

TECHNICAL ATTACHMENT
NEW LPFM FOR LINCOLN, NE

State: NE
City: LINCOLN
Channel: 247

Antenna Structure Registration: NA
Do you have an FCC Antenna Structure Registration Number?: N
Yes/No/Filed with the FAA No

Latitude: 40 50 12.00 N.
Longitude: 96 39 16.20 W.
Structure Type: MONOPOLE
Overall Structure Height: 30.2
Support Structure: 29.0
Ground Elevation: 352

Antenna Data

	HORIZONTAL	VERTICAL
Height of Radiation Center		
Above Ground Level	18	18
Height of Radiation Center AMSL	(FORM CALCULATES)	
MIn Radiated Power	(FORM CALCULATES)	
Max Radiated Power	(FORM CALCULATES)	

Antenna Type

Directional
Non-Directional X

Directional Antenna

Technical Certification

Environmental Effect

*Would a Commission grant of Authorization for this location be an action which may have a significant environmental effect? See 47 C.F.R. Section 1.1306?

NO

Interference

*Does the applicant certify that the proposed facility complies with engineering requirements...?

NO

SPACING

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REFERENCE                                     DISPLAY DATES
40 50 12.00 N.                               CLASS = L1      DATA  10-16-23
96 39 16.20 W.                               Current  Spacings to 2nd Adj.  SEARCH
12-10-23

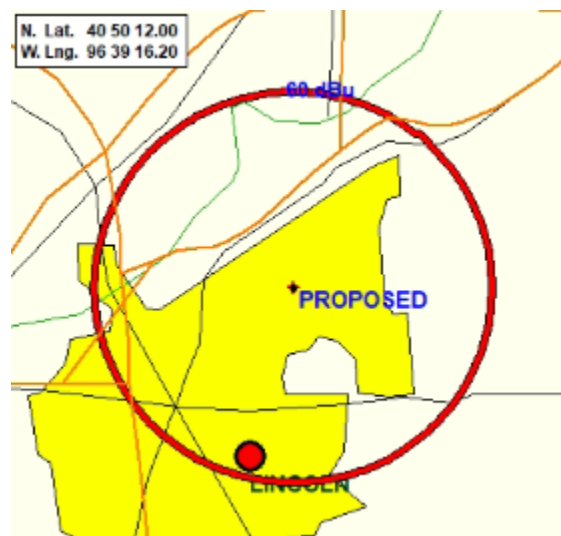
----- Channel 247 - 97.3 MHz -----

Call           Channel      Location              Azi    Dist  FCC   Margin
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KZKX   LIC    245C1   Seward              NE    334.7  35.25  72.5  -37.3
KBBX-FM LIC    249C1   Nebraska City      NE    81.7   42.67  72.5  -29.8
KOBM-FM LIC-Z   247C3   Blair              NE    22.5   96.63  77.5  19.1
KRGY   LIC    247C2   Aurora              NE    272.7  121.43  90.5  30.9
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All separation margins include rounding
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FCC 60 dBu F(50,50)



SECOND ADJACENT WAIVER REQUEST

Applicant respectfully requests a "second adjacent channel waiver" with regards to Section 47 C.F.R. Section 73.807 of the FCC rules based upon the "Living Way" precedent (Living Way Ministries, Inc., Memorandum Opinion and Order, 17 FCC Red 17054, 17056, ¶ 5 (2002), recon. denied 23 FCC Red 15070 (2008)). This will be accomplished by using Free Space methodology of calculation.

The second adjacent channel is (with signal strength at the proposed site):

KZKX	LIC	245C1	73.3 dBu
KBBX-FM	LIC	249C1	73.7 dBu

Using U/D methodology, interference will occur when KZKX's signal strength's interfering signal exceeds the desired signal by 40 dBu. So the area of predicted interference would then be bounded by the 113.3 dBu contour.

