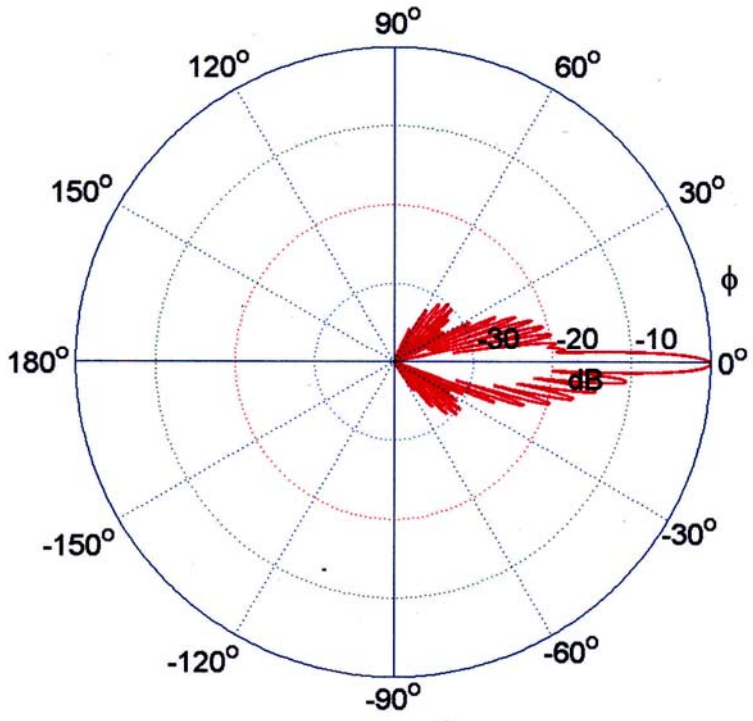
MICRONETIXX COMMUNICATIONS

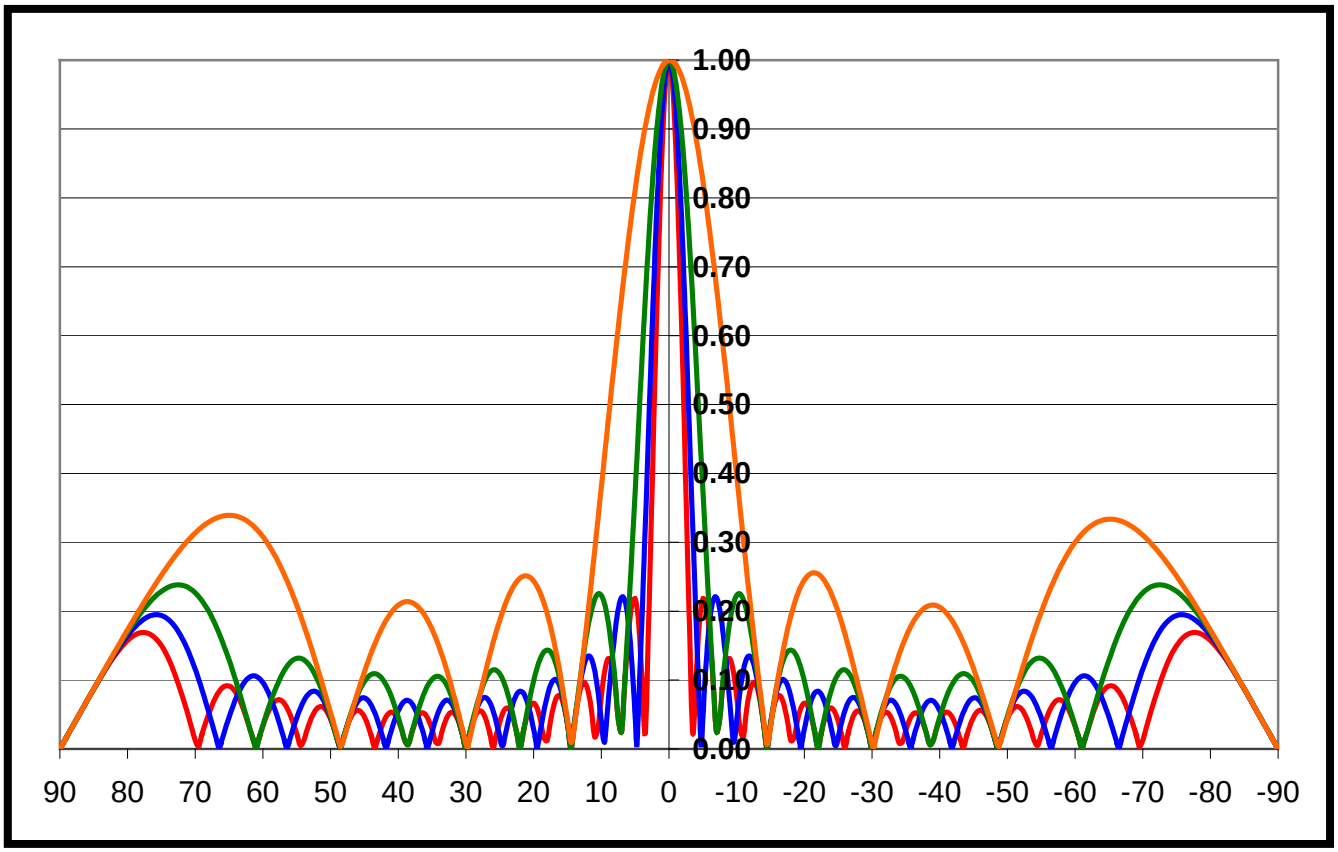
Low RFR Slot Antennas

Micronetixx Communications builds very low RFR slot antennas for both UHF (Band IV) and VHF (Band III) applications. Using an innovative design, these low RFR antennas produce up to 30 dB less RFR at high depression angles. Having a much lower RFR footprint allows the antennas to be mounted at lower positions on