Welcome to AntennaSelect™ Volume 55– April 2021

Welcome to Volume 55 of our Newsletter, AntennaSelect™. Every two months we will be giving you an "under the radome" look at antenna and RF Technology. If there are subjects you would like to see covered, please let us know by emailing us at: info@micronetixx.com

In This Issue:

DTV Over-Air Reception – Part 8 - Multiple Antennas

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Sometimes using multiple antennas for DTV reception can be the way to go. When stations transmit to a viewer from different directions, that is a common case. You can use a rotor, but some viewers do not get the rotor pointed in the right direction, when changing channels. Mounting two receive antennas on the same mast is one idea. Will it work or will there be shortcomings? The most common problem is the two antennas being mounted too close to each other vertically. We will use a few cut-to-channel high-band Yagis as the first example. Channel 7, 11, and 13 antennas (a total of 3) are used.

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Here we have mounted the three Yagis on a pole and spaced them 18 inches apart vertically. Channel 13 is on the top, channel 11 is in the middle, and channel 7 is at the bottom. It's a little known fact that antennas "talk" to each other and value the space around them.

These antennas when mounted too close together can electrically couple to each other. The antennas can de-tune each other, and the directional patterns can greatly suffer as well. In the old analog days you would see "ringing" in the picture when this happened – in digital days the blue or black screen of death appears.

In this case the antennas should be at a bare minimum of ½ Lambda or about 28 inches apart. A much better spacing would be in the area of 1Lambda or about 55 inches apart in vertical separation.

Another factor is how many elements the antenna has. As the Yagis get longer there are more chances of coupling between the two antennas. A longer antenna with, let's say, 10 elements detunes faster than a 5 element antenna. As azimuth gain increases, any metal surface near the antenna will detune more sensitively.

Another example in this case would be, what if we needed the middle antenna to be rotated 90 degrees with respect to the other two. When the middle antenna is in the apertures of the other antennas, it begins to act as a reflector to the other two antennas causing serious pattern distortion and up to 20 dB in losses due to resulting pattern distortion. To solve this the middle antenna that is on channel 11, can be moved to the top of the stack. It should be spaced at lease 60 inches or 1 Lambda above the middle antenna – more if you have got mounting space.

Remember antennas are reclusive and like living alone in their own space. Doing so will make them happy and they will reward you with a good solid signal!

New SFN3 Antennas for Distributed Transmission

MICRONETIXX COMMUNICATIONS

We are proud to announce our newest line of UHF Antennas for ATSC 3.0 Distributed Transmission Systems. The **SFN3** Series of Antennas is designed to provide powerful, yet light weight antenna configurations. The antenna has 3 bays, (six λ/2 radiators), and is available in 6 standard directional azimuth patterns- some with extended front to back ratios. They are available in horizontal, elliptical or circular polarizations. The power gain ranges from 6.18 to 14.36 on horizontally polarized models to 4.29 to 10.07 on elliptical models.

The standard input power is 5 kW – allowing ERPs of up to 50 kW on elliptical antennas, and 70 kW on horizontally polarized models. The antennas are end fed and are not pressurized.

The **SFN3** is built to be placed anywhere where there is a minimum of 15 feet of vertical space. The antennas are all just under 10 feet long and weigh an average of 100 lbs, including stainless steel mounting brackets. All **SFN3** antennas are rated at a basic wind speed 0f 150 M.P.H. The antenna pylons are built from rugged Aluminum and are treated with a Class 1A, (Iridite), Chromate Conversion Treatment for a long corrosion free life.

