When the requirement is to distribute undistorted, unimpaired signal in all directions, except a selected area, ERI's family of directional FM antennas provide the solution. ERI has designed, fabricated, and installed directional FM antenna for over 25 years. Utilizing ERI's 70 acre test range all directional antenna designs are verified with full scale measurements and meet the requirement of the Federal Communications Commission.

Of equal importance to the directional antenna’s pattern is the antenna support structure. ERI is the only manufacturer that can provide both the antenna and its support structure. ERI’s exclusive LAMBDA™ Optimized Mounting System and top mounted support poles allow for optimum antenna performance while ensuring a secure, unobstructed antenna aperture. ERI’s expertise in every phase of directional antenna development affords a timely and economical response to customer requirements.

**Directional ROTOTILLER® FM Antennas**

The most popular and economical method of achieving a directional FM antenna utilizes ERI’s ROTOTILLER® FM antenna, augmented with directors that provide the suppression required. The configuration of the antenna system is developed on the test range at full scale to ensure absolute reproduction of the required horizontal plane pattern.

These antennas have all of the benefits of the ERI ROTOTILLER® series FM antennas including an internally fed, fully pressurized system with superior fabrication characterized by totally welded feed connections, rugged brass material and TIG welding. The antenna’s configuration and the large diameter of the radiating elements contribute to the excellent bandwidth of the antenna system, and also inhibits corona discharge and has a high immunity to weather induced VSWR.

This product approach provides a directional FM antenna that can meet most license requirements, at an affordable price, and is a compact and easy to install antenna system.

**DA-1005 Directional FM Antennas**

The ERI, DA-1005 series FM antenna is pole or LAMBDA™ mounted and designed to radiate power in a highly defined directionized pattern. This dual polarized antenna is ideal for FM stations operating under a FCC construction permit which requires a directional antenna pursuant to Docket MM87-121.

The DA-1005 antenna is comprised of vertical and horizontal dipole elements. Each element is constructed of 3-1/8” diameter, brass tubing with silver soldered connections. This combination of materials provides excellent strength, flexibility, and durability. The large diameter of each element affords superior structural integrity and contributes to the wide VSWR bandwidth of the antenna. The DA-1005’s design vastly reduces the need of protection from radial ice accumulation. Radomes are available in extreme icing conditions. ERI’s optional DA LAMBDA™ mounting is designed and fabricated to enhance the operational and structural characteristics of the DA-1005 antenna.

The DA-1005 antenna system, comprised of the DA-1005 antenna and ERI’s DA LAMBDA™ support structure are developed on our 70 acre antenna pattern range. Pattern documentation is provided to meet pertinent requirements of the station’s construction permit and FCC rules concerning directional antennas.
Directional FM Antennas
And Pattern Optimization Services

When the requirement is to distribute undistorted, unimpaired signal in all directions, except a selected area, ERI's family of directional FM antennas provide the solution. ERI has designed, fabricated, and installed directional FM antenna for over 25 years. Utilizing ERI's 70 acre test range all directional antenna designs are verified with full scale measurements and meet the requirement of the Federal Communications Commission.

Of equal importance to the directional antenna's pattern is the antenna support structure. ERI is the only manufacturer that can provide both the antenna and its support structure. ERI's exclusive LAMBDA™ Optimized Mounting System and top mounted support poles allow for optimum antenna performance while ensuring a secure, unobstructed antenna aperture. ERI's expertise in every phase of directional antenna development affords a timely and economical response to customer requirements.

1180 Series Directional FM Antennas

For single and multiple station applications, the ERI 1180 Series FM Panel antenna can be configured as a directional FM antenna. This offers the directional FM station the benefits of high power handling, excellent axial pattern circularity, and the ability to have excellent horizontal plane pattern performance even when mounted on large tower faces.
The future of a radio station is highly dependent on the quality and size of the station’s coverage area. Understanding your antenna system’s coverage before the installation can make the difference between success and failure.

Antennas sold for commercial broadcasting are generally advertised as omnidirectional. This means the antenna delivers uniform radiation in all azimuth directions. However, the qualifying statement, “based upon a free space evaluation” usually goes unnoticed. FREE SPACE means the measurement was made without the influence of a mounting structure. The mounting structure will impair the omnidirectional performance of the antenna.

The success of the antenna coverage will depend upon your knowledge of the support structure’s effect on the antenna’s radiation pattern. ERI can provide this information.

