



APPLICATIONS BROCHURE

With EESeal[®], Electromagnetic Interference Won't Ground Your Mission

EESeal.com

With EESeal®, Electromagnetic Interference Won't Ground Your Mission

Today's leading military and aerospace engineers design technologies that sail towards the outer reaches of space, surveil threats from the stratosphere, and engage in enemy combat on the ground. No matter where your innovations head, electromagnetic interference can ground your mission for weeks, months — even years. When EMI forces your hand toward the 'Abort' button, Quell can deliver solutions as swiftly as your firm pushes boundaries.



20+ year partnerships
with top aerospace and
defense programs.



EMI mitigation capabilities called
"as close to a silver bullet as I've
ever seen!"



Solved thousands of EMI/ESD
issues in Military/Defense and
Aerospace applications globally.

EESEAL: THIRTY YEARS OF EXEMPLARY FLIGHT HISTORY

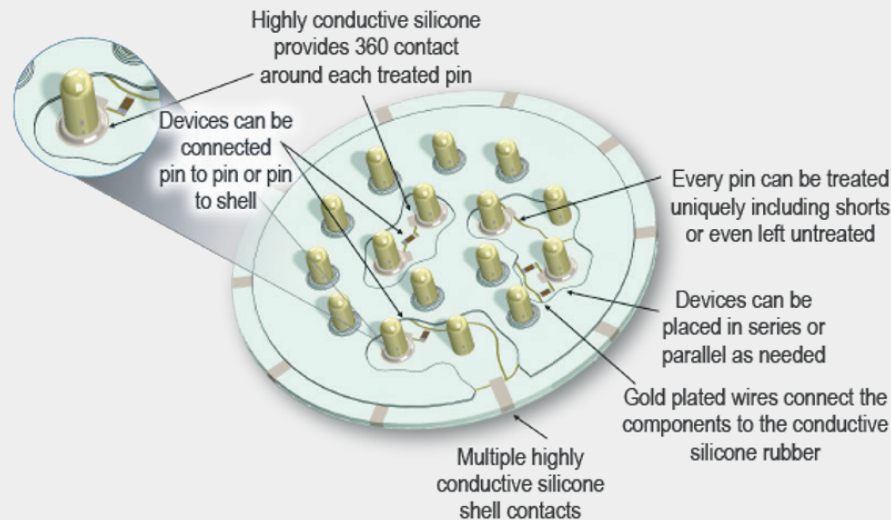
Since 1995, Quell has led the charge mitigating electromagnetic interference issues in satellites, weapon systems, avionics, spacecraft, and so much more. When the world's top aerospace and defense contractors face an unexpected EMI challenge that can potentially ground a critical mission, they call up Quell: a specialist in quick-turnaround EMI fixes in industries where every second counts.

WHAT IS EESEAL?

EMI issues can send a scare through your team as you imagine the nightmarish hardware overhauls and unacceptable project delays needed to fix the issue.

Not with EESeal.

EESeal is a quick-install filter that adds EMI and transient protection to any connector. Rapid prototyping and split-second installation tackle EMI/RFI problems pronto—all in an insert weighing under one gram.



Sensors, guidance systems, and communications all rely on effective EMI protection. Without the right approach, defense programs can risk interference from:

- Lightning strikes
- External sources like radar systems, radio and telecom signals
- Neighboring power supplies, converters, micro-controllers
- Other onboard electronics and devices

Why is EMI such a headache in aerospace and defense design? You don't always know about a potential problem until late in the game. Most issues arise during the qualification process, when you're deep into lab testing, and sometimes after equipment is already in the field. When faced with EMI challenges at these critical stages, a swift and cost-effective, yet long-lasting solution is just what you need to stay in budget and on schedule.

GET QUICK-FIX EMI SOLUTIONS THAT MEET OR EXCEED STRENUOUS REQUIREMENTS:

- MIL-STD-461
- MIL-STD-1344
- RTCA DO-160
- MIL-STD-5400
- NASA outgassing

FAST FIXES WHEN THEY'RE NEEDED MOST	Stay on the fast-track to mission success. EESeal can solve many EMI problems in under 24 hours.
EESEALS ARE FAST AND COST-EFFECTIVE TO PROTOTYPE	Get testable samples in your hands fast. Low cost of prototyping lets you analyze many options at once.
INSTALLS IN SECONDS	EESeals don't require soldering, specialized tools, or extensive training to install.
COMPREHENSIVE FREQUENCY MITIGATION	Thorough protection in a range of EMI frequencies from 100KHz to 100GHz.
COMPACT, LIGHTWEIGHT, AND LONG-LASTING	Ideal for applications with extremely tight space and weight constraints, like satellites, spacecraft, and missile guidance systems.

