



The

Broadcasters' Desktop Resource

www.theBDR.net

... edited by Barry Mishkind – the Eclectic Engineer

DA Q&A

What to Do When the Antenna Monitor Readings Go Out of Tolerance



With Kurt Gorman

[May 2012] In addition to the basic operating parameters, fully understanding a directional antenna system includes factors like radiation, bandwidth, etc.

When problems needing attention arise, finding solutions requires asking the right questions. Kurt Gorman shares some of the questions he gets – and the right answers.

QUESTION: Our remote control has alarmed that the Antenna Monitor parameters are considerably off from the licensed values. I am on the way to the transmitter site. Should I start by immediately adjusting the phasor to bring the monitor parameters into compliance?

ANSWER: Unless there are flames or strange noises coming out of the transmission system, the first thing to remember is “Don’t Panic!” Before you turn any dials on the phasor – even before you dial your consultant – here is how you should proceed.

DETERMINING WHERE THE PROBLEM IS LOCATED

Start by trying to determine if it is a sampling system problem – that is, the transmission system is ok but you are getting false indications – or if it is something in the antenna system itself that has changed.

Typically the first indication of where the problem is located is to check the transmitter and Common Point Current meters. If these indications are normal, you are probably looking at a problem with the sampling system.

You can verify this fairly easily with your Impedance Bridge.

MEASURE THE COMMON POINT IMPEDANCE.

In most cases, a component failure somewhere in the system will cause this to change substantially. A double-check is the reflected power

indication on the transmitter, which will spike if there has been a change in the load.

If there has been little or no change to the antenna system input impedance, this is a good sign. It is probable that the issue is with the sampling system. If there has been a change, the problem is indeed in the transmission system, and you will need to focus there.

Either way, *do not attempt* to adjust the phasor at this point without attempting to locate the exact problem.

For the moment, let us assume the Common Point is normal and continue by checking out the sample system.

SAMPLE SYSTEM CHECKS

When checking out your sampling system, first check all connections to the antenna monitor. A single loose cable can cause all sorts of havoc before it is found. Another problem may have come from a direct lightning strike – allowing nasty currents to get into the monitor.

If the monitor is the problem, pull it, note it in the Maintenance Log, and either repair it or send it to the factory for repair. If you have a neighboring station (or can get a loaner from the manufacturer) you should quickly see the proper parameters again.

When that is the case you will be glad you did not adjust the phasor!

REMEMBER THE REFERENCE TOWER

If *all* of the towers are considerably off from normal parameters, the problem could be the Reference Tower sampling system.

If one particular tower is showing the largest change from normal, try swapping that the lead from that tower's sample with another to verify the antenna monitor inputs are tracking. If the problem does not follow the lead, the problem is in the monitor and it needs repair.

On the other hand, if the problem does follow the cable lead, there may be an issue with that tower's sample system.

In that case, a quick DC continuity check from the antenna monitor end of the sample lines will verify there is no break or open circuit. This should indicate a low DC resistance. A further check: if it is possible to open the tower ends of the sampling lines, verify there are no shorted cables or other damage to the lines.

If the samples at each tower are from TCTs, using a spare unit or swapping TCTs between towers will verify whether they track. Also, many stations have a spare TCT on the shelf to use in checking the sample system. Just take the spare TCT to a tower of interest and swap it out – or swap out a pair of TCTs between towers.

EXTERNAL DAMAGE

At this point, a quick check around the site can be a good thing.

The reason is that there are several possibilities that might involved your neighbors or other visitors – and they could actually could be the cause of your problems. Someone with a little bit too much liquid encouragement shooting out a guy insulator (or two) can cause a problem. Or, a four-wheel drive off-road vehicle on a soggy field can easily damage some lines.

If there is no damage evident, and the sampling system appears to be functioning properly, the next step would be to go through the antenna system.

We will start diagnosing problems that might involve the actual transmission system next time.

Kurt Gorman, President of Phasetek Inc., is a second generation engineer and phasor manufacturer. If you have a question about directional antennas, you are invited to ask Kurt. His email is kurtgorman1@earthlink.net

Would you like to know when the next installment of this series is posted?
[Sign up here now](#) – it only takes 30 seconds – for our one-time-a-week Newsletter.

Return to The BDR Menu