The distance to this contour, using free space method:

$$D = (7.01 * P^{1/2}) / E,$$

where P is power (watts), E is field strength (v/m), and D is distance to contour (meters):

$$P = 50 \text{ w}, E = 113.3 \text{ dBu } D = 107.9 \text{ meters}$$

However, the field strength of the proposed LPFM's antenna system falls quickly at depression angles below the horizon. Using elevation pattern data provided by Scala for a FMVMP antenna setup (3 bay 0.87 wave spaced) the distance to the 113.3 dBu contour at various depression angles is tabulated below. The data shows that the lowest point at which the signal strength rises to 113.3 dBu is 14.8 meters below the center of radiation of the antenna system, or 3.2 meters above the ground. Therefore, this is sufficient clearance from the one story mini mall/offices below. The table below shows that the lowest elevation point of the 113.3 F(50,10) interfering contour is 3.2 meters above ground.

Due to zero population within this radiation radius, this meets the "Living Way" Criteria to qualify for a Waiver of 47 C.F.R. Section 73.807.

Thus, the applicant requests a second adjacent waiver based upon evidence no interference is proposed.

MAX ERP	DEPRESSION ANGLE	RELATIVE FIELD	dB FROM RELATIVE	ERP	ANGULAR DISTANCE TO 111.9 dBu CONTOUR	VERTICAL DISTANCE (below antenna)	HORIZONTAL DISTANCE TO 111.9 dBu CONTOUR	CLEARANCE OF CONTOUR ABOVE GROUND
50	-90	0.02	-33.979	0.02	2.1	2	0	16
50	-89	0.013	-37.721	0.01	1.3	1.2	0	16.8
50	-88	0.01	-40.000	0.01	1	0.9	0	17.1
50	-87	0.01	-40.000	0.01	1	0.9	0	17.1
50	-86	0.01	-40.000	0.01	1	0.9	0	17.1
50	-85	0.015	-36.478	0.01	1.6	1.5	0.1	16.5
50	-84	0.022	-33.152	0.02	2.3	2.2	0.2	15.8
50	-83	0.029	-30.752	0.04	3.1	3	0.3	15
50	-82	0.036	-28.874	0.06	3.8	3.7	0.5	14.3
50	-81	0.043	-27.331	0.09	4.6	4.5	0.7	13.5
50	-80	0.05	-26.021	0.13	5.3	5.2	0.9	12.8
50	-79	0.057	-24.883	0.16	6.1	5.9	1.1	12.1
50	-78	0.063	-24.013	0.20	6.7	6.5	1.3	11.5
50	-77	0.07	-23.098	0.25	7.5	7.3	1.6	10.7
50	-76	0.076	-22.384	0.29	8.1	7.8	1.9	10.2
50	-75	0.082	-21.724	0.34	8.7	8.4	2.2	9.6
50	-74	0.088	-21.110	0.39	9.4	9	2.5	9
50	-73	0.093	-20.630	0.43	9.9	9.4	2.9	8.6
50	-72	0.098	-20.175	0.48	10.5	9.9	3.2	8.1
50	-71	0.103	-19.743	0.53	11	10.3	3.5	7.7
50	-70	0.107	-19.412	0.57	11.4	10.7	3.9	7.3
50	-69	0.111	-19.094	0.62	11.8	11	4.2	7
50	-68	0.113	-18.938	0.64	12.1	11.2	4.5	6.8
50	-67	0.116	-18.711	0.67	12.4	11.4	4.8	6.6
50	-66	0.117	-18.636	0.68	12.5	11.4	5	6.6
50	-65	0.118	-18.562	0.70	12.6	11.4	5.3	6.6
50	-64	0.118	-18.562	0.70	12.6	11.3	5.5	6.7
50	-63	0.117	-18.636	0.68	12.5	11.1	5.6	6.9
50	-62	0.115	-18.786	0.66	12.3	10.8	5.7	7.2
50	-61	0.112	-19.016	0.63	12	10.4	5.8	7.6
50	-60	0.108	-19.332	0.58	11.5	9.9	5.7	8.1