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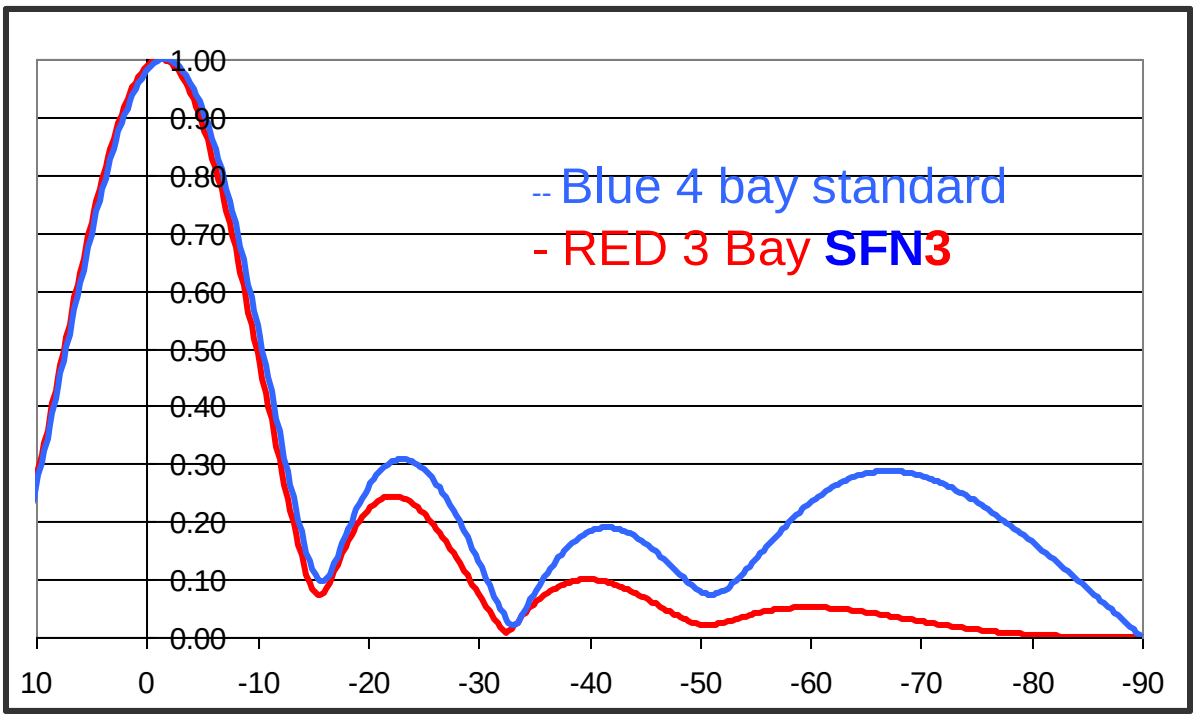
SFN3 Antenna Gain Chart

Pattern	Azimuth Gain	H - Pol	Eliptical 70/30	Circular (C/P)
D	1.90 (2.78 dB)	7.18 (8.56 dB)	5.03 (7.02 dB)	3.59 (5.55 dB)
F	3.80 (5.80 dB)	14.36 (11.57 dB)	10.07 (10.03	7.18 (8.56 dB)
G	3.60 (5.56 dB)	13.60 (11.34 dB)	9.54 (9.79 dB)	6.8 (8.32 dB)
2346	1.92 (2.83 dB)	7.25 (8.61 dB)	5.09 (7.07 dB)	3.63 (5.60 dB)
5645	2.85 (4.55 dB)	10.77 (10.32 dB)	7.55 (8.78 dB)	5.38 (7.30 dB)
6989	1.62 (2.09 dB)	6.12 (7.87 dB)	4.29 (6.32 dB)	3.06 (4.86 dB)

The **SFN3** Antennas come in 6 directional patterns, including the reduced rear "G" and "5645" patterns. (All 6 of these directional patterns are available at: www.antennaselect.com.)



The above plot is a comparison of a 3-bay **SFN3** to a 4-bay standard slot antenna. The **SFN3** has 14 dB less RFR hitting the ground. These small, but powerful antennas are perfect for distributed ATSC 3.0 transmission. They will let you place these antennas nearly anywhere you can think of.. Call us for more information.

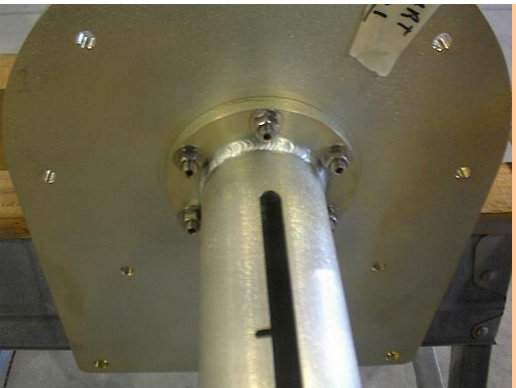
FM Antennas and Grounding Kits

When using jacketed flex line for FM Transmission, grounding kits are very cheap insurance to prevent problems. Grounding kits help electrically bond the outer conductor of the flex line to the tower. In the event of lightning, this makes it less likely that energy from the lightning strike will damage other components. Using one or two grounding kits near the antenna, and a kit every 150 feet or so down the tower works well. (Remember that the tower itself MUST be well-grouded and be fitted with lightning rods and static discharge/dissipation elements above the antennas.)

Grounding kits can also lower RFR hitting the ground. Yup! When there are multiple transmissions coming from a tower a lower side mount antenna can induce RF currents on the outer conductor of the flex line. These currents can travel down the outer conductor of the line a re-radiate. Adding grounding kits to transmission lines running behind a side mounted FM or TV antenna every 20 feet or so can greatly reduce these effects. When dealing with a side mounted UHF antenna, mount the ground clips closer together – 5 feet or so.

This simple approach can greatly reduce RFR near the base of the tower. The lower the better for RF public exposure.

Be on the lookout for the next volume of AntennaSelect coming out in June



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