



# **Line 6 Guide To Near / Far**

ElectroPhonic Limited Edition - Rev B

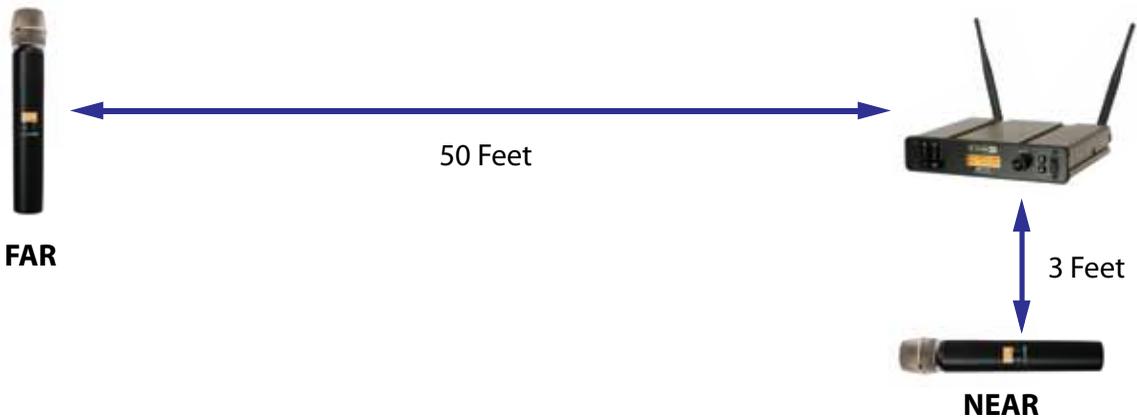
## Line 6 Guide To Near / Far

### Introduction

A **Near/Far** instance can occur with any multiple-unit radio system when the signal from one or many unintended transmitters are much closer to a receiver than the intended transmitter (even though all transmitters are on different channels). The transmitters that are too close can overpower the receiver's ability to pick up the distant transmitter's signal.

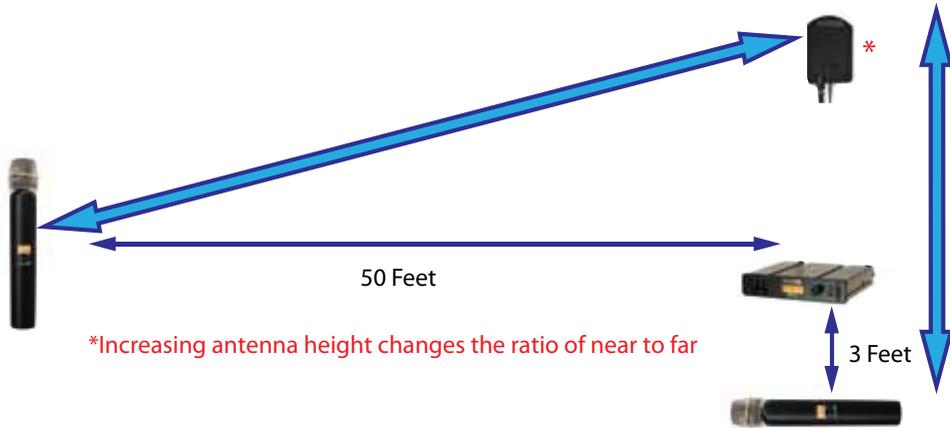
Line 6 receivers constantly and automatically adjust their gain to track their intended transmitters. So as the intended transmitter's distance increases, the receiver compensates and adds gain. If the intended transmitter is some distance from the receiver, the receiver will be in a high gain mode and in this mode it will be more susceptible to other transmitters that get too close, depending on how powerful they are and how close they match the frequency of the intended transmitter.

An extreme example of this would be if a singer or presenter should walk out into an audience say 50 feet from his receiver's antennas and a second performer would walk up within 3 feet of the first user's receiver. The distant transmitter would likely lose some of its ability to have its RF signal seen at the receiver.

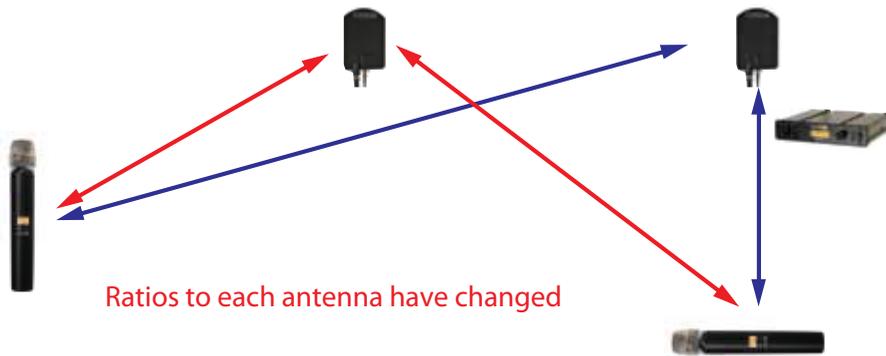


## Steps to mitigate Near/Far interference

The first and easiest step is to ensure that all transmitters are a minimum of six feet or more from any receivers, and to avoid extreme differences in range requirements between each of the systems. If this is not possible, placement of the receiver's antennas further up in the air can reduce near/far issues, since it will become far more difficult for any individual transmitter to get close to antennas that are elevated. This can be achieved either by relocating the receivers themselves, or by using remote antennas.



The next step is to split the distance between the two antennas. This makes it more difficult for a transmitter to get close to both antennas at the same time, leaving one antenna available for the distant transmitter and one for the close transmitter.



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A potential-worst case scenario could be to have 11 singers on the stage while a 12th singer roams the audience at great distance. Or similarly, a city council meeting where a number of transmitters are at the council table while one mic roams the audience. Under normal conditions, large systems like these would work best with the antennas daisy-chained through the antenna output connectors of the built-in antenna distribution system. However in this case a separate pair of antennas for the “roaming” transmitter may be used while the rest of the group is handled by a chained antenna system. It may also be prudent to employ paddle antennas in this situation, as well as to use the elevated antenna technique to reduce the ratio of transmitter distances. An additional potential solution, if it is known that the near transmitters will not be also used at a great distance, would be to set all of the near transmitters to “low power” mode (which has the same effect as “moving away” from the receiver). A little experimentation may be in order to produce the most reliable outcome.

### **“Walk test” your setup**

It is always recommended to test out your wireless system in the performance environment in advance of an event. This is especially important when using multiple systems that might encounter near/far issues. A “walk test” simply requires walking a transmitter around the performance area and through the extreme distances that it might be desired to use it while monitoring for any potential audio drop outs. When using multiple systems (such as the case described previously), it is important to have all transmitters turned on and placed in their locations when performing the walk test so that potential near/far issues can be discovered and corrected in advance of an event.