

KPOF Radio Denver Colorado Translator K274DF

TRANSLATOR / TRANSMITTER POWER CALCULATION FOR 250 WATTS ERP, Channel 274 102.7MHz

Vertical only polarization 250 w primary lobe @ 60 degrees, secondary lobe @ 255 degrees,
tertiary lobe @ 155 degrees

In support of Construction Permit BPFT-20190920AAX

TOTAL ERP = 250

POWER SOURCE

Nautel VS300 Transmitter with 330 watts max TPO

4 BAY ANTENNA SYSTEM per SCALA/KATHREIN Michael Bach

Antenna Bay Description

TOP - Kathrein 1 Bay CA2-FM @255° Vertical

Polarization 35%

TOP - Kathrein 1 Bay CA2-FM @155° Vertical

Polarization 5%

MIDDLE & BOTTOM-Kathrein 2 Bay CA2-FM

@60° Vertical Polarization 60%

Bext Custom Built 4 port Power Divider

30/30/05/35 %

4 BAY SYSTEM TOTAL PER SCALA

250

4 BAY SYSTEM GAIN =

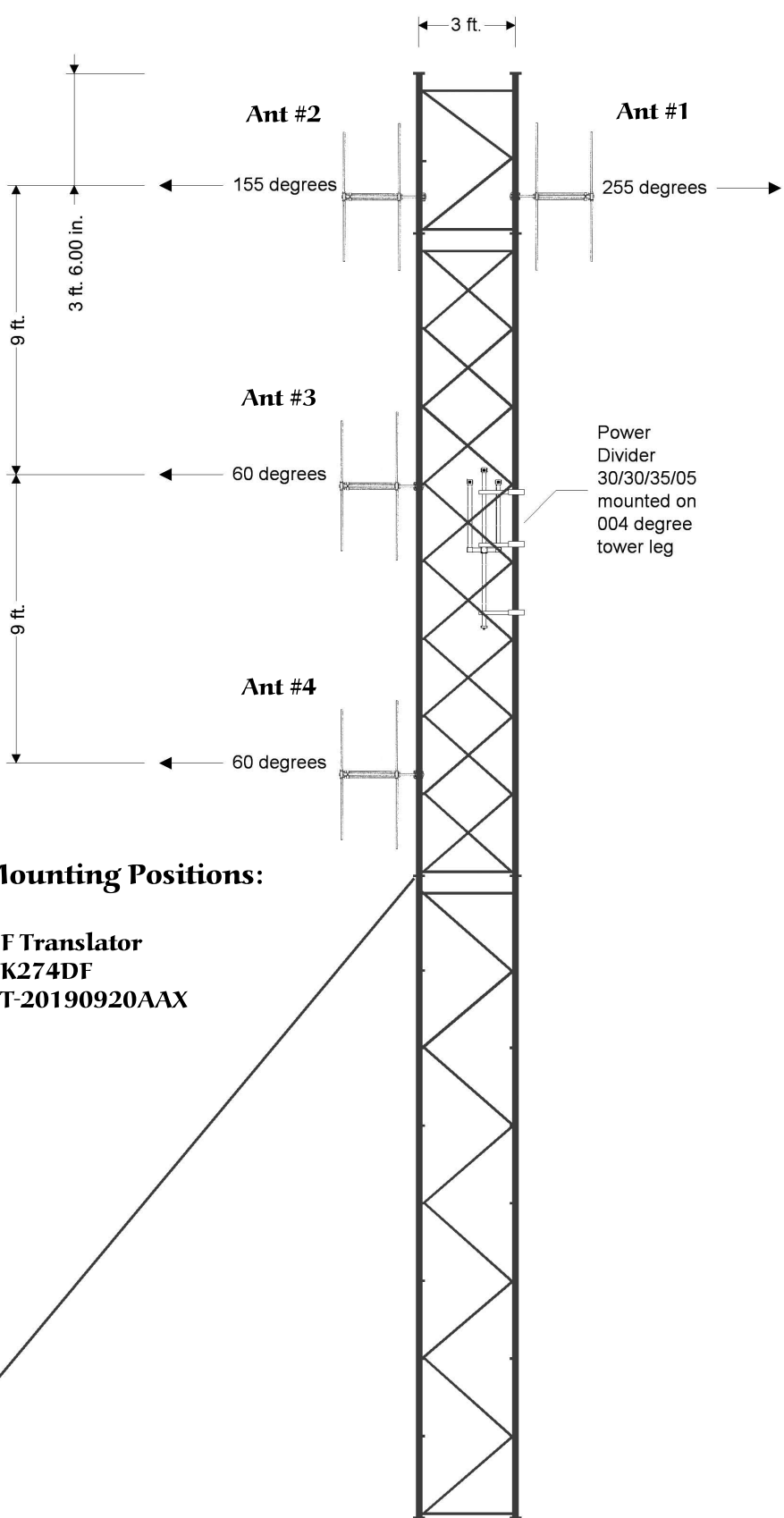
3.10

major lobe at 60 degrees

POWER DIVIDER to TRANSMITTER FEED SYSTEM

	QUANTITY	INSERTION LOSS dB	PER	LOSS PER DEVICE
Andrews 3/8" F2TNM-PL Male Connector	1	0.050	each	0.050
Andrews 3/8" Helix LDF2-50 Feed Line	270	1.057	100ft @ 102.7MHz	2.8539
Andrews 3/8" F2TNM-PL Male Connector	1	0.050	each	0.0500
LBA Cami 500 Broadband Iso-coupler	1	1.000	each	1.0000
Andrews 3/8" F2TNM-PL Male Connector	1	0.050	each	0.0500
Andrews 3/8" Helix LDF2-50 Feed Line	30	1.057	100ft @ 102.7MHz	0.3171
Andrews 3/8" F2TNM-PL Male Connector	1	0.050	each	0.0500
Andrews 5/8" L4.5PNF-RC Female Conn.	1	0.050	each	0.0500
Andrews 5/8" Helix LDF4.5-50 Feed Line	240	0.480	100ft @ 102.7MHz	1.1520
Andrews 5/8" L4.5PNM-RC Male Connector	1	0.050	each	0.0500
Total Feed System Loss dB >				5.573
System Efficiency >				27.71%

$$\text{CALCULATED TPO} = \frac{\text{ERP}}{(\text{Ant Power Multiplier} * \text{Feed Efficiency})} = 290.99$$

