JAMPRO ANTENNAS, INC.

JTC

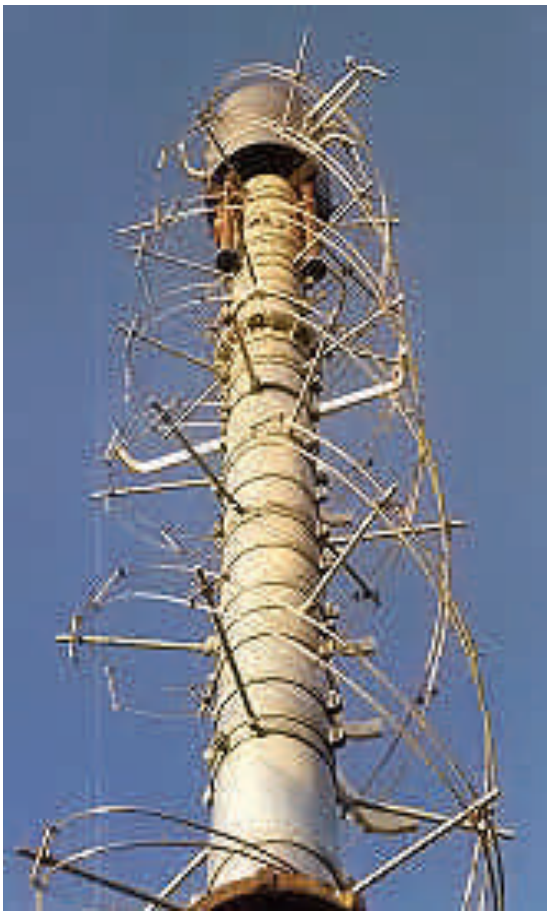
CIRCULAR POLARIZED SPIRAL FM AND TV ANTENNA

JAMPRO's Circularly Polarized Spiral Antenna provides the television broadcaster with the industry's technically finest CP antenna with a proven, in-use design, featuring superb performance in a rugged yet simple mechanical structure. The antenna is customized for each application and can be supplied for any single VHF or UHF channel: 2-70. Dependent upon system Null fill is produced by setting the spiral pitch angles for a given portion of the aperture.

The design of the JTC Circularly Polarized Spiral Antenna provides low radiation at steep depression angles, thus minimizing the danger of exceeding environmental radiation limits near te base of the tower. The customer must assume responsibility for complying with these ANSI requirements. JAMPRO will provide design or measured pattern values, but cannot accept responsibility in this matter due to many requirements, the spiral is built in either two or three sections and provides omnidirectional, circularly polarized power gains from 2 to 15 (or even higher on special order).

The spiral design provides an almost perfect horizontal pattern circularity of +- 1.0 dB(VHF) and +- 0.5 dB(UHF). Axial ratio, a true measure of performance of circularly polarized antennas, is excellent at only 1.5 dB. Electrical beam tilt and null fill are standard. The amount of each may be directed by the customer and his consultant to suit local conditions. Power input to the spiral is a standard

The JTC Circularly Polarized Spiral Antenna consists of a supporting pole around which are multiple stainless steel spirals wound at specific pitch angles and spaced from the pipe by heavy-duty fiberglass-reinforced lowloss insulators. The array acts as a traveling wave antenna, with the main beam broadside to the support pole and exceptionally low radiation along the axis of the pole. It produces an omnidirectional azimuth pattern with low VSWR. The pole diameter, length and number of spirals vary with the operating channel and gain required. Power is fed to the individual radiators by power dividers located at the top end of each section. The design readily allows for electrical beam tilt by setting the phase progression between the antenna sections. other factors not under our control.



True CP radiator for optimum circularity +/-1.0 or better

UHF/VHF/FM applications

Low uniform axial ratio 2 dB or better

Low windload design

Years of proven performance

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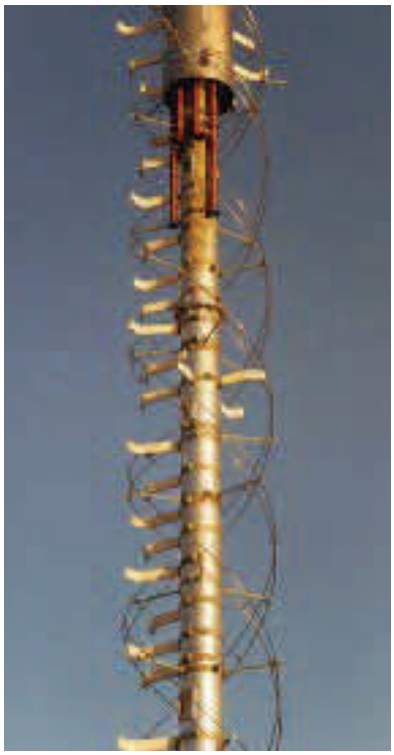
ELECTRICAL DESIGN

