

## EMI Flex Filter Inserts:

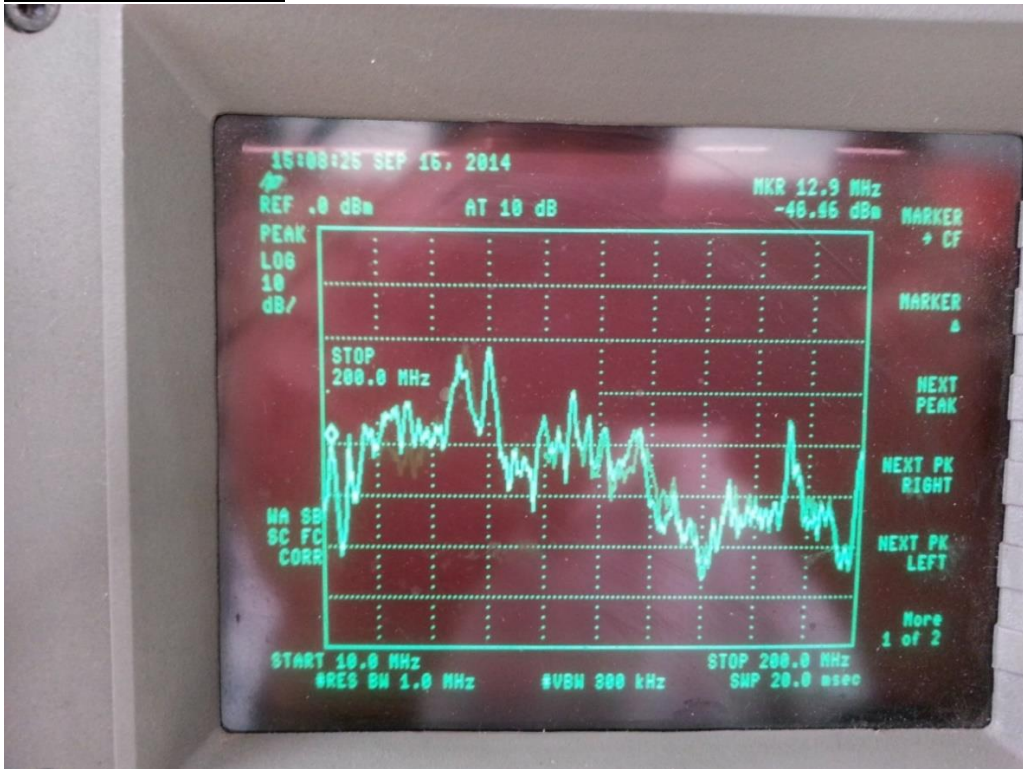
Here at EMI Solutions Inc. we did some testing at our facility last week for a Major Southern Calif. Aerospace Company. This customer had an electronic monitoring system that is used widely in Military Helicopters. Their system was experiencing outages in the Radiated Emissions (RE-102) testing which was precluding them from selling their system to the Military.

We brought their system and support equipment into EMI Solutions to perform some basic testing and sniff testing to help evaluate the source of the Noise and to help develop a solution to enable them to pass the required RE-102 test levels. During Radiated Emissions Testing (RE-102), we ended up comparing the performance of the EMI Solutions Flex Filter Inserts versus the other Filter Insert manufacturer's product.

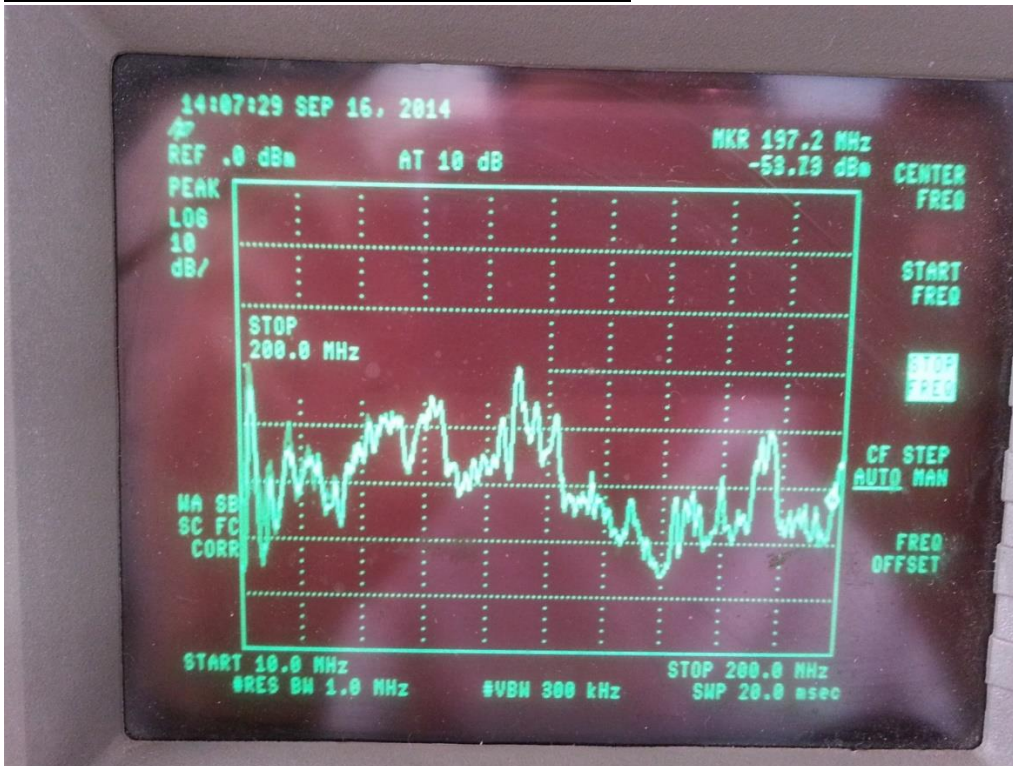
To provide a fair test comparison, we base lined the unit to determine the noise levels present. We then inserted our EMI Solutions Flex Filter Insert into their Military Circular connector. The Flex Insert that was used for the testing contained 47,000 pF 200 VDC capacitors on all pins. We took measurements as to the Filter effectiveness in the customer's system and documented the results. We then removed the EMI Solutions Flex Insert and then installed the competitors Filter Insert. We again measured the filter effectiveness and documented the results. Both Filters had the exact same capacitance on all pins, allowing for great direct comparison of filter performance. None of the parameters changed between the test measurements for each filter.