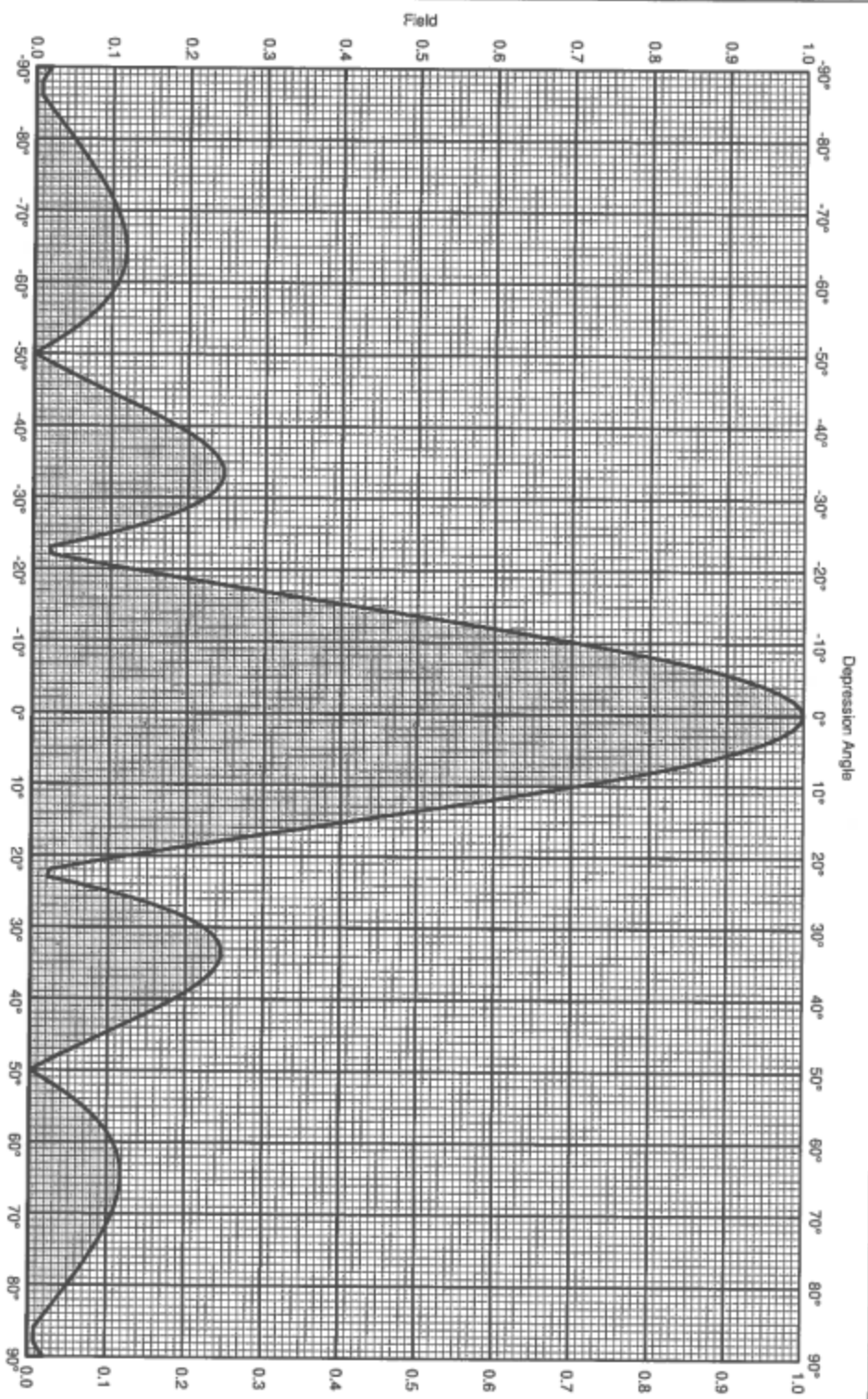
50	-59	0.103	-19.743	0.53	11	9.4	5.6	8.6
50	-58	0.096	-20.355	0.46	10.2	8.6	5.4	9.4
50	-57	0.088	-21.110	0.39	9.4	7.8	5.1	10.2
50	-56	0.079	-22.047	0.31	8.4	6.9	4.7	11.1
50	-55	0.069	-23.223	0.24	7.3	5.9	4.1	12.1
50	-54	0.058	-24.731	0.17	6.2	5	3.6	13
50	-53	0.045	-26.936	0.10	4.8	3.8	2.8	14.2
50	-52	0.031	-30.173	0.05	3.3	2.5	2	15.5
50	-51	0.016	-35.918	0.01	1.7	1.3	1	16.7
50	-50	0.01	-40.000	0.01	1	0.7	0.6	17.3
50	-49	0.018	-34.895	0.02	1.9	1.4	1.2	16.6
50	-48	0.036	-28.874	0.06	3.8	2.8	2.5	15.2
50	-47	0.054	-25.352	0.15	5.7	4.1	3.8	13.9
50	-46	0.073	-22.734	0.27	7.8	5.6	5.4	12.4
50	-45	0.093	-20.630	0.43	9.9	6.9	7	11.1
50	-44	0.112	-19.016	0.63	12	8.3	8.6	9.7
50	-43	0.132	-17.589	0.87	14.1	9.6	10.3	8.4
50	-42	0.15	-16.478	1.13	16	10.7	11.8	7.3
50	-41	0.169	-15.442	1.43	18.1	11.8	13.6	6.2
50	-40	0.186	-14.610	1.73	19.9	12.7	15.2	5.3
50	-39	0.201	-13.936	2.02	21.5	13.5	16.7	4.5
50	-38	0.215	-13.351	2.31	23	14.1	18.1	3.9
50	-37	0.227	-12.879	2.58	24.3	14.6	19.4	3.4
50	-36	0.236	-12.542	2.78	25.2	14.8	20.3	3.2
50	-35	0.242	-12.324	2.93	25.9	14.8	21.2	3.2
50	-34	0.246	-12.181	3.03	26.3	14.7	21.8	3.3
50	-33	0.246	-12.181	3.03	26.3	14.3	22	3.7
50	-32	0.242	-12.324	2.93	25.9	13.7	21.9	4.3
50	-31	0.235	-12.579	2.76	25.1	12.9	21.5	5.1
50	-30	0.224	-12.995	2.51	24	11.9	20.7	6.1
50	-29	0.208	-13.639	2.16	22.2	10.7	19.4	7.3
50	-28	0.188	-14.517	1.77	20.1	9.4	17.7	8.6
50	-27	0.163	-15.756	1.33	17.4	7.8	15.5	10.2
50	-26	0.134	-17.458	0.90	14.3	6.2	12.8	11.8
50	-25	0.1	-20.000	0.50	10.7	4.5	9.6	13.5