ERI owns and operates a 70 acre antenna pattern test facility capable of measuring the radiation properties of ERI and competitive antenna systems. The antenna’s radiation characteristic as a function of mounting is determined by exploratory investigation. Utilizing several antenna modeling stations, studies are conducted in full or fractional scale mock-ups. The result is a complete understanding of the relationship between your antenna and support structure; and knowing where the signal goes.

An antenna/tower investment must meet your economic and performance expectations. Don’t rely on guess work or luck! Before the purchase of an antenna or tower, arrange for pattern measurements. Can you afford not to?

**Antenna Pattern Optimization**

There are often advantages in eliminating the antenna pattern distortion caused by the support structure. Pattern circularity can be restored by the addition of parasitic elements or a LAMBDA™ Optimized Mounting System.

Parasitic elements are non-driven directors placed near the antenna elements. For existing installations this procedure is usually inexpensive and highly effective. For new installations or height extensions the LAMBDA™ Optimized Mounting System offers several advantages.

On very large support structures, side mount antenna optimization may not be possible. Omni-directional antenna patterns are only possible by using an ERI 1180 Series Antenna. Antenna Mounting Analysis, Pattern Optimization, and LAMBDA™ Optimized Mounting System are highly effective means for improving signal coverage.

The successful antenna/tower project must be responsive to your financial and technical demands. ERI offers the experience and product to ensure the competitive edge in your broadcast market.

<table>
<thead>
<tr>
<th>Type Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPM-01</td>
<td>Measurements on a 6-5/8” to 22” in diameter steel mounting pole. An average pole diameter is used if mounting is stepped or tapered.</td>
</tr>
<tr>
<td>FPM-02</td>
<td>Measurements on a 18” to 48” face triangular untapered steel tower section.</td>
</tr>
<tr>
<td>FPM-03</td>
<td>Measurements on a 48” to 120” face triangular untapered steel tower section.</td>
</tr>
<tr>
<td>FPM-04</td>
<td>Measurements on a greater than 120” face triangular untapered steel tower section.</td>
</tr>
</tbody>
</table>
About Electronics Research, Inc.
Founded in 1943, Electronics Research, Inc. delivers high quality, innovative, integrated solutions to broadcasters across the U.S. and around the world. Our dedicated staff of engineers, designers, fabricators, and project managers take pride in contributing to your success by providing AM, FM, VHF, UHF, BRS-EBS, and Mobile Media broadcast systems including the industry’s best antenna, transmission line, filter/combiner, and tower and structural support systems. In addition to manufacturing the full range of broadcast system components and installation accessories, ERI offers a suite of engineering and field services needed to plan, install, optimize, and maintain your broadcast facility. We are your single source for broadcast solutions.

Broadcast Antenna Systems
- ROTOTILLER® FM Antenna
- LYNX™ Dual Input Antenna for FM-IBOC
- 1105 Circularly Polarized FM Antenna
- 100A Series Low Power Circularly Polarized FM Antenna
- FM Low Power Horizontally Polarized Educational FM Antenna
- P300/P350 Series Vertically Polarized FM Antenna
- 1180 and 1090 Series Broadband Panel FM Radio Antenna
- SLIMWING™ Batwing VHF Television Antenna
- CRUCIS™ Crossed Dipole VHF Television Antenna
- STINGRAY™ Broadband Television Panel Antenna
- TRASAR® High Power Traveling Wave Television Antenna
- AGW Quick-Deploy Emergency UHF Television Antenna
- ALP Low and Medium Power UHF Television Antenna
- AL Series Low Power UHF Television Antenna
- HMD BRS-EBS Antenna
- SHADOWMASTER® Shadow-Filling BRS-EBS Antenna

Transmission Line Systems
- MACXLine® Rigid Transmission Line with Bellows
- HELIAX® Air- and Foam-dielectric Coaxial Cable
- HELIAX® Standard Elliptical Waveguide
- GUIDELine® Circular Waveguide
- Standard Rectangular Waveguide
- Dehydrators and Pressurization Equipment

Filter and Combining Systems
- FM Radio Filter and Combining Systems
- UHF and VHF Television Filter and Combining Systems
- DAB Filter and Combining Systems
- Mobile Media Filter and Combining Systems
- RF Components
- System Monitoring and Protection Components

Structural Support Systems
- Guyed Towers
- Self-Supporting Towers
- Roof-top Antenna Support Structures
- Specialty Structures and Custom Antenna Supports

RF and Structural System Services
- RF Field and Engineering Services
- Installation and Structural Engineering Services

All designs, specifications, and availabilities of products and services presented in this publication are subject to change without notice.