Shively Labs®

Model 6813 Circularly-Polarized FM Antenna — Half-Wave-Spaced

True Circular Polarization

Power Rating: 3 kW per Bay

Shively Standard Features:

- Ring Stub Design
- Low Weight and Windload
- Consistently Predictable Patterns
- Digital Ready
- Pattern Studies Available
- No Factory Personnel Needed to Install
- Adjustable Fine-Matching Transformer
- Radomes and Deicers Available
- Rugged 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: 1.06 : 1 ± 100 kHz
1.14 : 1 ± 200 kHz

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

Input Connection: 1-5/8 in EIA Female

Electrical Specifications:

No. of Bays	Gain		Power Rating	No. of Bays	Gain		Power Rating
	Power	dB	kW		Power	dB	kW
2	0.70	-1.54	6	8	2.53	4.03	15
3	1.01	1.05	9	10	3.14	4.96	15
4	1.31	1.17	10	12	3.75	5.74	15
5	1.62	2.08	12	14	4.35	6.39	15
6	1.92	2.83	12	16	4.96	6.96	15

Notes:

1. 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 6813 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	96	428	166	740	362	1615
3	10	3.3	19	6.2	30	9.8	138	615	243	1084	547	2440
4	15	4.9	24	7.9	35	11.5	181	807	321	1432	731	3260
5	20	6.6	29	9.5	40	13.1	250	1115	398	1775	916	4085
6	25	8.2	34	11.2	45	14.8	266	1186	476	2123	1101	4910
7	30	9.8	39	12.8	50	16.4	308	1374	553	2466	1285	5731
8	35	11.5	38	12.5	55	18.0	329	1467	609	2716	1426	6360
10	45	14.8	48	15.7	65	21.3	404	1802	754	3363	1778	7930
12	55	18.0	58	19.0	75	24.6	489	2181	909	4054	2147	9576
14	65	21.3	68	22.3	85	27.9	574	2560	1064	4745	2516	11221
16	75	24.6	78	25.6	95	31.2	589	2627	1220	5441	2886	12872

Windload (Half-Wave-Spaced):

No. of Bays	Revision 'C'						Revision 'F'					
	Without radomes		With radomes		With radomes & 1/2" (1.2 cm) radial ice		Without radomes		With radomes		With radomes & 1/2" (1.2 cm) radial ice	
	lb	N	lb	N	lb	N	(ft2)	m2	(ft2)	m2	(ft2)	m2
2	123	549	331	1476	399	1780	4.4	0.4	9.4	0.9	11.5	1.1
3	199	888	511	2279	619	2761	7.0	0.7	14.6	1.4	17.9	1.7
4	275	1227	690	3077	838	3737	9.7	0.9	19.7	1.8	24.4	2.3
5	351	1565	870	3880	1058	4719	12.4	1.2	24.9	2.3	30.9	2.9
6	427	1904	1050	4683	1278	5700	15.1	1.4	30.1	2.8	37.4	3.5
7	503	2243	1229	5481	1497	6677	17.7	1.6	35.3	3.3	43.9	4.1
8	552	2462	1382	6164	1670	7448	19.5	1.8	39.5	3.7	48.9	4.5
10	674	3006	1713	7640	2067	9219	24.1	2.2	49.1	4.6	60.7	5.6
12	826	3684	2072	9241	2507	11181	29.5	2.7	59.5	5.5	73.7	6.8
14	978	4362	2432	10847	2946	13139	34.8	3.2	69.8	6.5	86.7	8.1
16	1130	5040	2791	12448	3386	15102	40.1	3.7	80.2	7.5	99.6	9.3

Notes:

2. The mounting structure must not flex more than ± 1/2 in (1.2 cm) in any ten-foot (3-meter) section. Five 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 windloads are calculated for 112 mph (180 kph), using 50 psf (2400 N/m^2) for flats and 33 psf (1600 N/m^2) for rounds] per EIA standard RS-222-C and CSA standard S37-94. The surface area is calculated per EIA standard RS-222-F (C_aA_c).
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.