Welcome to AntennaSelect™ Volume 32 – June 2017

Welcome to Volume 32 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 what you would like to see by emailing us at: info@micronetixx.com

In this issue:

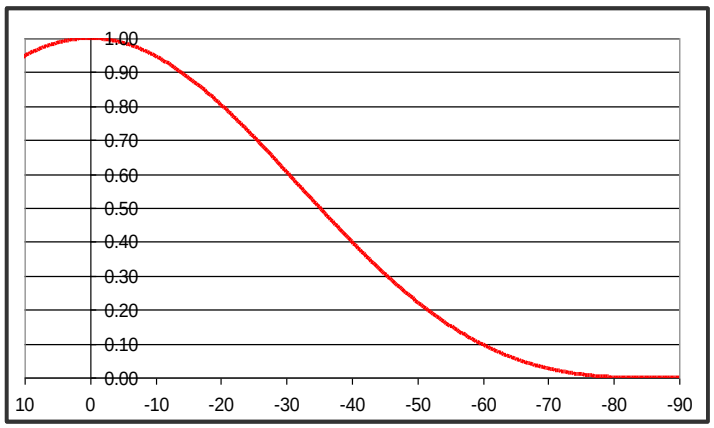
FMP FM Antennas Available for Channels 5 and 6

Our popular FMP Circularly-Polarized FM antennas are available for channel 5 and 6 applications. We have scaled the FMP antenna design to work on either channel. The FMP is an Omni-directional C/P antenna. A single bay has a gain of 0.49 (-3.10 dB). Multiple bay antennas are fed from an input power divider. The bays are spaced at half wave increments to lower downward RFR and provide better elevation gain.

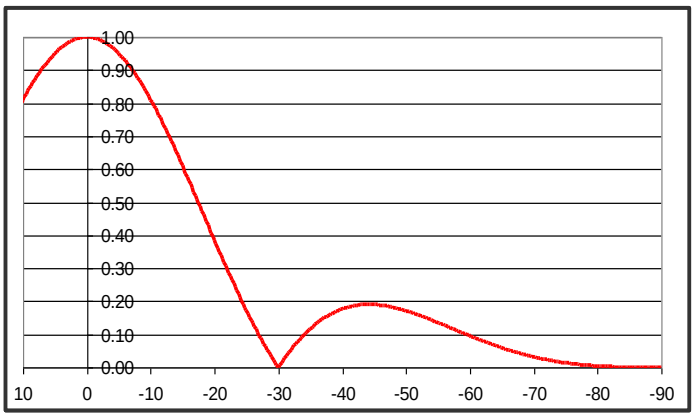
The FMP antenna bays are built with rugged heavy wall schedule 304 stainless steel. The bays are built to mount on an offrigged pole. Placing the bays off the tower face helps the antenna launch a near perfect C/P signal.

A single bay **FMP** is fed directly, while multi-bays are fed with a power divider. Input power ranges from 3 kW with a single bay to 24 kW with an 8-bay antenna. The maximum ERP of the **FMP** is 1.47 kW with a single bay and 60 kW with an 8 bay antenna. Since the multi-bay **FMP** antennas are branch fed, there is no differential group delay across the channel, making this a perfect choice for ATSC 1.0 and 3.0 operations

