Welcome to AntennaSelect™ Volume 44 – June 2019

Welcome to Volume 44 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:

Omnioid or Omni-directional – UHF Slot Antennas

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So the question comes up – use an Omnioid pattern slot antenna or an Omni-directional slot antenna? What are the performance versus cost trade-offs? Let's take a look… Under FCC rules the Omnioid antenna can be filed as an Omni-directional or non-directional antenna. The Omnioid antenna was common shortly after slot antennas became available. The Omnioid has a peak azimuth gain of approximately 1.7. The main lobe normalized field is about 100 percent, with the rear lobe is approximately 60 to 70 percent. Before antenna manufacturers learned to tune slot antennas with multiple slots per elevation, the Omnioid was the "Omni-Directional pattern of the day.

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For lower-power applications, a common pylon diameter of 3 to 4 inches at UHF and 10 to 12 inches at High Band VHF is typical.

Using an 8-bay slot antenna as an example, what is the gain using both the Omnioid and Omni-diectional methods. Figured as an Omni-directional, the gain is slightly more than unity per bay. For the 8-bay antenna that works out to be an elevation gain of approximately 8.2 to 8.5. Now to calculate the gain of the Omnioid, we multiply the azimuth gain of the antenna (commonly 1.7), by the elevation gain. That works out to a peak gain of about 13.7 or so.

With this configuration, if we apply 1 kW of RF input power to the Omni-directional antenna, the ERP would be about 8.2 kW. Applying the same power to the Omnioid antenna, the ERP is about 13.7 kW.

The FCC allows the Omnioid antenna to be filed as a directional antenna or as a non-directional antenna. In the case of the Omnioid antenna, the peak gain is about 13.7, or the average gain is about 8.2; (the average ERP of the Omnioid in this case works out to 8.2 kW in the example above).

So can you file an Omnioid as a non-directional antenna? Yes. If we apply 1 kW to the input, the peak ERP would increase to 25.5 kW, an increase of 1.7 times or 2.3 dB. Yes it is a “free” gift and for translators or lower-power signals, this will increase coverage a few miles.

Now what about the antenna…? The Omnioid with one slot per level would take a total of 8 slots to build using the 8 bay example. In the case of the Omni-directional antenna, 3 slots per level are commonly used. So here, the 8-bay Omni-directional antenna would have a total of 24 slots.

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Some details: The size of the two antenna types. Since the pylon of the Omni-directional antenna is larger (usually 6 inches diameter), the antenna will weigh more than the Omnioid, plus present a larger wind load area. The antenna will also have three times the slots and couplers, so the cost will also be higher. For use in higher wind zone areas, the bracketing system will also be somewhat more complex.

NEW SFN-T slot antenna

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A number of people have asked for something with higher performance and elliptical/circular polarization than common broadband UHF panel antennas. Our new SFN-T antennas are a perfect fit the for a large number of translator and low power stations, as well as SFN antennas for future ATSC 3.0 distributed applications. The SFN-T antennas are small, high performance slot antennas. Here is why they are superior to panel antennas: First, the SFN-T antennas come in a number of azimuth patterns, eliminating the need for multiple panels and power divider networks. Then the vertical component may be specified from 10% vertical to full circular polarization – with true in-phase quadrature performance. Low weight and wind load area make them deployable on a number of small structures

Want more? …The SFN-T is a low downward radiation antenna, with 6 to 15 dB less RFR hitting the ground. Deploying them on roof tops and short structures is a much easier task.

Fun Fact: Our SFN low RFR Technology turns 16 years old in a few months. Since then we have supplied hundreds of these antennas to RF-sensitive sites such as Empire State Building, Sandia Crest, Mount Royal (Montreal) and many others. This Technology works where others will not. Our competitors do not have this ability. Period.

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Simple antenna solution for the FM repack

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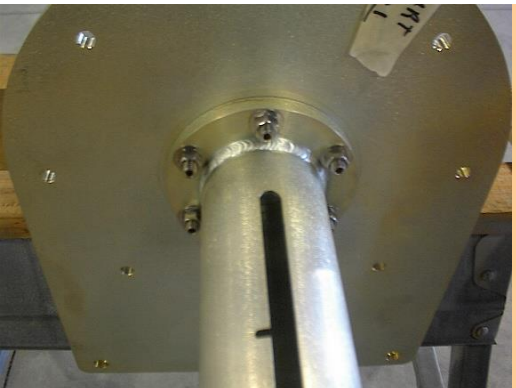
More FM stations are facing disruptions due to the Re-Pack. Locations to erect a temporary facility are facing space and severe tower-loading issues. We have a solution that might interest you. We have been putting together two-bay Micronetixx FM antenna systems that are both lightweight and versatile.

To do this we offer a two-bay antenna package with an input power divider, usually using a 1-5/8” EIA flange. This allows an input power rating of 6 kW. We can bump the input up to 10 kW if needed.

The antenna consists of two of our FMP antenna bays. These are rugged stainless steel bays, with a relatively Omni-directional pattern. Each bay is fed with a power divider. One of the advantages is better bandwidth and a simpler feed system. We have also proposed antennas for multi-channel operation.

The two-bay antennas have close to unity gain. We can also offer a higher bay-count, such as a 3 or 4 bay antenna, fed from an input power divider. The good news is the 2 bay antenna costs just north of $10,000. A sum that will make both the FCC and yourself happy. Contact us today.

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



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