WHERE YOU'LL FIND EESeal PROTECTING SENSITIVE MILITARY AND AEROSPACE EQUIPMENT FROM EMI:

- Missile guidance systems
- Countermeasures systems for helicopters and tiltrotors
- Long-range intelligence radar
- Tactical all-terrain vehicles
- Communications and intelligence satellites
- Missile defense programs
- Spacecraft
- Unmanned aerial vehicles

QUELL QUICK SOLVE #1: TROUBLESHOOTING EMI ISSUES WHILE RESPECTING PROPRIETARY DETAILS ADVANCED COUNTERMEASURES SYSTEM FOR HELICOPTERS AND TILTROTORS

A renowned countermeasures system was experiencing noise issues at 20-300 MHz and 1-2 GHz. In warfighter protection programs like these, disruptions in VHF, UHF, and SHF bands can reduce tracking accuracy, diminish sensitivity, and generate signal interference. And with thousands of operational flight hours, fixes need to be made fast.

EMI distortions in countermeasure systems can cause:

- Reduced accuracy
- Diminished sensitivity
- Signal interference

EESeal to the rescue...

Ultra-thin EESeal silicone inserts are ideal for 'need to know' projects where details are kept close to the vest. Quell can turn out application-specific prototypes swiftly and cost effectively. Aerospace and defense technology teams can safeguard sensitive information, and still receive several iterations to evaluate.

Since it was a late-stage project, this defense contractor had no time to spare. Quell produced a suite of possible samples — and met the client's team at the EMI compliance lab for immediate assistance.





QUELL QUICK SOLVE #2: A FULLY QUALIFIED EMI FILTER KEEPS AN UNMANNED AIRCRAFT SYSTEM IN-FLIGHT SURVEILLANCE FROM THE SKIES

The long-range radar aboard a 24/7 intelligence and reconnaissance powerhouse ran up against similar issues. Unexpected noise was emanating from the umbilical between the radar unit and the host plane. The system was designed, qualified, and ready for flight — this defense firm didn't have time for answers that called for extensive reengineering.

EESeal to the rescue...

Always airborne and clocking hundreds of thousands of flight hours, this team wanted a solution that wouldn't require a redesign of existing components. Quell EESeals already meet MIL-DTL-38999 spec — so filter inserts qualified and tested to stand up against punishing conditions like high altitudes, extreme shock, and severe vibration were ready to go in 24 hours after the design was approved by their engineers.

QUELL QUICK SOLVE #3: CLEANING UP DISTORTIONS IN A MISSILE GUIDANCE CONTROLLER

HIGH-STAKES MISSILE GUIDANCE SYSTEM

Something wasn't right about the signals transmitting from a missile guidance controller. A leading defense supplier found the trouble: EMI was disturbing electronic signals that guided the missile system.

EMI distortions in missile systems can cause:

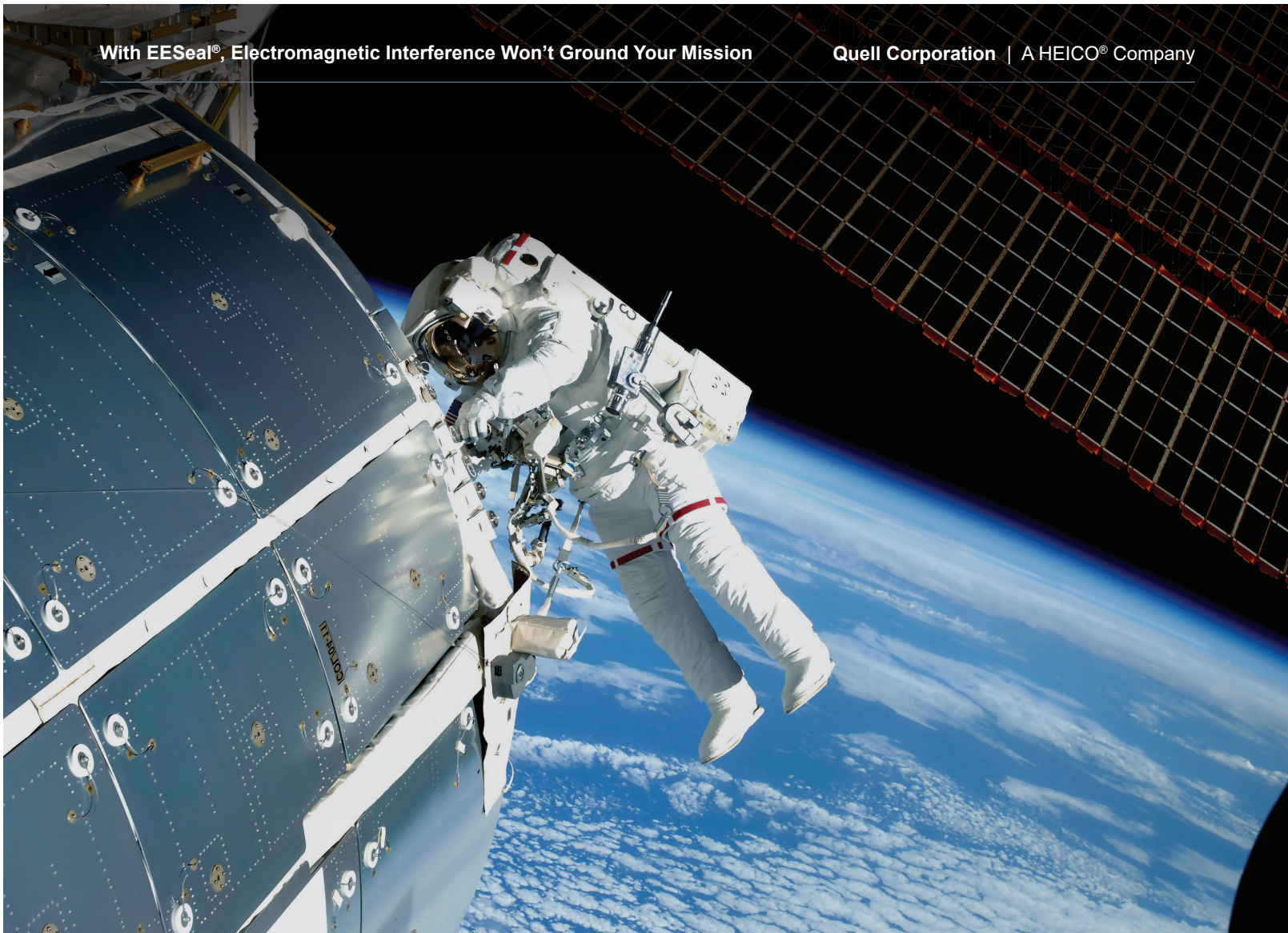
- False targeting
- Loss of target lock
- Steering complications
- Systems failure