Three or more stainless steel spiral radiators are wrapped in a taper around the steel support pole. This patented design results in a varied pitch angle and diameter of these radiators and produces the excellent pattern. Low axial ratio produced by this antenna gives best CP performance including optimum response by viewers using rabbitear or conventional antennas.

Antennas are individually designed to the customer's technical requirements. Thus, it is not necessary to accept a stock gain, beam tilt or null fill figure. JAMPRO supplies the antenna with specified beam tilt and null fill figures as needed. Computer design enters these figures into production as power division values or phase differences in the antenna sections. Correct design is proven by final pattern measurements at the JAMPRO antenna range.

The spiral design is relatively insensitive to ice, however provision is made for deicing the antenna by internal resistance heaters in the spiral radiators. Approximately 15 watts per foot is used per spiral, and a harness to bring this to the base of the antenna is provided. 120 volts or 208 volts, three phase is commonly used. Other values can be provided.

An important advantage of the spiral design is in the feed system that is all internal and pressurized by the dry air in the transmission line. No external cables are used. No ungrounded members are used, which would be prone to lightning damage. A triaxial feed system internally provides power to the section of the antenna, and the spiral radiators themselves are grounded at each end. Insulation in the JTC Circularly Polarized Spiral Antenna is teflon, and fiberglass climbing steps are provided. The antenna is capable of being serviced with the antenna normally mounted on the tower.



MECHANICAL DESIGN

E.I.A. design requirements are followed, and mechanical specifications by a licensed engineering consultant dictate pole dimensions and other features of the JTC Circularly Polarized Spiral Antenna. The antenna is commonly provided for flange mount at the tower top. All steel is hotdipped galvanized after fabrication and before assembly. Beacon mounting plate and wiring to the base of the antenna is provided, as well as four lightning rod assemblies.

Installation of the antenna may be made as one unit or the sections may be hoisted and installed individually. If necessary, any part of the JTC Circularly Polarized Spiral Antenna can be removed for service or inspection at the tower top. It will not be necessary to remove the antenna for any service that might be required. A field technician who is familiar with the antenna's construction may be provided as an option to assist with installation.
*Note: All specifications are subject to change with-

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SPECIFICATIONS						
50/33 PSF, NO ICE						
VHF—LOW BAND						
Channel	Power Gain	Height (ft.)	Weight (lbs)	Diameter (ft.)	Shear (lbs.)	Moment (KIP ft.)
2	3.0	114	15,450	4.8	5,875	298
3	3.0	104	10,995	4.3	5,285	240
4	3.0	94	8,660	4.0	4,475	180
5	3.0	82	5,435	3.5	3,925	145
6	3.0	76	5,055	3.2	3,640	126
VHF—HIGH BAND						
7	6.0	63	3,650	3.1	2,175	68
8	6.0	62	3,545	3.0	2,165	66
9	6.0	61	3,490	2.9	2,110	63
10	6.0	60	3,435	2.8	2,090	62
11	6.0	59	3,380	2.7	2,025	59
12	6.0	58	3,330	2.6	2,005	58
13	6.0	57	3,275	2.5	1,980	57
VHF– HIGH BAND						
7	8.0	94	7,410	3.1	4,220	171
8	8.0	91	7,190	3.0	3,860	162
9	8.0	88	61970	2.9	3,645	144
10	8.0	85	6,745	2.8	3,522	135
11	8.0	83	6,635	2.7	3,405	128
12	8.0	81	6,415	2.6	3,385	123
13	8.0	78	6,410	2.5	3,225	118
UHF						
14-24	15.0	68	3,865	2.8	2,462	84
25-36	15.0	60	3,435	2.5	2,170	65.7
37-50	15.0	52	3,000	2.2	1,885	49.8
51-70	15.0	46	2,685	2.0	1,675	39.4

Note: The above specifications are for circular polarized applications.