a tower or building rooftop and still meet all RF exposure rules. The low RFR antennas are the same physical size as standard antennas, and also can be configured to provide elliptical or circular polarization to enhance Mobile TV.



A polar plot of a 18 bay Micronetixx low RFR slot antenna, with 1 degree of beam tilt and 10% first null fill.

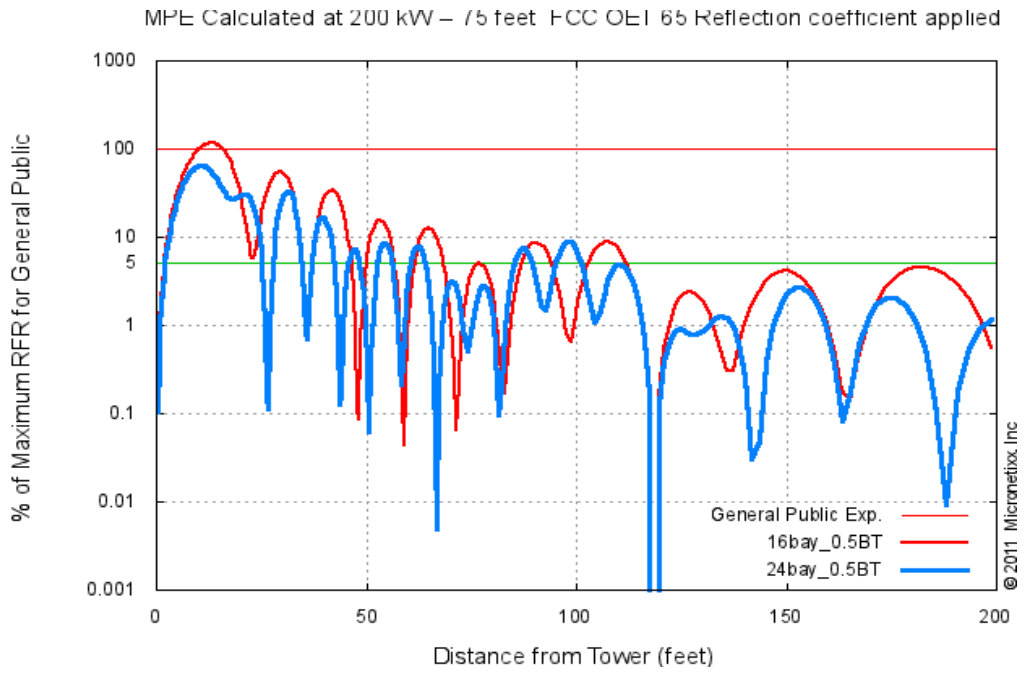
What causes RFR problems when using standard antennas ?