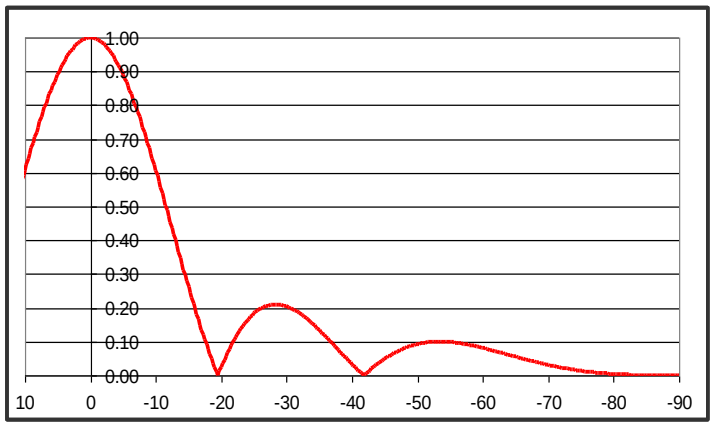
Sample FMP antenna elevation patterns



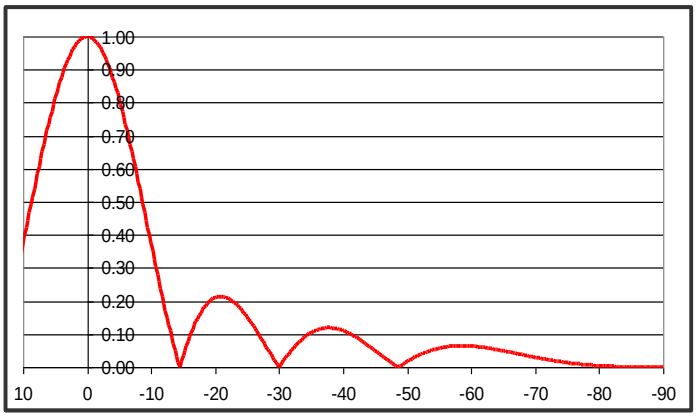
2 Bay elevation pattern



4 Bay elevation pattern



6 Bay elevation pattern



8 Bay elevation pattern

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FMP Antenna Electrical Information

Number of Bays	Antenna Gain (C/P)	Antenna Max Input Power	Maximum ERP
1	0.49 (-3.1 dB)	3 kW (4.77 dBk)	1.47 kW (1.67 dBk)
2	0.69 (-1.61 dB)	6 kW (7.78 dBk)	4 kW (6.02 dBk)
4	1.30 (1.14 dB)	12 kW (10.79 dBk)	15 kW (11.76 dBk)
6	1.90 (2.78 dB)	18 kW (12.55 dBk)	34 kW 15.31 dBk)
8	2.50 (3.98 dB)	24 kW (13.80 dBk)	60 kW (17.78 dBk)

The table above shows the gain, input power rating and maximum ERP of the antenna with an Omni-directional pattern. **FMP** Antennas can also be furnished with a broad cardioid pattern. To get the maximum ERP for the cardioid models, multiply the maximum ERP shown in the table above by 1.8.

Our **FMP** Antennas are built from rugged schedule 304 stainless steel. All elements of the Antenna are welded, and are held at DC ground. The **FMP** antennas mount to an outrigged pole. Multi-bay models come with a cut-to-frequency feed system and a power divider. The input to the power divider can be furnished with either a 1-5/8” or 3-1/8 EIA input, depending on input power needs

The chart below shows the space needed to mount the antenna and its wind load area and weight. The **FMP** has the lowest weight and wind area low band C/P low band VHF antenna on the market.

FMP Antenna Mechanical Information

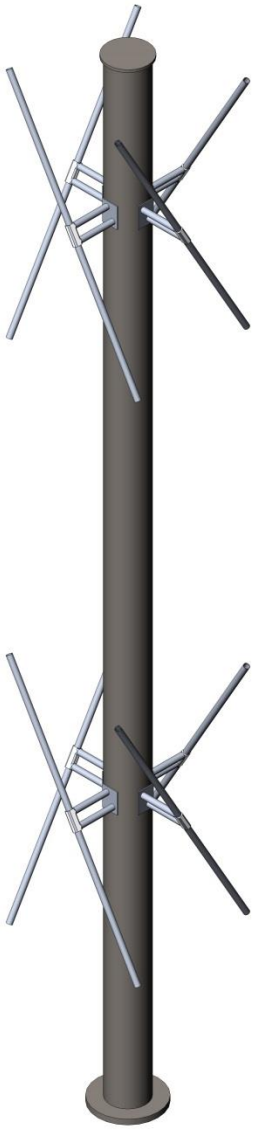
Number of Bays	Antenna Length	Reccomended tower space	Antena Weight	Antenna Load Area
1	4.0 ft. (1.22 m)	15 ft. (4.57 m)	35 lbs. (16 kg)	0.6 ft^2 (0.06 m^2)
2	9.5 ft. (2.90 m)	26 ft. (7.92 m)	85 lbs. (39 kg)	1.7 ft^2 (0.16 m^2)
4	21.7 ft. (6.62 m)	36.8 ft. (11.21 m)	155 lbs. (71 kg)	2.9 ft^2 (0.27 m^2)
6	32.6 ft. (9.94 m)	47.5 ft. (14.50 m)	225 lbs. (103 kg)	4.1 ft^2 (0.38 m^2)
8	43.5 ft. (13.26 m)	58.5 ft. (17.83 m)	295 lbs. (134 kg)	5.3 ft^2 (0.49 m^2)

Note: Mechanicals are for a channel 6 antenna

The **FMP** is Re-Pack ready and is great for temporary or permanent standby applications. Call us today for the details.