50	-24	0.063	-24.013	0.20	6.7	2.7	6.1	15.3
50	-23	0.021	-33.556	0.02	2.2	0.8	2	17.2
50	-22	0.025	-32.041	0.03	2.6	0.9	2.4	17.1
50	-21	0.074	-22.615	0.27	7.9	2.8	7.3	15.2
50	-20	0.126	-17.993	0.79	13.5	4.6	12.6	13.4
50	-19	0.181	-14.846	1.64	19.4	6.3	18.3	11.7
50	-18	0.238	-12.468	2.83	25.5	7.8	24.2	10.2
50	-17	0.297	-10.545	4.41	31.8	9.2	30.4	8.8
50	-16	0.357	-8.947	6.37	38.2	10.5	36.7	7.5
50	-15	0.418	-7.576	8.74	44.8	11.5	43.2	6.5
50	-14	0.478	-6.411	11.42	51.2	12.3	49.6	5.7
50	-13	0.538	-5.384	14.47	57.6	12.9	56.1	5.1
50	-12	0.597	-4.481	17.82	63.9	13.2	62.5	4.8
50	-11	0.654	-3.688	21.39	70.1	13.3	68.8	4.7
50	-10	0.708	-2.999	25.06	75.8	13.1	74.6	4.9
50	-9	0.759	-2.395	28.80	81.3	12.7	80.3	5.3
50	-8	0.807	-1.863	32.56	86.5	12	85.6	6
50	-7	0.85	-1.412	36.13	91.1	11	90.4	7
50	-6	0.888	-1.032	39.43	95.1	9.9	94.5	8.1
50	-5	0.921	-0.715	42.41	98.7	8.5	98.3	9.5
50	-4	0.949	-0.455	45.03	101.7	7	101.4	11
50	-3	0.971	-0.256	47.14	104	5.4	103.8	12.6
50	-2	0.987	-0.114	48.71	105.8	3.6	105.7	14.4
50	-1	0.996	-0.035	49.60	106.7	1.8	106.6	16.2
50	0	1	0.000	50.00	107.2	0	107.2	18
50	1	0.996	-0.035	49.60	106.7	1.8	106.6	16.2
50	2	0.987	-0.114	48.71	105.8	3.6	105.7	14.4
50	3	0.971	-0.256	47.14	104	5.4	103.8	12.6
50	4	0.949	-0.455	45.03	101.7	7	101.4	11
50	5	0.921	-0.715	42.41	98.7	8.5	98.3	9.5
50	6	0.888	-1.032	39.43	95.1	9.9	94.5	8.1
50	7	0.85	-1.412	36.13	91.1	11	90.4	7
50	8	0.807	-1.863	32.56	86.5	12	85.6	6
50	9	0.759	-2.395	28.80	81.3	12.7	80.3	5.3
50	10	0.708	-2.999	25.06	75.8	13.1	74.6	4.9