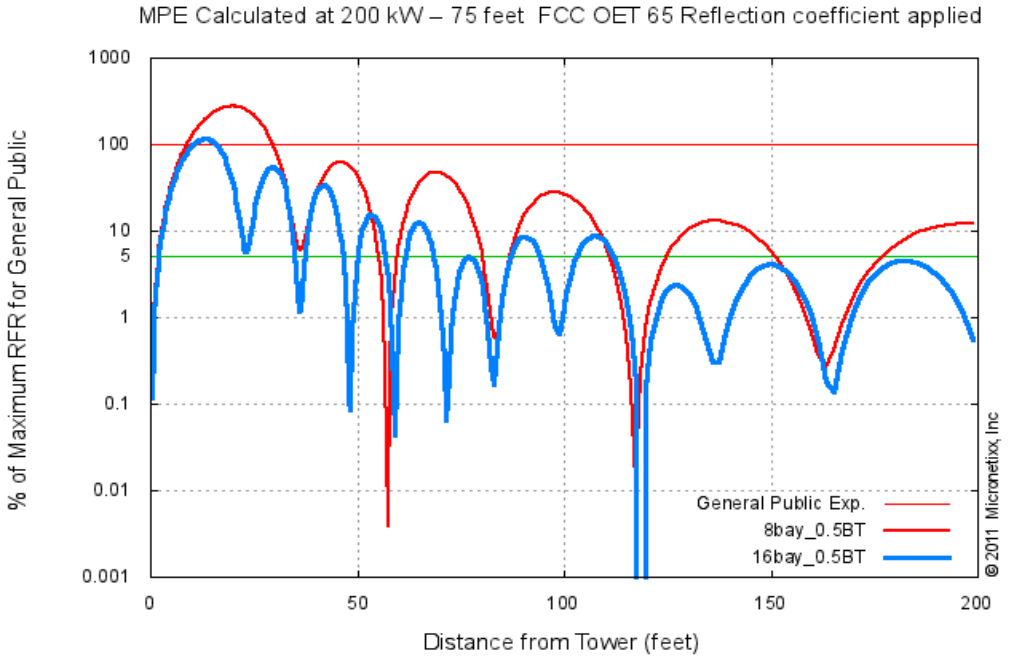
A Cartesian plot of a 4 bay antenna (ORANGE), 8 bay antenna (GREEN), 12 bay antenna (BLUE), and 16 bay antenna (RED).

For broadcasters the perfect antenna would concentrate all of the radiation from the horizon to about 10 degrees below the horizon. In reality most antennas place a good deal of radiation at higher depression angles, and above the horizon.

On short tower or building rooftop sites, RFR can be a real problem. One problem with standard spaced (1 Wavelength) antennas is the residual grazing lobes at about +/- 80 degrees do not decrease with bigger bay count antennas. The last grazing lobe is usually the one to cause the worst RFR problem. If a station had an ERP of 200 kW and used the 16 bay antenna plotted above, the ERP at +/- 80 degrees would be 6.48 kW (8.11 dBk). A 24 bay antenna would produce nearly the same result.



The plot above shows the MPE of the 200 kW station with a center of radiation 75 feet above ground. The red plot is the 16 bay antenna, the blue plot is the 24 bay antenna. The major grazing lobes about –80 degrees down is on the left of the plot.