The EMI Solutions Flex Filter Insert provided better Filtering performance BOTH in terms of the magnitude of the filtering (Insertion Loss) as well as in the frequency range over which the filters worked. What that means in layman's terms is that our Flex filter provides higher filter performance and it operates over a wider Frequency range to help customers eliminate more noise from their systems. Below are the Pictures from the Spectrum Analyzer screen as well as the tabulated data for the key peaks observed during the test and measurement of the filters:

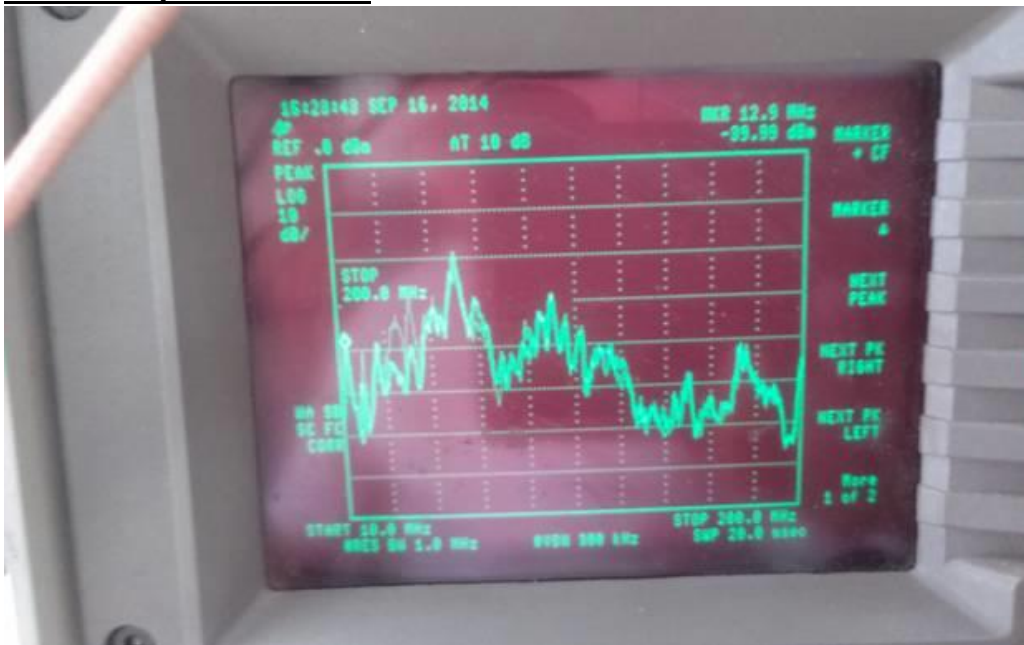
### Baseline Problem:



## With the EMI Solutions Flex Filter Insert:



## With Competitors Filter



Note: There are chamber anomalies at 11 MHz as well as 94 MHz, which should be ignored.

Now, here is why ours works better for those that like the technical details:

- We use a solid copper ground plane from which we only remove a small isolation channel around each pin
- Our Competitor uses VERY small gauge wires to connect the capacitors to the connector pins and to ground (Shell of the connector)

- As a result, they have more resistance/impedance and inductance which leads to lower performance since they INCREASE the resonance effects of Chip Capacitors.
- Their design worsens the innate resonance that Chip Caps already have, thereby reducing the peak performance of the caps and minimizing the frequency over which those capacitors provide filtering.
- Our design minimizes any additional resistance or inductance and thereby allows for maximum performance by the Filter Capacitor
- We minimize wherever possible these effects and thus our performance is noticeably higher (5 – 10 dB) across all frequencies
- Additionally, Our Flex Filter provides shielding effectiveness on the face of the connector since we only remove minimal amounts of Copper for the isolation channel, and since the Flex Filter is well grounded at the interface of the device. This is an added feature which also helps our performance as compared to our competitor.

**The results of this testing were that the customer's unit now passes RE-102 testing and the EMI Solutions Flex Filters provided great insertion loss (Filtering) across a broader frequency spectrum to help enable this result.**

**Contact EMI Solutions to assist you with your EMI filtering requirements at 949-206-9960 or send us an email to [sales@4emi.com](mailto:sales@4emi.com).**