

## **TRANSMITTER POWER OUTPUT**

The transmitter power output of 620 watts specified in the instant application is based on the data and calculations that follow.

The transmission line is 83 meters of Andrew HJ5-50A semi-rigid air-dielectric coaxial cable. This transmission line has a loss of 1.143 dB per 100m at 89.3 MHz<sup>1</sup> for a net loss of 0.949 dB for 83m. This equates to a transmission line efficiency of 80.4%.

WRTJ transmits with Shively model 6513-1-H/V(SLANT) non-directional single-bay antenna. The authorized effective radiated power is 460 watts in the vertical polarization plane and 1 watt in the horizontal polarization plane. The antenna yields a power gain of 0.918 in the vertical polarization plane and 0.002 in the horizontal polarization plane<sup>2</sup>. The transmitter power output (TPO) required to yield the authorized effective radiated power in the vertical and horizontal polarization planes is 623 watts as shown below:

	<u>Horizontal</u>	<u>Vertical</u>
Transmitter Power Output (W):	623	623
Transmission Line Efficiency:	× 0.804	× 0.804
Antenna Gain:	<u>× 0.002</u>	<u>× 0.918</u>
Authorized ERP (W):	1	460

When 623 watts is rounded to the nearest 10-watt increment as required per 47 CFR §73.212(a), the licensed transmitter output power becomes 620 watts as specified in the instant application.

The WRTJ transmitter, a Broadcast Electronics model FMi 106, is certificated for operation at this power level.

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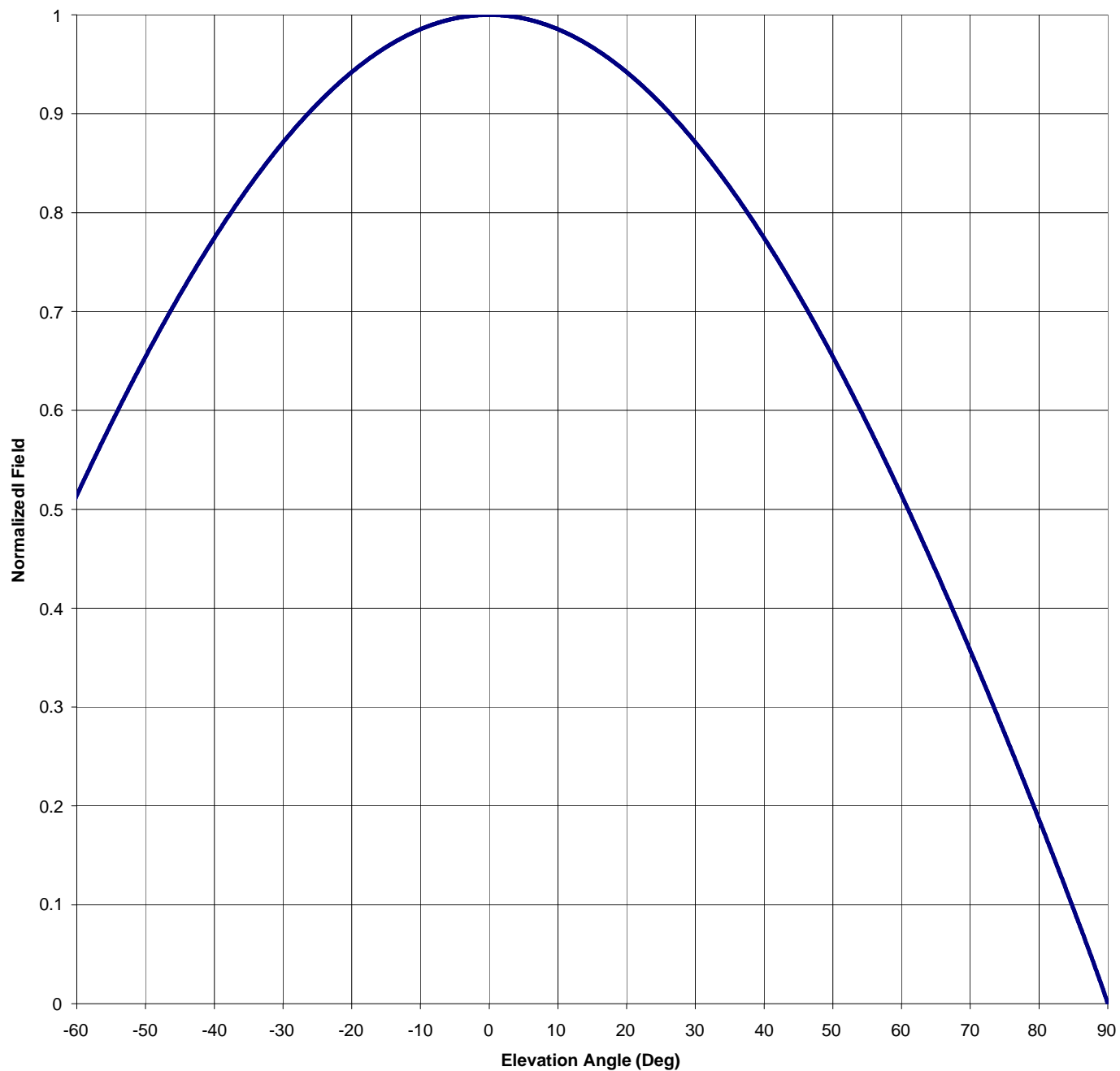
<sup>1</sup> Manufacturer's specification