50	11	0.654	-3.688	21.39	70.1	13.3	68.8	4.7
50	12	0.597	-4.481	17.82	63.9	13.2	62.5	4.8
50	13	0.538	-5.384	14.47	57.6	12.9	56.1	5.1
50	14	0.478	-6.411	11.42	51.2	12.3	49.6	5.7
50	15	0.418	-7.576	8.74	44.8	11.5	43.2	6.5
50	16	0.357	-8.947	6.37	38.2	10.5	36.7	7.5
50	17	0.297	-10.545	4.41	31.8	9.2	30.4	8.8
50	18	0.238	-12.468	2.83	25.5	7.8	24.2	10.2
50	19	0.181	-14.846	1.64	19.4	6.3	18.3	11.7
50	20	0.126	-17.993	0.79	13.5	4.6	12.6	13.4
50	21	0.074	-22.615	0.27	7.9	2.8	7.3	15.2
50	22	0.025	-32.041	0.03	2.6	0.9	2.4	17.1
50	23	0.021	-33.556	0.02	2.2	0.8	2	17.2
50	24	0.063	-24.013	0.20	6.7	2.7	6.1	15.3
50	25	0.1	-20.000	0.50	10.7	4.5	9.6	13.5
50	26	0.134	-17.458	0.90	14.3	6.2	12.8	11.8
50	27	0.163	-15.756	1.33	17.4	7.8	15.5	10.2
50	28	0.188	-14.517	1.77	20.1	9.4	17.7	8.6
50	29	0.208	-13.639	2.16	22.2	10.7	19.4	7.3
50	30	0.224	-12.995	2.51	24	11.9	20.7	6.1
50	31	0.235	-12.579	2.76	25.1	12.9	21.5	5.1
50	32	0.242	-12.324	2.93	25.9	13.7	21.9	4.3
50	33	0.246	-12.181	3.03	26.3	14.3	22	3.7
50	34	0.246	-12.181	3.03	26.3	14.7	21.8	3.3
50	35	0.242	-12.324	2.93	25.9	14.8	21.2	3.2
50	36	0.236	-12.542	2.78	25.2	14.8	20.3	3.2
50	37	0.227	-12.879	2.58	24.3	14.6	19.4	3.4
50	38	0.215	-13.351	2.31	23	14.1	18.1	3.9
50	39	0.201	-13.936	2.02	21.5	13.5	16.7	4.5
50	40	0.186	-14.610	1.73	19.9	12.7	15.2	5.3
50	41	0.169	-15.442	1.43	18.1	11.8	13.6	6.2
50	42	0.15	-16.478	1.13	16	10.7	11.8	7.3
50	43	0.132	-17.589	0.87	14.1	9.6	10.3	8.4
50	44	0.112	-19.016	0.63	12	8.3	8.6	9.7
50	45	0.093	-20.630	0.43	9.9	6.9	7	11.1