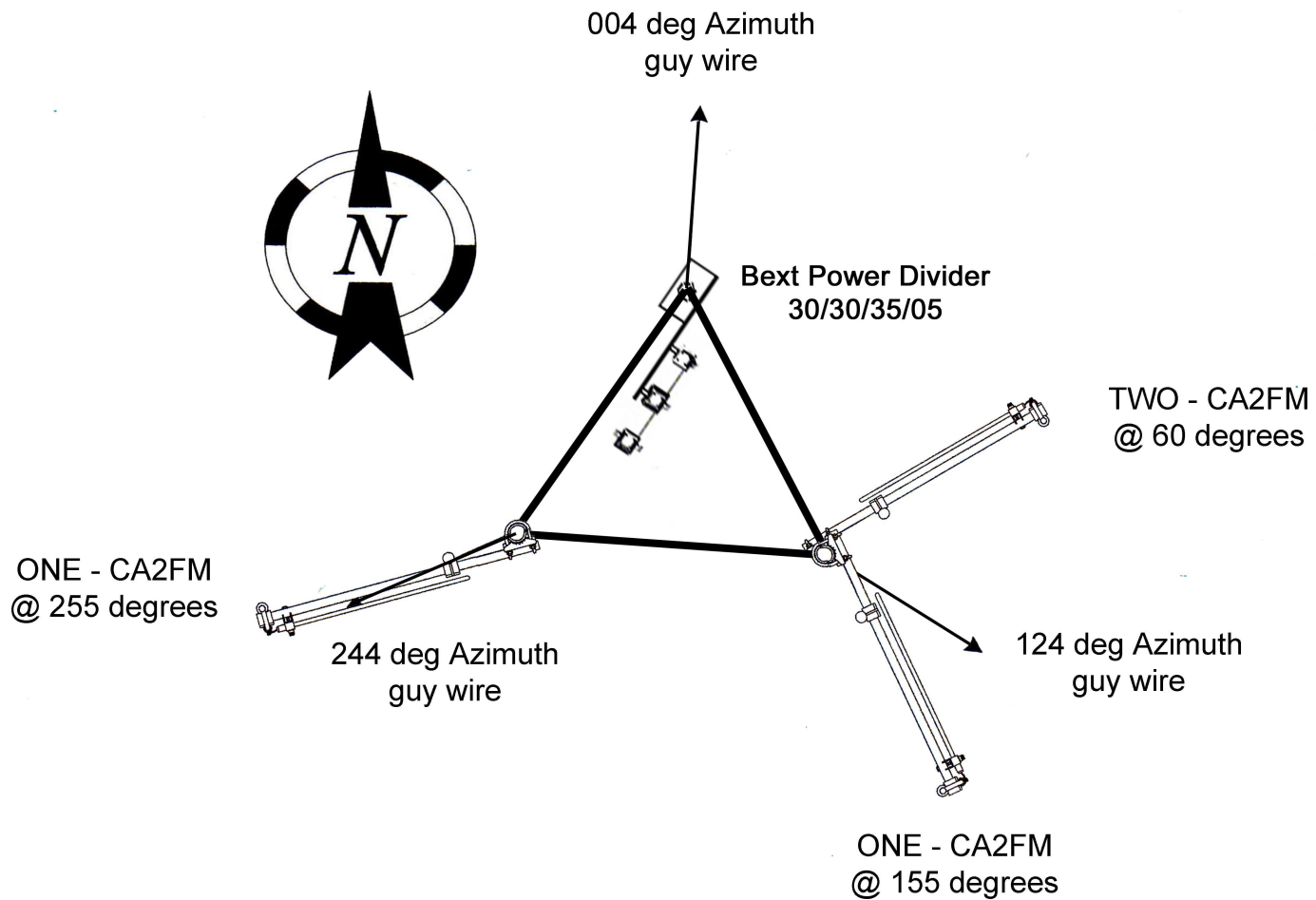


Elevation Mounting Positions:

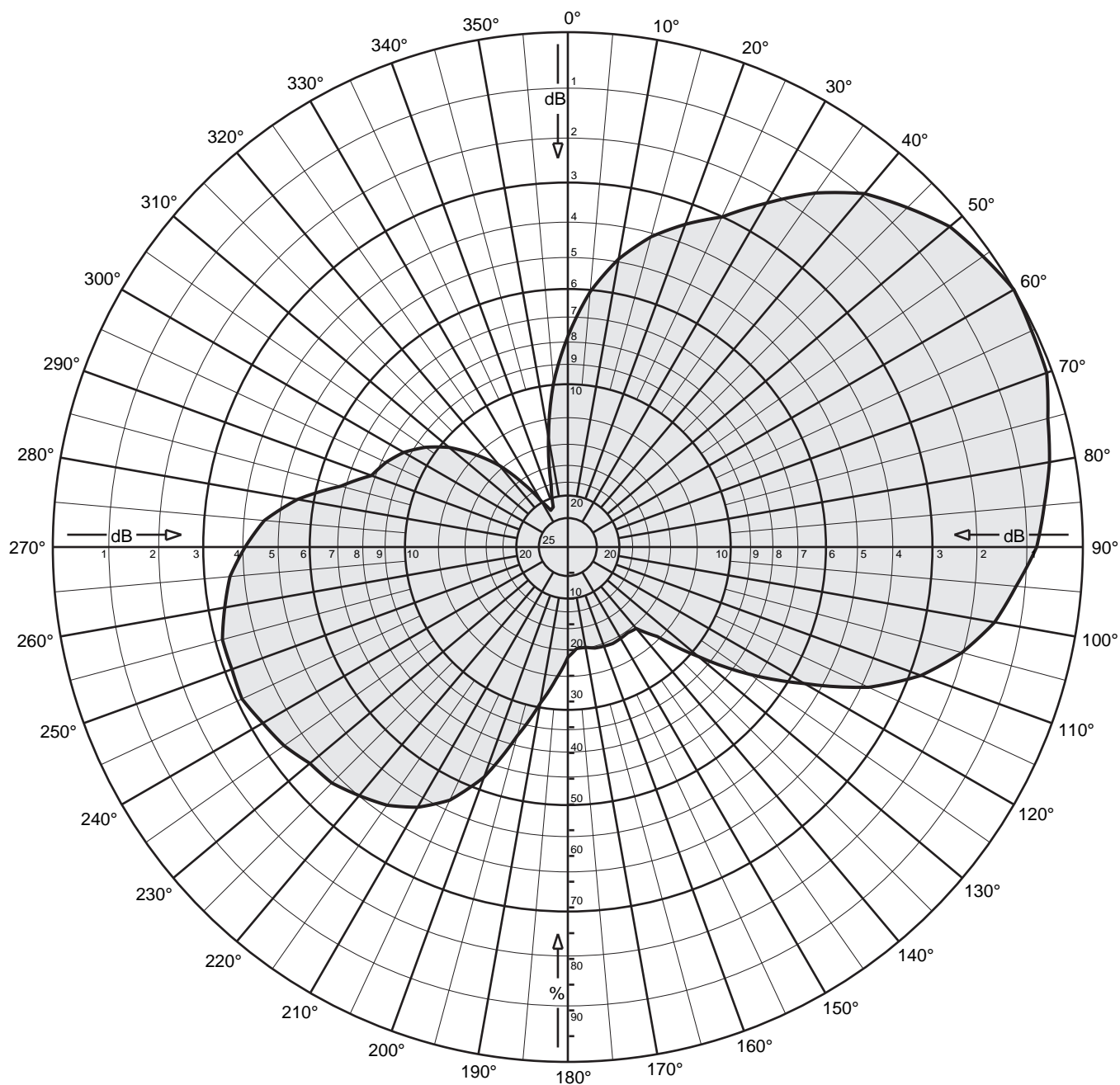
**KPOF Translator
K274DF
CP: BPFT-20190920AAX**