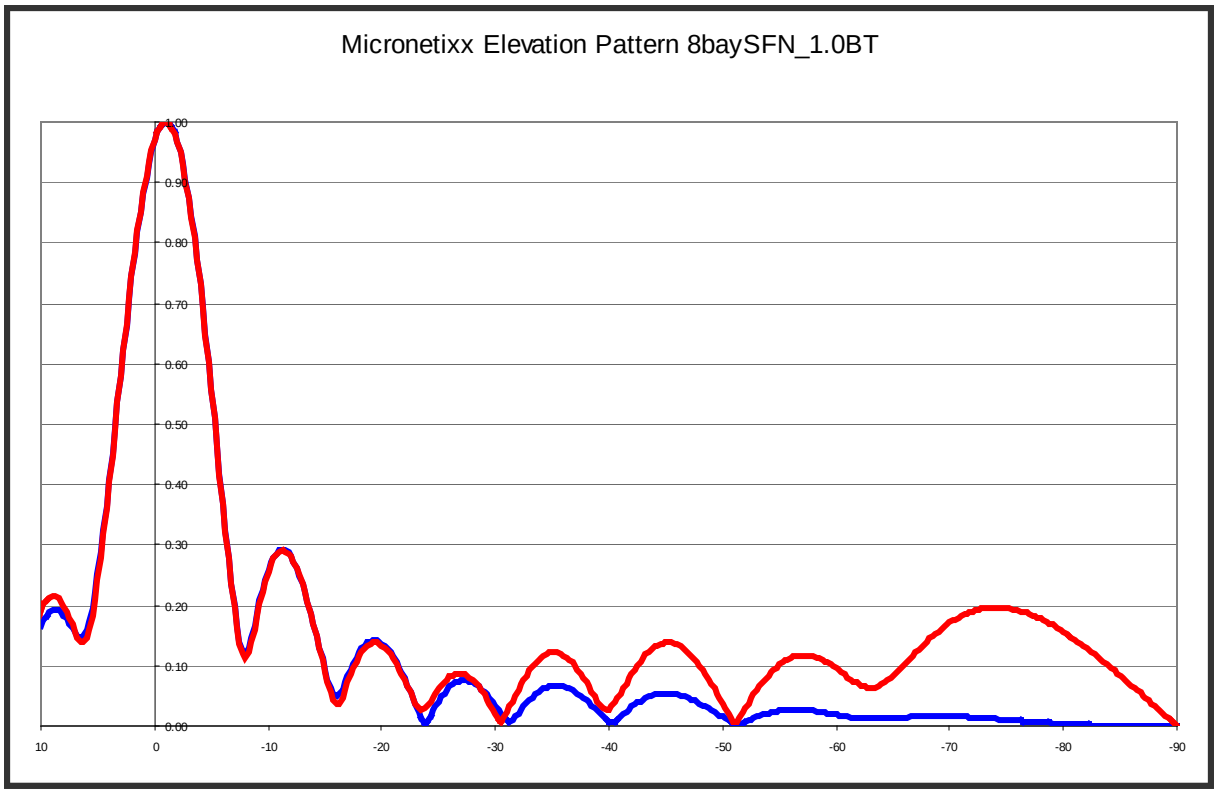


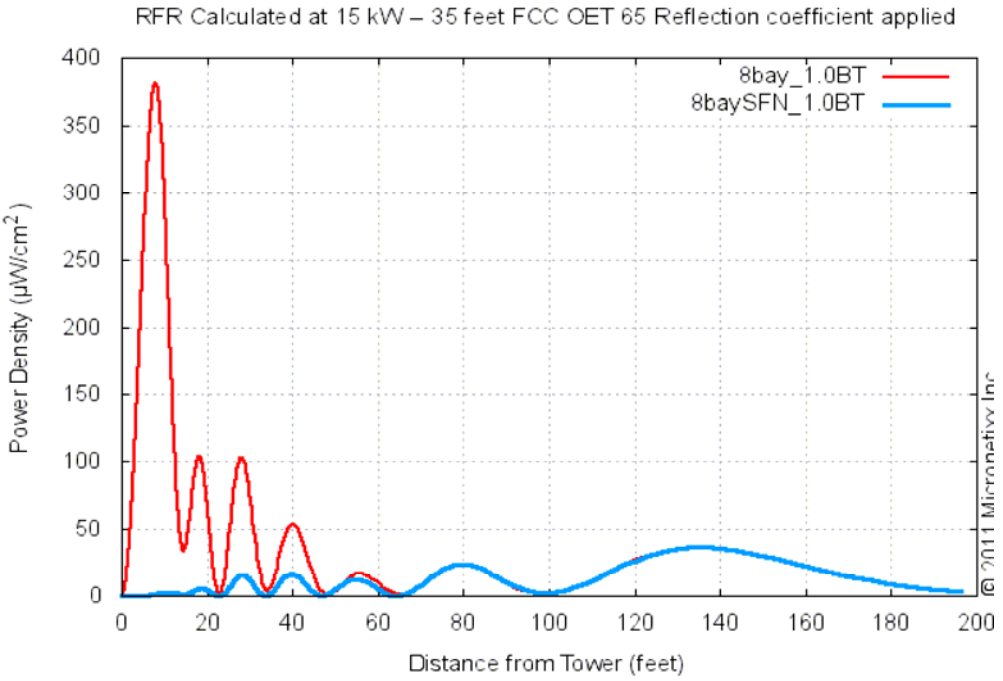
This plot shows the same 16 bay antenna (Blue plot) compared to a 8 bay antenna (Red plot) – 75 feet above the ground at 200 kW. The last grazing lobe of the 8 bay antenna leaves even a larger RFR hotspot near the tower.

