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Link Panning

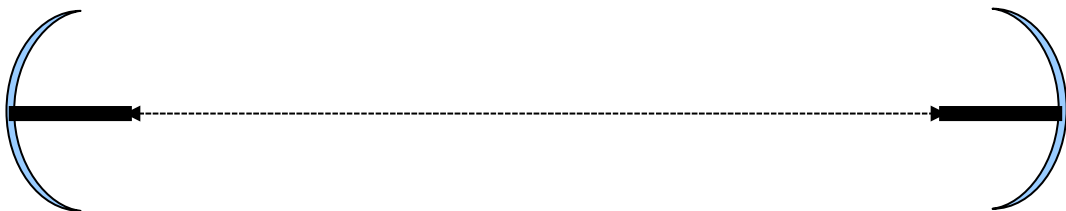
A few words to help those who have never done it.

Please note: whilst the following is true for links in general, its main purpose is to assist short haul (line of sight) analog video applications.

RF (Radio Frequencies) can be troublesome at the best of times, and microwave links are no exception.

The rules (simple ones):

1. Polarisation - make sure both are set to the same (horizontal or vertical). With some luck the link tech has set them up properly or the mounting hardware prevents incorrect polarisation.
2. Make sure the transmitter and receiver are both set to the same frequency. Again, the link tech should have this set this up correctly.
3. Ensure the transmitter and receiver are the correct way around! ie. Don't trust the box, check the device itself. Taking the wrong end to some location and then having to swap them is painful and annoying.
4. When you mount both transmitter and receiver: if the transmitter cannot see the receiver then....start to worry! Its worth remembering that microwaves behave like light – they travel in straight lines so you should be able to see the other end.
5. Clear transmission path. Unfortunately its more than just being able to see the other end, this is where RF starts to play its games! So if any trees, buildings, cars, busses, flags, flag poles, people etc are “close to” the line of sight then its worth moving the transmitter or receiver or even both if necessary. Unfortunately there are no simple explanations here, Fresnel zones, dish sizes, power level, frequency etc etc all come into play.
6. No water or “large” flat surfaces between the transmitter and receiver. Its probably starting to become obvious just how tediously messy links can be. To help, recall that microwaves behave like light, so its possible for flat surfaces to create unwanted reflections which interfere with the reception of the direct signal.
7. Make sure someone at the receiving end can interpret a waveform monitor display. A skilled link tech at the receiver can make things much easier.
8. Panning – rotating a link horizontally.
9. Tilting – rotating a link vertically.
10. To achieve the best results, each end of the link should point directly into the other (as shown in the diagram below).



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11. To get started, stand some distance behind the link and estimate the pan and tilt orientation. Once satisfied you have a good estimate, pan and tilt the link accordingly.
12. The receiver has an inbuilt meter which indicates the strength of the received signal. This enables the link tech to radio/phone the person at the transmitter telling them how to pan and tilt the transmitter to achieve best results.
13. It is usually necessary to pan and tile the transmitter and receiver several times to achieve the best result.
14. This all sounds very simple but if you haven't used links in this location before allow plenty of time.
15. Some other little wrinkles. Often the signal strength is excellent but the pictures are terrible, there are many possible causes: reflections, co-channel interference, inter modulation interference etc etc. This is where a waveform monitor and an experienced link tech can save the day.