

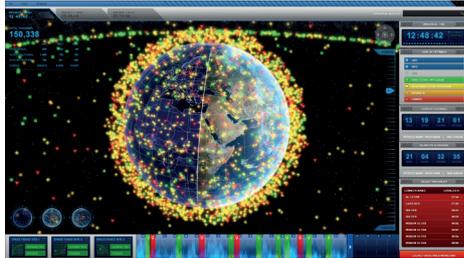


**MPE**  
Quality, Reliability, Performance

# Company Bulletin

for EMC, EMP & TEMPEST Protection

## Issue 11



Current construction of the sensor site on Kwajalein Atoll



Custom high-current EMC protection filter with integral busbar as supplied for the Space Fence program

## Space . . . the Final Frontier

Almost 60 years after the first satellite was launched, space is becoming ever more cluttered with defunct satellites, spent rocket boosters and sundry stray pieces.

To help deal with the problem, MPE has recently manufactured and supplied a suite of custom high-current EMC protection filters for applications in the US Air Force's new Space Fence program. The Space Fence is a second-generation space radar system currently being built by prime contractor Lockheed Martin for the USAF, in order to track the increasing amount of space debris and artificial satellites in Earth orbit and avoid potential collisions.

Richard F Ambrose, Executive Vice-President of Lockheed Martin Space Systems, emphasizes the point: "Ground-based situational awareness is a growing priority for government and commercial organisations around the world who need to protect their investments in space."

The new system will track a larger number of small objects than previous space radars, about 200,000 objects, and make 1.5 million observations per day, about 10 times the number made by existing or previous US assets.

Contracts were issued for development and construction in 2014, and the Space Fence is expected to come into service in 2018. The first Space Fence facility is located at Kwajalein Atoll in the Marshall Islands, with an option for a second ground-based, space scanning radar site to follow in Western Australia.

One of the highest profile projects in the USA, in 2014 Lockheed Martin awarded the contract for Space Fence ground structures to General Dynamics. These include the receiving array, cooling equipment, radomes and other buildings. Space Fence will use gallium nitride (GaN) powered, S-band ground-based radars to provide the USAF with uncued detection, tracking and accurate measurement of space objects, primarily in low-earth orbit.

The geographic separation and higher wave frequency of the new Space Fence radars will allow for the detection of much smaller microsatellites and debris than current systems. Furthermore Lockheed Martin's Space Fence design will significantly improve the timeliness with which operators can detect space events that could present potential threats to GPS satellites or the International Space Station. The flexibility and sensitivity of the system will provide coverage of deep space geosynchronous orbits while maintaining the surveillance fence.

The custom EMC filters provided by MPE have been designed to meet the demanding performance specification flowed down from prime contractor Lockheed Martin. Supplied via MPE's USA representative Technical Sales Solutions (TSS), they are being installed on site by ATEC Industries (ATEC) of Elkridge, Maryland, USA. All units have been manufactured in their entirety at MPE and individually tested and certified ahead of shipping to ATEC in Maryland for subsystem integration.



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Alongside the demanding performance criteria, of particular importance was the space envelope taken by the EMC filters and the mechanical design to allow ease of integration to the subsystems on site. The custom filter suite delivered by MPE comprised a wide range of units for use within low current through to very high current applications.

Construction is well under way, with the new system's initial operational capability scheduled for 2018, and Lockheed Martin looks forward to supporting the USAF on the first Space Fence, as well as the future second site planned to operate in Western Australia in 2021.

[www.lockheedmartin.co.uk/us/products/space-fence.html](http://www.lockheedmartin.co.uk/us/products/space-fence.html)