Micronetixx Low RFR Antennas

Using innovative technologies along with some patent pending antenna structures, we have created a very low RFR slot antenna that can be used for UHF (Band IV) or VHF (band III). These antennas produce up to 30 dB less radiaton at high depression angles, both below and above the horizon. Since the radiation pattern of these antennas are suppressed at high depresssion angles, the elevation gains are about 15% higher than a standard antenna. This in some cases can allow the use of a slightly smaller antenna which will increase the width of the main lobe. The low RFR antennas have excellent bandwidth and very low group delay over the channel, making them perfect for all digital transmission formats.

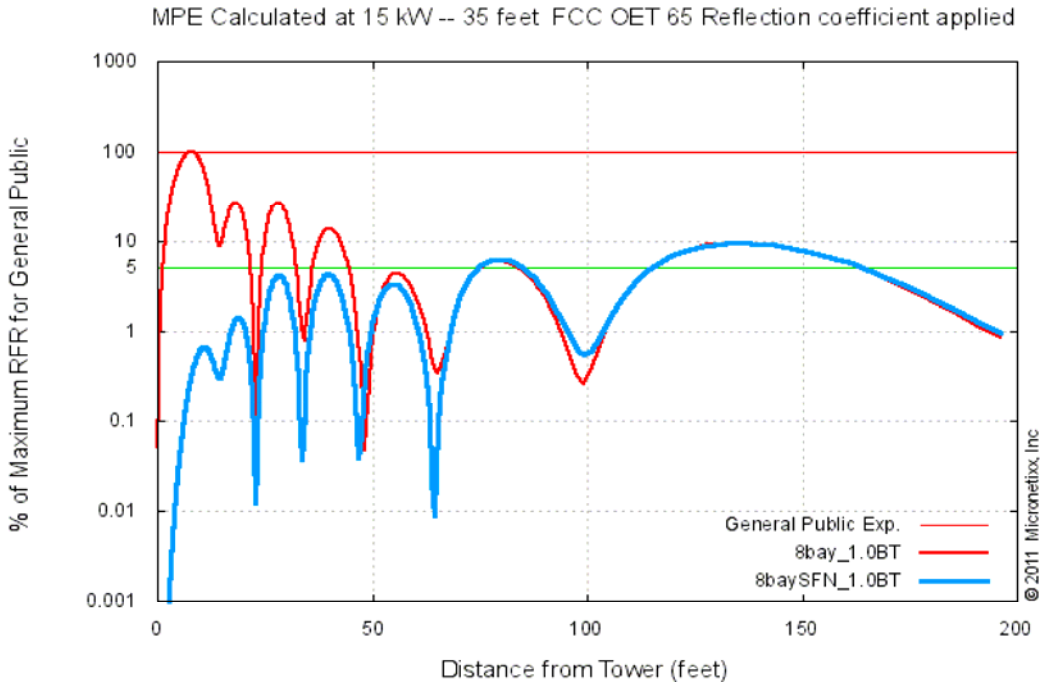
Below is a plot of a 8 bay standard slot antenna (Red Plot) and a Micronetixx low RFR antenna (Blue Plot)



