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The Music Rail performance, like many cutting edge IC's, is bound by certain external capacitive conditions. This vulnerability also affects three-terminal regulators, many of which are subject to the same conditions. Therefore, to ensure best performance, we recommend the following guidelines.

Input Capacitance

At least 10uF should be strapped from input to ground. Better to use 33uF or higher and place it close to the module until stability is confirmed. You can use film or electrolytic, but if electrolytic is used, you should use 33uF minimum. If the module is within a few inches of the stock cap bank this part may be omitted.

Output Capacitance

Ensure that no output cap is present. If this is unavoidable, try to make the cap value less than 0.1uF or greater than 20uF. It is possible to go much higher than this, into the thousands of microfarads, if certain precautions are taken. To avoid having the Music Rails self-protect, ensure that the current rating is respected under all operating conditions. To do this you must consider:

- 1) The load current at turn on
- 2) The peak capacitive current at turn on
- 3) The leakage current of the load capacitors

So long as the sum of the above does not exceed the Music Rail current rating, it will operate.

Test Procedure

Under certain conditions a Music Rail may produce a low-level, non-destructive oscillation. This oscillatory energy adds to the noise floor, which can then be seen on a scope. This oscillation can occur when the above conditions are not met. Oscillation may also occur when the input capacitor is too far away from the Music Rail.

If a problem is suspected, first check the voltage drops, then check the input vs. output noise with a scope; or better yet, use a sensitive AC meter or spectrum analyzer. To find voltage drops, see Figs. 2 & 6 in the [Technical Data](#) or Figs. 3 & 7 in the [Quick-Start Guide](#).

If, after trying all of the above, you still fail to achieve proper operation, please contact: techsupport@bybeelabs.com

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MUSIC RAILS are manufactured in the United States.

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