50	46	0.073	-22.734	0.27	7.8	5.6	5.4	12.4
50	47	0.054	-25.352	0.15	5.7	4.1	3.8	13.9
50	48	0.036	-28.874	0.06	3.8	2.8	2.5	15.2
50	49	0.018	-34.895	0.02	1.9	1.4	1.2	16.6
50	50	0.01	-40.000	0.01	1	0.7	0.6	17.3
50	51	0.016	-35.918	0.01	1.7	1.3	1	16.7
50	52	0.031	-30.173	0.05	3.3	2.5	2	15.5
50	53	0.045	-26.936	0.10	4.8	3.8	2.8	14.2
50	54	0.058	-24.731	0.17	6.2	5	3.6	13
50	55	0.069	-23.223	0.24	7.3	5.9	4.1	12.1
50	56	0.079	-22.047	0.31	8.4	6.9	4.7	11.1
50	57	0.088	-21.110	0.39	9.4	7.8	5.1	10.2
50	58	0.096	-20.355	0.46	10.2	8.6	5.4	9.4
50	59	0.103	-19.743	0.53	11	9.4	5.6	8.6
50	60	0.108	-19.332	0.58	11.5	9.9	5.7	8.1
50	61	0.112	-19.016	0.63	12	10.4	5.8	7.6
50	62	0.115	-18.786	0.66	12.3	10.8	5.7	7.2
50	63	0.117	-18.636	0.68	12.5	11.1	5.6	6.9
50	64	0.118	-18.562	0.70	12.6	11.3	5.5	6.7
50	65	0.118	-18.562	0.70	12.6	11.4	5.3	6.6
50	66	0.117	-18.636	0.68	12.5	11.4	5	6.6
50	67	0.116	-18.711	0.67	12.4	11.4	4.8	6.6
50	68	0.113	-18.938	0.64	12.1	11.2	4.5	6.8
50	69	0.111	-19.094	0.62	11.8	11	4.2	7
50	70	0.107	-19.412	0.57	11.4	10.7	3.9	7.3
50	71	0.103	-19.743	0.53	11	10.3	3.5	7.7
50	72	0.098	-20.175	0.48	10.5	9.9	3.2	8.1
50	73	0.093	-20.630	0.43	9.9	9.4	2.9	8.6
50	74	0.088	-21.110	0.39	9.4	9	2.5	9
50	75	0.082	-21.724	0.34	8.7	8.4	2.2	9.6
50	76	0.076	-22.384	0.29	8.1	7.8	1.9	10.2
50	77	0.07	-23.098	0.25	7.5	7.3	1.6	10.7
50	78	0.063	-24.013	0.20	6.7	6.5	1.3	11.5
50	79	0.057	-24.883	0.16	6.1	5.9	1.1	12.1
50	80	0.05	-26.021	0.13	5.3	5.2	0.9	12.8

50	81	0.043	-27.331	0.09	4.6	4.5	0.7	13.5
50	82	0.036	-28.874	0.06	3.8	3.7	0.5	14.3
50	83	0.029	-30.752	0.04	3.1	3	0.3	15
50	84	0.022	-33.152	0.02	2.3	2.2	0.2	15.8
50	85	0.015	-36.478	0.01	1.6	1.5	0.1	16.5
50	86	0.01	-40.000	0.01	1	0.9	0	17.1
50	87	0.01	-40.000	0.01	1	0.9	0	17.1
50	88	0.01	-40.000	0.01	1	0.9	0	17.1
50	89	0.013	-37.721	0.01	1.3	1.2	0	16.8
50	90	0.02	-33.979	0.02	2.1	2	0	16



KATHREIN
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 Medford, OR 97501 (USA)
 Phone: (541) 779-6500
 Fax: (541) 779-5991
<http://www.kathrein-scala.com>

FMV-3 1/2 wave dipole array
 Vertical stacked 0.87 wavelength
 Gain: 4.9 dBS (x 3.09)
 Vertical Polarization

Vertical plane Pattern



FMV-3 1/2 wave dipole array

Vertical plane Pattern

Vertical stacked 0.87 wavelength

Gain: 4.9 dBd (x 3.09)