<sup>2</sup> Manufacturer's specification; see attached documentation

Antenna Mfg.: Shively Labs  
Antenna Type: 6513-1-H/V(SLANT)  
Station: WRTJ  
Frequency: 89.3  
Channel #: 207  
Figure: 27500-VERTICAL

Date: 9/21/2009

Beam Til	0	
Vertical Gain (Max)	0.918	-0.373 dB
Gain (Horizon)	0.918	-0.373 dB



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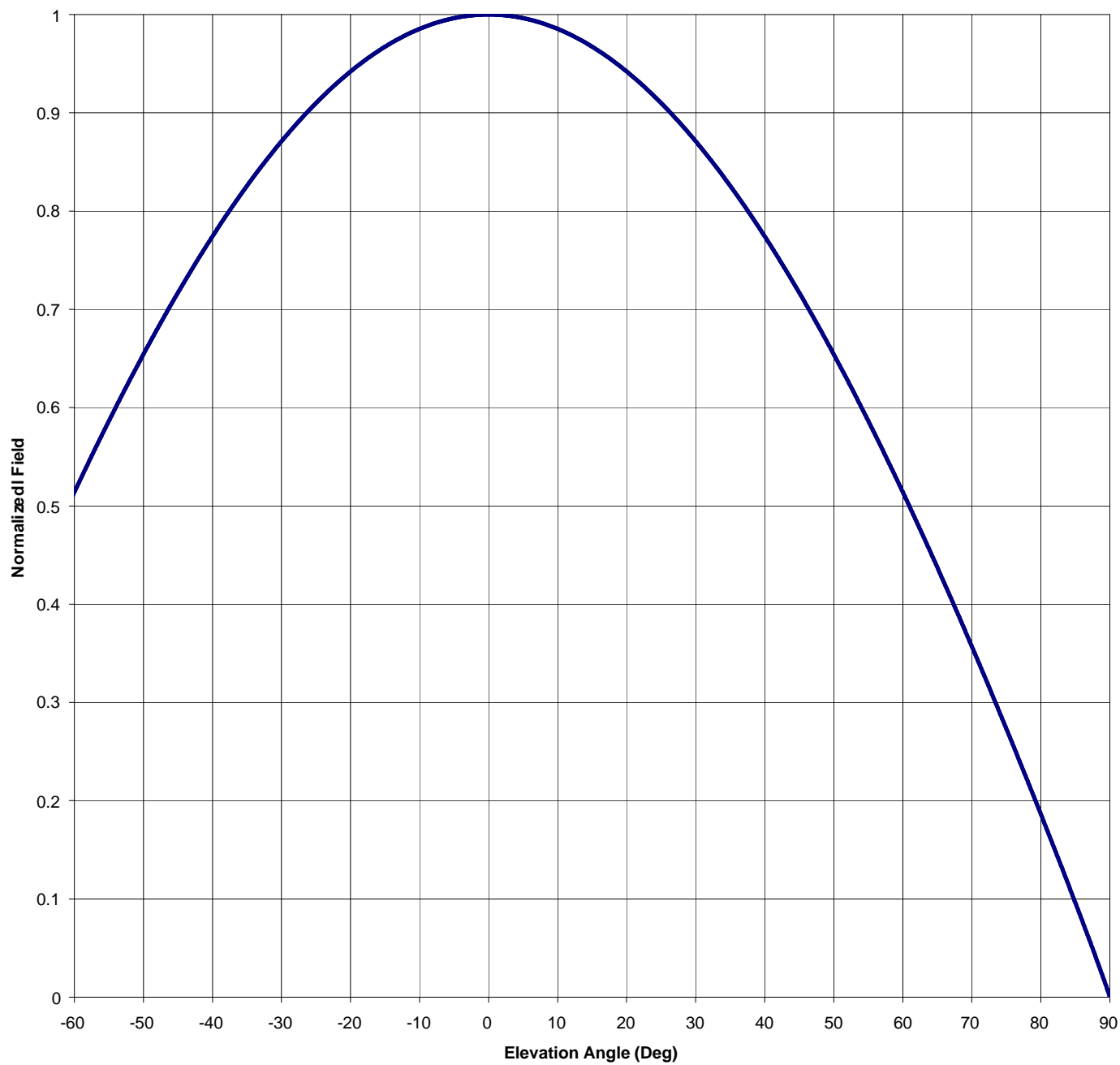
Frequency: 89.3

