% of the sample tested • 75% of the failing items had been removed from LRUs that had passed shop-level ATE testing
<p>Radar LRU Chassis Testing</p> 	<p>This LRU is fitted to a very large fleet of fighter aircraft, and its NFF rate put it at the top of the Mission Capability (MICAP) critical items list</p> <p>This ongoing project tests LRU chassis because their inter-connections are the biggest cause of intermittency and NFFs</p>	<ul style="list-style-type: none"> • 195 chassis tested to date • Intermittency successfully detected and isolated in 130; plus 40 had 'opens', 12 had 'shorts' and 7 had wiring assembly errors – all these faults were not detected by the shop-level ATE testing • \$39M of assets recovered • Mean Time Between Repair has trebled, resulting in \$11M in maintenance savings • No longer on the MICAP critical list
<p>Radar LRU Ribbon-Cable Testing</p> 	<p>This ribbon-cable is fitted to the radar system of a very large fighter fleet, and the radar was to undergo a modification programme that required the integrity of the ribbon-cables being confirmed</p> <p>This project successfully created a test solution to confirm the asset's integrity when not installed</p>	<ul style="list-style-type: none"> • This ribbon-cable had a modest value (\$1600) but a long lead-time and so a solution was needed to test the items to ensure that the system modification programme would not be delayed • The project successfully created a standardised and repeatable test solution to test the ribbon-cables quickly and thoroughly • 24% of all cables tested were assessed as having the required integrity to allow them to be returned to use, which has supported the successful progress of the modification programme

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<p>EW System LRU Chassis Testing</p> 	<p>This item is a vital component of an Electronic Warfare avionics suite and was suffering high NFF rates, hence the LRU was deemed to be a critical item on the Mission Capability (MICAP) list</p> <p>This ongoing project tests LRU chassis because their inter-connections are the biggest cause of intermittency and NFFs</p>	<ul style="list-style-type: none"> • Ncompass™ testing successfully detected AC impedance and component drift problems • Intermittent faults were successfully detected and isolated in 71% of all the LRU chassis tested • None of these faults had been detected by extensive testing using conventional, shop-level ATE
<p>GCU LRU Chassis Testing</p> 	<p>This ongoing project tests LRU chassis because their inter-connections are the biggest cause of intermittency and NFFs</p>	<ul style="list-style-type: none"> • The F/A-18 GCU is the second highest degrader in the US NAVAIR inventory • Intermittent faults were successfully detected and isolated in 80% of all the LRU chassis tested • None of these faults had been detected by extensive testing using conventional, shop-level ATE