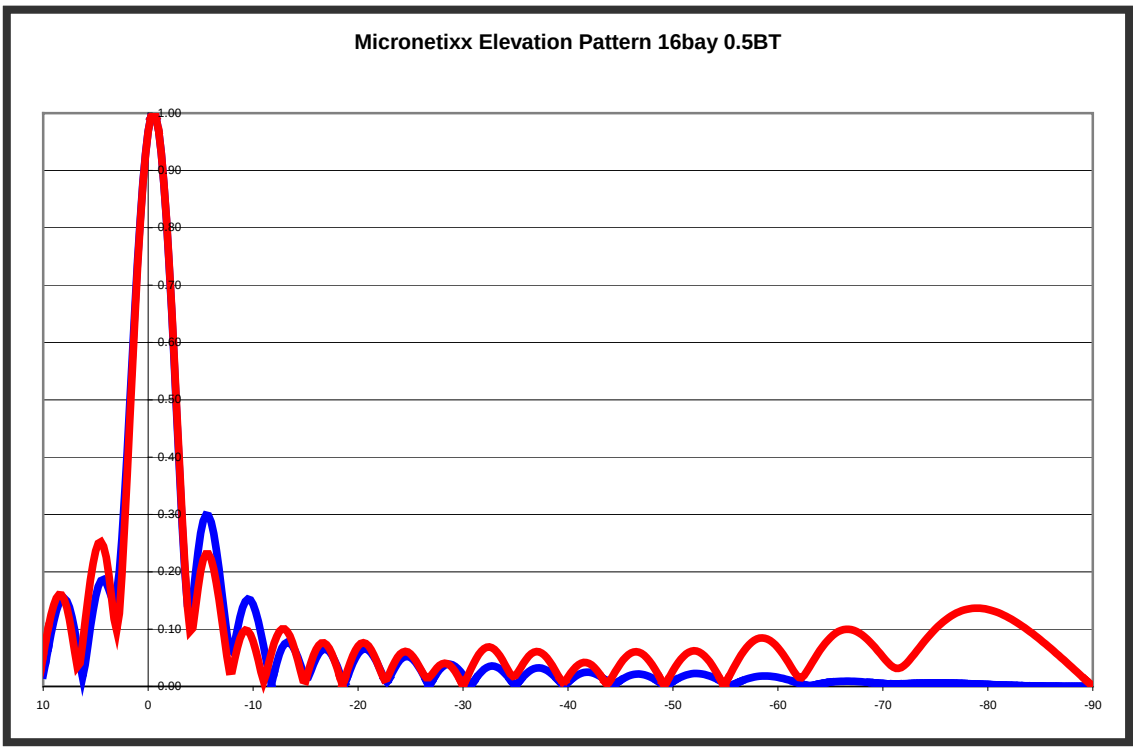


The graph above is the power density of the two 8 bay antennas mounted 35 feet up with an ERP of 15 kW. The red plot is the standard antenna, the blue plot a Micronetixx low RFR antenna.

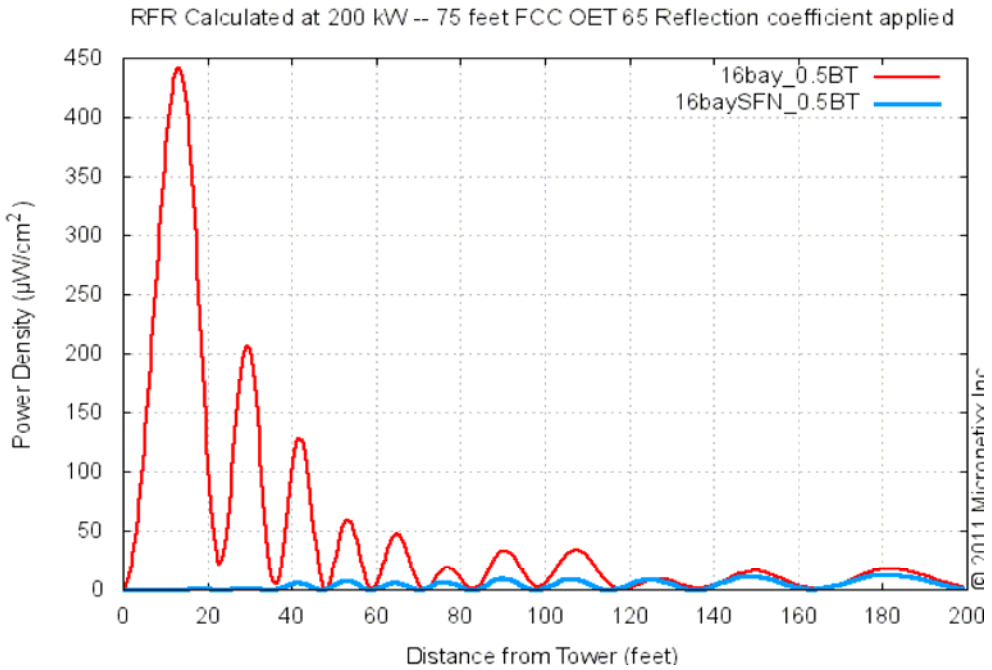
The plot below is the same two antennas, showing percentage of MPE (Maximum Public Exposure), again with an ERP of 15 kW.



