

## MIL-STD-461 AND EMI FILTERS

Filter manufacturers are often asked to provide a MIL-STD-461 filter. No specific filter or filter product line can be said to meet MIL-STD-461. MIL-STD-461 is a sub-system or equipment EMI requirement, not a filter requirement. A filter may be designed which will bring the system within the specified limits of MIL-STD-461, but the Insertion Loss required of the filter design depends on the extent to which the system exceeds the MIL-STD-461 limits.

The only true method of determining the filter Insertion Loss requirement for a given system is to run a MIL-STD-461 test on the system (see figure below). The solid line in the figure represents the MIL-STD-461 CE102 limit. The dashed line represents the result of a MIL-STD-461 test. In this example, the test results show that the system exceeds MIL-STD-461 limits by 11dB at 0.1MHz, by 3dB at 0.5MHz, by 7dB at 3MHz and by 5dB at 10MHz. In general this means an EMI filter must now be designed, which will have an Insertion Loss of 11dB at 0.1MHz, of 3dB at 0.5MHz and so on for each frequency that the system exceeds MIL-STD-461. Usually, a well designed EMI filter that meets the lower frequency Insertion Loss requirements will also meet the upper frequency requirements.

TSE has designed and manufactured many EMI filters to allow systems to meet MIL-STD-461 requirements however, a particular filter designed for one system may not allow a different system to meet all MIL-STD-461 requirements.