EESeal to the rescue...

Quell's targeted tests gave them just the information they needed to customize an EESeal that would reduce EMI intensity to nominal levels. It was all done without a time-consuming board spin. EESeal integrated seamlessly with existing hardware without painstaking changes to underlying systems.

Better yet? EESeal isn't just a quick band-aid. It's a lasting solution that survives the life expectancy of the most distinguished aerospace programs. **The client performed their own accelerated life-cycle testing and found EESeal stood up to the grueling conditions of missile flight for 30+ years.** Right in line with their expectations for the overall system.





EESEAL TO THE RESCUE... QUELL QUICK SOLVE #4: SHIELDING SATELLITES FROM SPACEBORNE EMI HIGH-PRECISION CIRCUITRY ABOARD A SATELLITE

Low earth orbit. An exciting frontier brimming with infinite discovery. But it also introduces a unique set of EMI challenges this team of pioneering engineers needed a fast way to fix.

High in the sky, satellites are also susceptible to EMI disruption from the sun and neighboring orbiters. A central focus of satellite engineering can also generate EMI challenges: make them as small and light as possible. This leads to densely packed interiors, squeezing in miniaturized components as tightly as possible to keep down launch and operations costs. Almost instantly removing traditional EMI shielding, like bulky metal casings, from consideration.

On the ground, silicone can be a helpful material for some EMI issues. But in space, where high levels of radiation and vacuum conditions cause silicone to leech volatile compounds that can halt a mission, extra precautions are necessary. The client needed an EMI mitigation solution that was lightweight, protected against rubber-based outgassing, and fit the satellite's already cramped footprint. Where did they turn?

EESeal to the rescue...

Quell has decades of experience customizing rapid EMI fixes with long-lasting, space-qualified materials. Using a special post-bake protocol, **this flagship firm had an EESeal in their hands, designed to meet NASA's stringent outgassing requirements. All in just a few days.** Quell delivered a version with fully custom circuitry and an array of high-reliability capacitors that provided additional filtering and signal protection.

EESEAL® IS A PROVEN PRODUCTION SOLUTION WITH OVER 2.5 MILLION SHIPPED ACROSS THE GLOBE — WILL YOU BE NEXT?

Get your free sample started today

See how quickly you can solve EMI issues with an easy-to-install EESeal filter.

Visit eeseal.com/free-emi-filter-sample/ and provide these details about your project:

- Complete connector part numbers
- Desired capacitance values and/or filter frequencies/characteristics
- Voltages on all pins (e.g., 115VAC 400Hz, 28VDC, etc.)
- Identify any pins that carry high-frequency data (e.g., RS232, Ethernet, video, etc.)
- Do any transient or lightening specifications need to be met?
- Where should we ship your sample?

Once we have your info, our engineers will design, build and ship your **FREE** custom EESeal® in 24-48 hours!

Quick, Easy, Permanent Retrofit with EESEAL® Inserts



505.243.1423 | EESeal@Quell.US | www.eeseal.com
5639 Jefferson NE Albuquerque, NM 87109 USA