Vertical Polarization

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
-90	0.020	-33.94	-29.04	0.00	-45	0.093	-20.65	-15.75	0.03
-89	0.013	-37.62	-32.72	0.00	-44	0.112	-18.99	-14.09	0.04
-88	0.010	-40.00	-35.10	0.00	-43	0.132	-17.62	-12.72	0.05
-87	0.010	-40.00	-35.10	0.00	-42	0.150	-16.45	-11.55	0.07
-86	0.010	-40.00	-35.10	0.00	-41	0.169	-15.47	-10.57	0.09
-85	0.015	-36.47	-31.57	0.00	-40	0.186	-14.63	-9.73	0.11
-84	0.022	-33.13	-28.23	0.00	-39	0.201	-13.93	-9.03	0.12
-83	0.029	-30.69	-25.79	0.00	-38	0.215	-13.36	-8.46	0.14
-82	0.036	-28.83	-23.93	0.00	-37	0.227	-12.90	-8.00	0.16
-81	0.043	-27.29	-22.39	0.01	-36	0.236	-12.55	-7.65	0.17
-80	0.050	-26.02	-21.12	0.01	-35	0.242	-12.31	-7.41	0.18
-79	0.057	-24.90	-20.00	0.01	-34	0.246	-12.19	-7.29	0.19
-78	0.063	-23.95	-19.05	0.01	-33	0.246	-12.18	-7.28	0.19
-77	0.070	-23.10	-18.20	0.02	-32	0.242	-12.31	-7.41	0.18
-76	0.076	-22.37	-17.47	0.02	-31	0.235	-12.58	-7.68	0.17
-75	0.082	-21.69	-16.79	0.02	-30	0.224	-13.01	-8.11	0.15
-74	0.088	-21.11	-16.21	0.02	-29	0.208	-13.65	-8.75	0.13
-73	0.093	-20.59	-15.69	0.03	-28	0.188	-14.54	-9.64	0.11
-72	0.098	-20.15	-15.25	0.03	-27	0.163	-15.76	-10.86	0.08
-71	0.103	-19.74	-14.84	0.03	-26	0.134	-17.47	-12.57	0.06
-70	0.107	-19.41	-14.51	0.04	-25	0.100	-19.96	-15.06	0.03
-69	0.111	-19.12	-14.22	0.04	-24	0.063	-24.05	-19.15	0.01
-68	0.113	-18.90	-14.00	0.04	-23	0.021	-33.55	-28.65	0.00
-67	0.116	-18.72	-13.82	0.04	-22	0.025	-32.19	-27.29	0.00
-66	0.117	-18.61	-13.71	0.04	-21	0.074	-22.66	-17.76	0.02
-65	0.118	-18.54	-13.64	0.04	-20	0.126	-18.00	-13.10	0.05
-64	0.118	-18.55	-13.65	0.04	-19	0.181	-14.85	-9.95	0.10
-63	0.117	-18.62	-13.72	0.04	-18	0.238	-12.46	-7.56	0.18
-62	0.115	-18.77	-13.87	0.04	-17	0.297	-10.55	-5.65	0.27
-61	0.112	-19.00	-14.10	0.04	-16	0.357	-8.95	-4.05	0.39
-60	0.108	-19.34	-14.44	0.04	-15	0.418	-7.59	-2.69	0.54
-59	0.103	-19.77	-14.87	0.03	-14	0.478	-6.41	-1.51	0.71
-58	0.096	-20.34	-15.44	0.03	-13	0.538	-5.38	-0.48	0.89
-57	0.088	-21.07	-16.17	0.02	-12	0.597	-4.48	0.42	1.10
-56	0.079	-22.00	-17.10	0.02	-11	0.654	-3.69	1.21	1.32
-55	0.069	-23.20	-18.30	0.01	-10	0.708	-2.99	1.91	1.55
-54	0.058	-24.79	-19.89	0.01	-9	0.759	-2.39	2.51	1.78
-53	0.045	-26.96	-22.06	0.01	-8	0.807	-1.86	3.04	2.01
-52	0.031	-30.19	-25.29	0.00	-7	0.850	-1.42	3.48	2.23
-51	0.016	-36.02	-31.12	0.00	-6	0.888	-1.03	3.87	2.44
-50	0.010	-40.00	-35.10	0.00	-5	0.921	-0.72	4.18	2.62
-49	0.018	-35.12	-30.22	0.00	-4	0.949	-0.46	4.44	2.78
-48	0.036	-28.99	-24.09	0.00	-3	0.971	-0.26	4.64	2.91
-47	0.054	-25.32	-20.42	0.01	-2	0.987	-0.12	4.78	3.01
-46	0.073	-22.69	-17.79	0.02	-1	0.996	-0.03	4.87	3.07
					0	1.000	0.00	4.90	3.09



FMV-3 1/2 wave dipole array

Vertical plane Pattern

Vertical stacked 0.87 wavelength

Gain: 4.9 dBd (x 3.09)

