Shively Labs®

Model 6814 Super-High-Power FM Antenna — Full-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 Available

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 1- 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
1	0.46	-3.40	25	n/a	6	3.28	5.16	40	80
2	0.99	-0.04	40	50	7	3.87	5.88	40	n/a
3	1.55	1.90	40	n/a	8	4.46	6.50	40	80
4	2.12	3.26	40	80	10	5.65	7.52	40	80
5	2.70	4.32	40	n/a	12	6.85	8.36	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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Model 6814 Size and Weight (Full-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
1	2	0.7	9	3.0	20	6.6	156	696	226	1008	489	2181
2	10	3.3	19	6.2	30	9.8	249	1111	389	1735	936	4175
3	20	6.6	29	9.5	40	13.1	341	1521	551	2457	1383	6168
4	30	9.8	39	12.8	50	16.4	433	1931	713	3180	1830	8162
5	40	13.1	49	16.1	60	19.7	525	2342	875	3903	2278	10160
6	50	16.4	59	19.4	70	23.0	618	2756	1038	4629	2725	12154
7	60	19.7	69	22.6	80	26.2	710	3167	1200	5352	3171	14143
8	70	23.0	73	23.9	90	29.5	793	3537	1353	6034	3588	16002
10	90	29.5	93	30.5	110	36.1	977	4357	1677	7479	4482	19990
12	110	36.1	113	37.1	130	42.6	1162	5183	2002	8929	5376	23977

Windload (Full-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
1	5.2	0.5	3.1	0.3	9.1	0.8	8.5	0.8	12.4	1.2	11.6	1.1
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.