Horizontal Gain (Max) 0.002 -27.048 dB

Channel #: 207

Gain (Horizon) 0.002 -27.048 dB

Figure: 27500-HORIZONTAL



Antenna Mfg.: Shively Labs  
Antenna Type: 6513-1-H/V(SLANT)

Date: 9/21/2009

Station: WRTJ

Beam Tilt 0

Frequency: 89.3

Gain (Max) 0.918

-0.373 dB

Channel #: 207

Gain (Horizon) 0.918

-0.373 dB

Figure: 27500-VERTICAL

Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field	Angle of Depression (Deg)	Relative Field
-90	0.000	-44	0.729	0	1.000	46	0.705
-89	0.021	-43	0.741	1	1.000	47	0.693
-88	0.040	-42	0.752	2	0.999	48	0.680
-87	0.059	-41	0.763	3	0.999	49	0.667
-86	0.078	-40	0.774	4	0.998	50	0.654
-85	0.096	-39	0.785	5	0.996	51	0.641
-84	0.114	-38	0.796	6	0.995	52	0.628
-83	0.133	-37	0.806	7	0.993	53	0.614
-82	0.151	-36	0.816	8	0.991	54	0.600
-81	0.168	-35	0.826	9	0.988	55	0.586
-80	0.186	-34	0.835	10	0.985	56	0.572
-79	0.204	-33	0.845	11	0.982	57	0.558
-78	0.221	-32	0.854	12	0.979	58	0.544
-77	0.239	-31	0.862	13	0.975	59	0.529
-76	0.256	-30	0.871	14	0.971	60	0.514
-75	0.273	-29	0.879	15	0.967	61	0.499
-74	0.290	-28	0.887	16	0.963	62	0.484
-73	0.307	-27	0.895	17	0.958	63	0.469
-72	0.324	-26	0.903	18	0.953	64	0.453
-71	0.341	-25	0.910	19	0.948	65	0.437
-70	0.357	-24	0.917	20	0.942	66	0.422
-69	0.373	-23	0.924	21	0.936	67	0.406
-68	0.390	-22	0.930	22	0.930	68	0.390
-67	0.406	-21	0.936	23	0.924	69	0.373
-66	0.422	-20	0.942	24	0.917	70	0.357
-65	0.437	-19	0.948	25	0.910	71	0.341
-64	0.453	-18	0.953	26	0.903	72	0.324
-63	0.469	-17	0.958	27	0.895	73	0.307
-62	0.484	-16	0.963	28	0.887	74	0.290
-61	0.499	-15	0.967	29	0.879	75	0.273
-60	0.514	-14	0.971	30	0.871	76	0.256
-59	0.529	-13	0.975	31	0.862	77	0.239
-58	0.544	-12	0.979	32	0.854	78	0.221
-57	0.558	-11	0.982	33	0.845	79	0.204
-56	0.572	-10	0.985	34	0.835	80	0.186
-55	0.586	-9	0.988	35	0.826	81	0.168
-54	0.600	-8	0.991	36	0.816	82	0.151
-53	0.614	-7	0.993	37	0.806	83	0.133
-52	0.628	-6	0.995	38	0.796	84	0.114
-51	0.641	-5	0.996	39	0.785	85	0.096
-50	0.654	-4	0.998	40	0.774	86	0.078
-49	0.667	-3	0.999	41	0.763	87	0.059
-48	0.680	-2	0.999	42	0.752	88	0.040
-47	0.693	-1	1.000	43	0.741	89	0.021
-46	0.705	0	1.000	44	0.729	90	0.000
-45	0.717			45	0.717		