Vertical Only Antennas for K274DF Denver

April 2020



KPOF AM Radio Tower
Registration # 1055826
Latitude 39 50 47.0 N
Longitude 105 01 59.0 W
Rohn 80 series guyed tower
36" face 2" pipe legs



Four CA2-FM/50N Yagi Antennas

Oriented two at 60 deg w/ 30% Power each

one at 155 deg w/ 5% power

one at 255 deg w/ 35% power

Gain: 4.9 dBd (x 3.1) 102.7 MHz.

Vertical Polarization

Vertical stacked 0.94 wavelength

Horizontal plane Pattern K274DF



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Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	0.409	-7.77	-2.87	0.52	180	0.214	-13.39	-8.49	0.14
5	0.498	-6.06	-1.16	0.77	185	0.256	-11.82	-6.92	0.20
10	0.568	-4.91	-0.01	1.00	190	0.308	-10.23	-5.33	0.29
15	0.624	-4.10	0.80	1.20	195	0.380	-8.41	-3.51	0.45
20	0.667	-3.52	1.38	1.38	200	0.476	-6.46	-1.56	0.70
25	0.707	-3.01	1.89	1.55	205	0.543	-5.31	-0.41	0.91
30	0.771	-2.26	2.64	1.84	210	0.584	-4.68	0.22	1.05
35	0.840	-1.52	3.38	2.18	215	0.612	-4.26	0.64	1.16
40	0.896	-0.95	3.95	2.48	220	0.630	-4.01	0.89	1.23
45	0.932	-0.61	4.29	2.69	225	0.648	-3.77	1.13	1.30
50	0.968	-0.28	4.62	2.90	230	0.654	-3.69	1.21	1.32
55	0.984	-0.14	4.76	2.99	235	0.673	-3.44	1.46	1.40
60	1.000	-0.00	4.90	3.09	240	0.684	-3.30	1.60	1.45
65	0.994	-0.06	4.84	3.05	245	0.698	-3.12	1.78	1.51
70	0.990	-0.09	4.81	3.03	250	0.694	-3.17	1.73	1.49
75	0.965	-0.31	4.59	2.88	255	0.694	-3.17	1.73	1.49
80	0.950	-0.45	4.45	2.79	260	0.676	-3.39	1.51	1.41
85	0.929	-0.64	4.26	2.66	265	0.659	-3.63	1.27	1.34
90	0.910	-0.82	4.08	2.56	270	0.627	-4.06	0.84	1.21
95	0.874	-1.17	3.73	2.36	275	0.592	-4.56	0.34	1.08
100	0.841	-1.50	3.40	2.19	280	0.533	-5.47	-0.57	0.88
105	0.792	-2.02	2.88	1.94	285	0.456	-6.81	-1.91	0.64
110	0.730	-2.74	2.16	1.64	290	0.406	-7.83	-2.93	0.51
115	0.645	-3.81	1.09	1.28	295	0.389	-8.19	-3.29	0.47
120	0.530	-5.51	-0.61	0.87	300	0.368	-8.69	-3.79	0.42
125	0.431	-7.31	-2.41	0.57	305	0.338	-9.43	-4.53	0.35
130	0.331	-9.61	-4.71	0.34	310	0.301	-10.43	-5.53	0.28
135	0.246	-12.20	-7.30	0.19	315	0.254	-11.91	-7.01	0.20
140	0.207	-13.70	-8.80	0.13	320	0.207	-13.70	-8.80	0.13
145	0.203	-13.84	-8.94	0.13	325	0.150	-16.45	-11.55	0.07
150	0.205	-13.77	-8.87	0.13	330	0.102	-19.80	-14.90	0.03
155	0.207	-13.69	-8.79	0.13	335	0.079	-22.10	-17.20	0.02
160	0.205	-13.77	-8.87	0.13	340	0.083	-21.66	-16.76	0.02
165	0.203	-13.84	-8.94	0.13	345	0.125	-18.08	-13.18	0.05
170	0.198	-14.08	-9.18	0.12	350	0.216	-13.30	-8.40	0.14
175	0.198	-14.09	-9.19	0.12	355	0.319	-9.92	-5.02	0.31