Lindenblad Antenna – Questions and Answers

MICRONETIXX COMMUNICATIONS



Two Bay LB Antenna

In the last issue of AntennaSelect, we introduced our new Lindenblad Antenna for low band VHF. Some questions came in about other uses for the antenna, and what bay size is optimal

The first question is: “Is the Lindenblad available for high band VHF applications?” Answer: no. The support monopole needed would distort the vertical pattern and scatter it. A far better antenna for high band VHF is our TPV or TPV-SFN antenna with elliptical or circular polarization added. We also introduced our THV Series of C/P antennas last month.

Second question: “What is the best bay count for a low band VHF application?” There is no advantage in selecting a single bay vs. a multi-bay model except for higher gain from the multi-bay profile. A single bay model has a gain of 0.49 and at channel 2 is about 16 feet long. Going to a two bay model has unity gain, and is about 34 feet long.

Low bay-count antennas on low band VHF cast a broad beam over the viewing public. What really improves reception is the great C/P signal provides.

Third Question: “In looking at the future and wishing to maximize ERP, what is the highest gain LB model?”

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Answer: The LB antennas at low band VHF are large. Spacing at channel 2 between bays is 17-1/4th feet. At channel 6, spacing drops to 11-5/8th feet. If the tower has capacity, we can supply these antennas up to 6 bays. That would give you a gain of 3.0. If the LB antenna was replacing a top mounted UHF pylon, a two or three bay LB would most likely present lower weight and wind loads than the UHF pylon.

Final Question: "Can the LB antennas be used at FM?" Yes. The LB antennas have wide bandwidth at FM. This is a top-mounted only solution. We can supply them up to a bay count of 8.

Translator and LPFM Mounting Questions:

As more translator and LPFM stations are built, we get questions from customers regarding how they should mount their antennas. Here is a sample of some of the questions we have received:

"Can I mount my LPFM antenna on a used power pole?" This customer was able to get an 80 foot used pole from the local power company. They offered to set the pole at no cost. The answer is yes if the antenna is mounted properly. In this case it was a single bay antenna. Our advise is to install a section of steel galvanized pipe that extends 10 feet above the pole top. Mount the antenna 5 feet from the top of the new metal pole. Bond that pole with 1" wide ground strap for low self-impedance. A licensed electrician should be able to install a proper grounding system. For the transmission line (they used ½ inch flex), install a ground kit near where the support pole is grounded. Mounting the antenna directly to the power pole will not work well as the wooden pole's RF characteristics change during rainy periods. This can affect the tuning of the antenna.

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Another reader asks: “I am putting my LPFM on the side of a large face cell tower. Can I mount antennas on opposing sides to improve coverage?”

For practical purposes, probably not. It would take a lot of work to calculate what spacing would work – and that is from theory. A scale model and pattern testing at the factory would need to be done. There might not be a good answer even with the testing. A second antenna may cancel out a large portion of signal over a number of azimuths. If the two-antenna system did work, future changes to the tower could change the azimuth pattern. Adding something as small as a few transmission lines could cause pattern changes. From a dollars and sense point of view, the tower owner will be glad to charge the LPFM station more rent, as they are occupying double the amount of tower space!

So here is our answer for the station; If there is an important azimuth direction that needs optimum coverage, mount the antenna on that side of the tower. Offset the antenna from the leg of the tower by a minimum of 3 feet – 5 feet is even better. This is done with an outrigged pole system. Moving the antenna away from the tower leg will set it up to launch the best possible C/P signal. There could always be some azimuth pattern distortion looking through a wide-faced tower.

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