Vertical Polarization

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	4.90	3.09	45	0.093	-20.65	-15.75	0.03
1	0.996	-0.03	4.87	3.07	46	0.073	-22.69	-17.79	0.02
2	0.987	-0.12	4.78	3.01	47	0.054	-25.32	-20.42	0.01
3	0.971	-0.26	4.64	2.91	48	0.036	-28.99	-24.09	0.00
4	0.949	-0.46	4.44	2.78	49	0.018	-35.12	-30.22	0.00
5	0.921	-0.71	4.19	2.62	50	0.010	-40.00	-35.10	0.00
6	0.888	-1.03	3.87	2.44	51	0.016	-36.03	-31.13	0.00
7	0.850	-1.42	3.48	2.23	52	0.031	-30.19	-25.29	0.00
8	0.807	-1.86	3.04	2.01	53	0.045	-26.96	-22.06	0.01
9	0.759	-2.39	2.51	1.78	54	0.058	-24.79	-19.89	0.01
10	0.708	-2.99	1.91	1.55	55	0.069	-23.20	-18.30	0.01
11	0.654	-3.69	1.21	1.32	56	0.079	-22.00	-17.10	0.02
12	0.597	-4.48	0.42	1.10	57	0.088	-21.07	-16.17	0.02
13	0.538	-5.38	-0.48	0.89	58	0.096	-20.34	-15.44	0.03
14	0.478	-6.41	-1.51	0.71	59	0.103	-19.77	-14.87	0.03
15	0.418	-7.59	-2.69	0.54	60	0.108	-19.34	-14.44	0.04
16	0.357	-8.95	-4.05	0.39	61	0.112	-19.00	-14.10	0.04
17	0.297	-10.55	-5.65	0.27	62	0.115	-18.77	-13.87	0.04
18	0.238	-12.46	-7.56	0.18	63	0.117	-18.62	-13.72	0.04
19	0.181	-14.85	-9.95	0.10	64	0.118	-18.55	-13.65	0.04
20	0.126	-18.00	-13.10	0.05	65	0.118	-18.54	-13.64	0.04
21	0.074	-22.66	-17.76	0.02	66	0.117	-18.61	-13.71	0.04
22	0.025	-32.19	-27.29	0.00	67	0.116	-18.72	-13.82	0.04
23	0.021	-33.56	-28.66	0.00	68	0.113	-18.90	-14.00	0.04
24	0.063	-24.05	-19.15	0.01	69	0.111	-19.12	-14.22	0.04
25	0.100	-19.97	-15.07	0.03	70	0.107	-19.41	-14.51	0.04
26	0.134	-17.47	-12.57	0.06	71	0.103	-19.74	-14.84	0.03
27	0.163	-15.76	-10.86	0.08	72	0.098	-20.15	-15.25	0.03
28	0.188	-14.54	-9.64	0.11	73	0.093	-20.59	-15.69	0.03
29	0.208	-13.65	-8.75	0.13	74	0.088	-21.11	-16.21	0.02
30	0.224	-13.01	-8.11	0.15	75	0.082	-21.69	-16.79	0.02
31	0.235	-12.58	-7.68	0.17	76	0.076	-22.37	-17.47	0.02
32	0.242	-12.31	-7.41	0.18	77	0.070	-23.10	-18.20	0.02
33	0.246	-12.18	-7.28	0.19	78	0.063	-23.95	-19.05	0.01
34	0.246	-12.19	-7.29	0.19	79	0.057	-24.90	-20.00	0.01
35	0.242	-12.31	-7.41	0.18	80	0.050	-26.02	-21.12	0.01
36	0.236	-12.55	-7.65	0.17	81	0.043	-27.29	-22.39	0.01
37	0.227	-12.90	-8.00	0.16	82	0.036	-28.83	-23.93	0.00
38	0.215	-13.36	-8.46	0.14	83	0.029	-30.69	-25.79	0.00
39	0.201	-13.93	-9.03	0.12	84	0.022	-33.13	-28.23	0.00
40	0.186	-14.63	-9.73	0.11	85	0.015	-36.47	-31.57	0.00
41	0.169	-15.47	-10.57	0.09	86	0.010	-40.00	-35.10	0.00
42	0.150	-16.45	-11.55	0.07	87	0.010	-40.00	-35.10	0.00
43	0.132	-17.62	-12.72	0.05	88	0.010	-40.00	-35.10	0.00
44	0.112	-18.99	-14.09	0.04	89	0.013	-37.62	-32.72	0.00
					90	0.020	-33.94	-29.04	0.00