Shively Labs®

Model 6814 Super-High-Power FM Antenna — Half-Wave-Spaced

True Circular Polarization

Handles up to 25 kW per Bay

Multiplexes over 6 MHz Bandwidth

using coax broadbanding technology

Shively Standard Features:

- Ring Stub Design
- Consistently Predictable Patterns
- Digital-Ready
- Pattern Studies Available
- No Factory Personnel Needed to Install
- Adjustable Fine-Matching Transformer
- Radomes and Deicers Available
- Rugged Stainless Steel Corrosion-Resistant Mounts
- Works with Regular Towers; No Need for Special Frequency-Sensitive Tower Sections
- Pressure Relief Valve for Easy Purging of the System
- Special Spacing, H/V Ratios, Null Fill and Beam Tilt Avail

Performance Specifications:

Polarization: Right circular.

VSWR: 1.05 : 1 ± 200 kHz for a single-frequency antenna
1.1 : 1 over ± 200 KHz for a dual frequency antenna with up to 6 MHz frequency separation.

Azimuth Pattern Circularity: Horizontal component ± 1.5 dB on pole.

Input Connection: Standard up to 40 kW; 3-1/8" female flange; end-fed 2 - 7 bays; center-fed over 7 bays
Special on request: up to 80 kW input; 4-1/16" male or 6-1/8" male flange.

Electrical Specifications:

No. of Bays	Gain		Input Power Rating, kW		No. of Bays	Gain		Input Power Rating, kW	
	Power	dB	End-fed	Center-fed		Power	dB	End-fed	Center-fed
2	0.70	-1.54	25	50	7	2.22	3.47	40	n/a
3	1.01	1.05	40	n/a	8	2.53	4.03	40	80
4	1.31	1.17	40	80	10	3.14	4.96	40	80
5	1.62	2.08	40	n/a	12	3.75	5.24	40	80
6	1.92	2.83	40	80					

Notes:

1. End-fed arrays include 3-1/8" EIA input. Center-fed arrays include 3-1/8" EIA input (6-1/8" EIA and 4-1/16" optional).
2. Our gain figures are derived from the computed directivity and include the losses in the antenna feed system.
   Gain is provided for one polarization and is equal in circularly polarized antennas for both horizontal and vertical components. Gain will be reduced if null fill, beam tilt, special H/V ratio, or special wavelength spacing is provided. Gain will increase in a directional array by the directivity of the azimuth pattern.

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A Division of Howell Laboratories, Inc., P. O. Box 389, Bridgton, Maine 04009 USA www.shively.com
(207) 647-3327 1-888-SHIVELY Fax: (207)647-8273 sales@shively.com
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Model 6814 Size and Weight (Half-Wave-Spaced):

No. of Bays	Vertical Tower Space						Weight					
	Antenna Radiation Aperture		Physical Space Used		Total Tower Space Recommended		Without radomes		With radomes		With radomes & 1/2" (1.2 cm) radial ice	
	ft	m	ft	m	ft	m	lb	N	lb	N	lb	N
2	5	1.6	14	4.6	25	8.2	228	1017	368	1641	901	4018
3	10	3.3	19	6.2	30	9.8	320	1427	530	2364	1348	6012
4	15	4.9	24	7.9	35	11.5	412	1838	692	3086	1795	8006
5	20	6.6	29	9.5	40	13.1	504	2248	854	3809	2243	10004
6	25	8.2	34	11.2	45	14.8	597	2663	1017	4536	2690	11997
7	30	9.8	39	12.8	50	16.4	689	3073	1179	5258	3136	13987
8	35	11.5	38	12.5	55	18.0	772	3443	1332	5941	3553	15846
10	45	14.8	48	15.7	65	21.3	935	4170	1635	7292	4412	19678
12	55	18.0	58	19.0	75	24.6	1120	4995	1960	8742	5306	23665

Windload (Half-Wave-Spaced):

No. of Bays	Without radomes				With radomes				With radomes & 1/2" (1.2 cm) radial ice			
	EPA_N		EPA_T		EPA_N		EPA_T		EPA_N		EPA_T	
	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2	ft^2	m^2
2	10.0	0.9	6.5	0.6	18.0	1.7	17.3	1.6	25.2	2.3	24.5	2.3
3	14.8	1.4	9.9	0.9	26.8	2.5	26.1	2.4	38.1	3.5	37.3	3.5
4	19.6	1.8	13.2	1.2	35.6	3.3	35.0	3.2	50.9	4.7	50.2	4.7
5	24.3	2.3	16.6	1.5	44.4	4.1	43.8	4.1	63.8	5.9	63.0	5.9
6	29.1	2.7	20.0	1.9	53.2	4.9	52.6	4.9	76.6	7.1	75.9	7.0
7	33.9	3.1	23.4	2.2	62.1	5.8	61.4	5.7	89.5	8.3	88.7	8.2
8	39.5	3.7	27.1	2.5	71.6	6.7	70.5	6.6	103.3	9.6	102.0	9.5
10	49.1	4.6	33.9	3.2	89.3	8.3	88.2	8.2	129.0	12.0	127.7	11.9
12	58.6	5.4	40.7	3.8	106.9	9.9	105.8	9.8	154.7	14.4	153.4	14.3

Notes:

1. Ask for technical assistance at Shively for weight and windload information on ice thicker than 1/2 in.
2. The mounting structure must not flex more than ± 3/4 in (± 1.8 cm) in any 10-ft (3-meter) section. 5 feet (1.5 m) of mounting structure is required above and below the antenna bays for proper pattern formation.
3. Antenna radiation aperture is the distance from the center of the top bay to the center of the bottom bay. Physical space used is from the top of the top bay to the input flange at the bottom of the array, or the bottom of the bottom bay in a center-fed array. Total tower space recommended allows ten feet (3 m) of clear tower space above and below the antenna to protect from pattern interference by other antennas. At frequencies lower than 98 MHz, each of these dimensions will increase by up to 1 ft (0.3 m) per bay.
4. Seven bays or less are normally end-fed. All antennas supplied with beam tilt will be center-fed. Antennas with an odd number of bays are normally not available with center feed.
5. Windload and weight tabulations are estimates and assume 98 MHz. They include the bay, interbay feedline, input connection, and a fine-matching transformer. No values have been included in these tabulations for mounts. Actual values vary with the specific installation. Contact us with details of your installation if more precise values are needed.
6. Antenna areas and weights calculated using TIA-222-G.
7. Deicers add approximately 1 lb (4.4 N) per bay in weight and 2 lb (8.9 N) or 0.05 ft^2 (0.005 m^2) per bay in windload.
8. Ask for technical assistance at Shively if you are planning to mount antennas on AM towers or install them at altitudes over 3,000 ft (915 m) above mean sea level.