



AgCam Ranch Hand Troubleshooting Guide

Problem	Possible Cause	Solution
• Snowy Picture	TX and/or RX antenna not grounded	<ul style="list-style-type: none">• 5dbi Magnet mount antenna - Attach to metal surface that is at least 12" square.• 8dbi omni-directional antenna – Attach mounting bracket to metal surface that is grounded, or run a grounding cable to the ground.
	Interference	<ul style="list-style-type: none">• Try a different channel on the TX and RX• If possible, remove any electronics in the area that operate at 2.4Ghz• Place the TX and RX as far as possible from other electronics
	Trying to transmit further than the system is capable of	<ul style="list-style-type: none">• Move TX and RX closer together or upgrade antennas

Problem	Possible Cause	Solution
• No picture	Weak signal	<ul style="list-style-type: none">• Move TX and RX closer together or upgrade antennas
	TX and/or RX not getting enough power or no power at all	<ul style="list-style-type: none">• If the TX is connected to an AgCam Quad, make sure the power supply for the TX AND the Quad are 1500mA• If the RX is connected to an AgCam monitor or Quad, make sure the power supply for the monitor or Quad is 1500mA• If the TX is using its own power supply, make sure it is 1500mA• If the TX and/or RX is powered by any of the scenarios above and the power light is not lit, call tech support
	TX and RX on different channels	<ul style="list-style-type: none">• Make sure you select the same channel on the TX and the RX. If your model has dipswitches, make sure only one pin is in the ON (down) position.

Problem	Possible Cause	Solution
• Rolling Picture	Electronic board is failing	<ul style="list-style-type: none">• Call tech support

Problem	Possible Cause	Solution
• Scrolling Black Lines	Interference	<ul style="list-style-type: none">• Try a different channel on the TX and RX• If possible, remove any electronics in the area that operate at 2.4Ghz• If using a wireless router, try setting it to the lowest wireless channel and set the Ranch Hand pair to channel 3• Place the TX and RX as far as possible from other electronics

Helpful Tips for Wireless Setup

Choosing Locations

Sometimes it is difficult to choose a location which will allow for unobstructed line of sight. Survey the area and choose a location where you may attain the clearest shot to the area where your receiver will be. When you first install the system, don't automatically assume that the first location will be the best. It is often found that moving the transmitter location (antenna particularly) even a few feet or inches can make a world of difference. Radio signals bounce off of buildings and walls. Remember what you see when you see a radio tower for a TV station in the middle of nowhere. There is a reason why they are so high and in remote areas. Aside from the fact that they don't want them to fall on any populated area, it simply is the best location for successful transmission without interference.

Antenna Location

There are several common misconceptions about installing an antenna for a wireless video link. Most of the installation problems we have solved were because of improper installation or placement. In short ranges it is not necessary to put the antenna very high. If the antenna is in the same yard and transmitting only a few hundred feet, most antennas will only need to be 10 to 15 feet high at the most.

One thing to keep in mind, when not using our directional antenna, is the position of the antenna relative to a building. If the antenna is mounted on the side of a building which faces the direction of transmission, it will have poor performance. It is better to get the antenna up above the roof line where it is in clear of the building, or put the antenna around a corner so that there is no obstruction. For example: if you were to draw a straight line between the receiver and transmitting antennas, you should be able to draw past the antennas without hitting a solid object. If it is impossible to get that clear line past the antennas, do your best to offset the antenna away from the building as far as possible. 10 inches from the wall of a building will perform much better than 3 inches, but 24 inches will be even better.

Antenna Selection

Choose the proper antenna for the distance and then factor in any possible obstructions. Mathematically it is theoretically possible to achieve very long distances with the proper antenna. However, in our tests we have downgraded the mathematical possibilities significantly.

If you have a building which you would like to monitor within a typical sized farm yard (200 to 300 yards), it is quite conceivable that using only a small 5dbi gain antenna would do the trick well. The only reason to use an external antenna is to avoid the building obstruction.

In longer ranges within a farmyard, the 8dbi gain antenna will perform very well.

When transmitting longer distances such as monitoring a remote farm or building site, it is preferable to use the 8dbi directional antenna. This type of antenna focuses all of the power in a single direction and is a higher gain antenna. It will perform well across 5 miles or more.



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The Exceptions To The Rules

Obstructions will change all the rules for selecting an antenna. Where an 8Dbi directional antenna would work across 5 or more miles, a single belt of trees will reduce that range to small distances or not work at all. Trees are very dense and wet and will tear apart a radio signal and render it useless. In the winter months when there are no leaves, the trees are nearly transparent to radio signals. Cattle producers will enjoy clear video in the spring while calving is occurring. Then, in the summer months, the signal is diminished due to leaves on the trees. However, most of the cameras find themselves on a tractor by that time. In situations where you need to clear trees to attain line of sight, you may consider using a directional antenna for even short ranges of a few hundred feet. The tight focus of the signal may penetrate the trees enough to produce a good signal.

Buildings are mostly not a problem but can be. Metal skin on a building can block a signal and also reflect it in different directions. Reflected signals are also picked up by the receiver but at a slightly different time. This will cause a horizontal flicker which persists. What is happening is that the PLL synthesizer is trying to focus itself on the most stable signal. However, having the presence of a random and unintentional signal will cause the receiver to constantly wander, looking to see if it can improve the signal strength. Once again, to improve this you may need to use a focusing antenna like the 8dbi directional. An omni-directional antenna transmits the signal in all directions allowing the signal to bounce. Also try to change the direction of the antenna. Even if it appears to be slightly out of direct line of sight, it has improved signal in some situations. If all else fails, move the antenna to a different location.

In a long-range setup, it is necessary to install the same antenna on both ends to achieve maximum range. This is not true within shorter ranges. If you are using an 8dbi directional antenna to penetrate trees or buildings, it is often acceptable or even better to use a 5dbi antenna on the receiver.