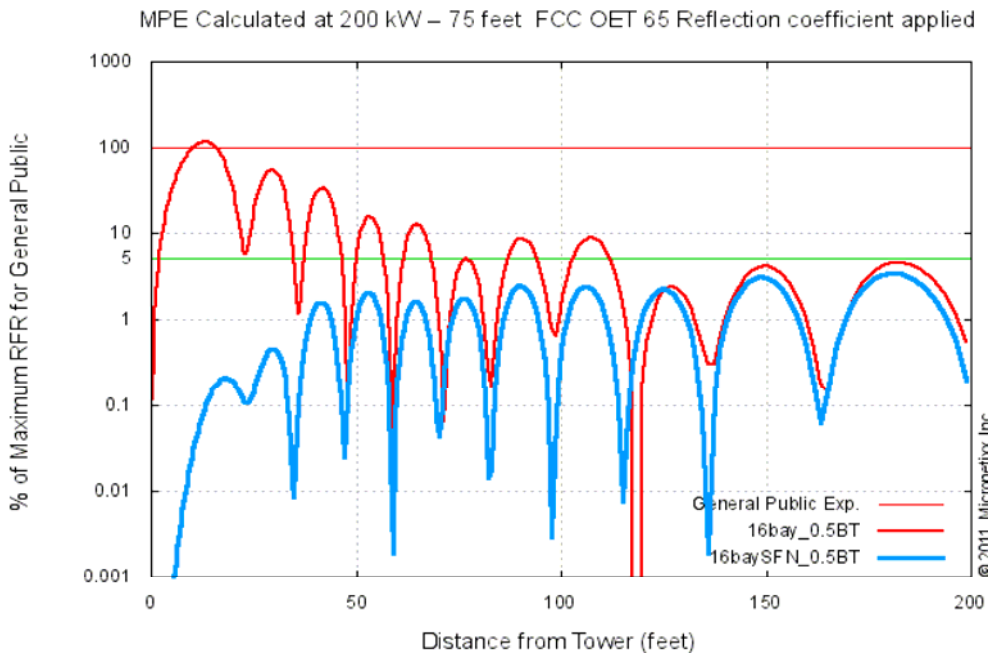
The plot below is a comparison of a 16 bay standard slot antenna (Red plot) and a 16 bay Micronetixx low RFR antenna (Blue plot).



The graph below show the power density of the two antennas with an ERP of 200 kW and 75 feet up. The red plot is the standard slot antenna , the blue plot is the Micronetixx low RFR antenna.



The graph below shows the MPE of the same two 16 bay antennas at 200 kW and 75 feet up. The red trace is a standard slot antenna, the blue trace is the Micronetixx low RFR antenna.



Sample Elevation Gains

	Standard Slot	Micronetixx Low RFR
4 Bay	4.05 (6.07 dB)	4.80 (6.81 dB)
6 Bay	6.15 (7.88 dB)	7.00 (8.45 dB)
8 Bay	8.20 (9.14 dB)	9.35 (9.71 dB)
10 Bay	10.30 (10.13 dB)	11.70 (10.68 dB)
12 Bay	12.35 (10.91 dB)	13.70 (11.36 dB)
14 Bay	14.40 (11.58 dB)	15.80 (11.98 dB)
16 Bay	16.40 (12.15 dB)	18.00 (12.55 dB)
18 Bay	18.35 (12.63 dB)	20.10 (13.03 dB)
20 Bay	20.20 (13.05 dB)	22.90 (13.60 dB)

More advantages of Micronetixx Low RFR antennas

The low RFR antennas can solve a lot of problems and save money in some cases. Here are just a few examples:

- Allows for mounting on short structures or towers where a standard antenna would produce too much radiation.
- Allows full time operation on building sites, where the station would have to power down or shut off when personnel are on the roof.
- Reduces intermodulation chances on multi-user sites by greatly decreasing downward radiation.
- Makes more space on short towers rentable and still make site RFR goals.
- For on channel SFN applications, greatly increases the isolation of the transmit and receive antenna vetically.
- The extra gain of the low RFR antennas, may reudce the need for a larger transmitter or amplifier in marginal power budget situations.

Let us design and build a Low RFR antenna for you

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