

# Calculated Proposed Nighttime Pattern KTKK, Kearns, Utah

## ANTENNA ARRAY PROGRAM

484.0 WATTS

630.0 KHZ.

TOWER	FIELD RATIO	PHASE DEGREES	SPACING DEGREES	BEARING DEGREES	HEIGHT DEGREES	TOP-LOADING DEGREES
1	1.000	.00	.00	.00	50.30	12.75
2	1.900	172.00	76.00	358.00	50.30	12.75
3	1.100	335.00	165.00	.00	50.30	12.75

RADIATION VALUES COMPUTED BELOW ARE AT A DISTANCE OF ONE KILOMETER

ERMS THEORETICAL	=	202.38 MV/M	ERMS STANDARD	=	212.83 MV/M
K NO LOSS	=	233.11 MV/M	K WITH LOSSES	=	185.07 MV/M
ERSS NO LOSS	=	562.38 MV/M	ERSS WITH LOSSES	=	446.49 MV/M
GROUND LOSS	=	1.00 OHMS	GROUND LOSSES	=	293.25 WATTS
ARRAY Q	=	11.16	ERSS/ERMS	=	2.21

484.0 WATTS

630.0 KHZ.

STANDARD PATTERN RADIATION AT .0 DEGREES ELEVATION

BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M
.0	231.85	90.0	35.50	180.0	408.19	270.0	60.69
5.0	229.91	95.0	29.41	185.0	406.06	275.0	60.35
10.0	223.82	100.0	30.92	190.0	399.61	280.0	56.75
15.0	213.72	105.0	46.72	195.0	388.87	285.0	49.01
20.0	199.83	110.0	72.17	200.0	373.96	290.0	37.39
25.0	182.49	115.0	102.89	205.0	355.00	295.0	24.31
30.0	162.14	120.0	136.61	210.0	332.25	300.0	20.76
35.0	139.37	125.0	171.77	215.0	306.05	305.0	36.52
40.0	114.89	130.0	207.10	220.0	276.89	310.0	59.95
45.0	89.60	135.0	241.51	225.0	245.41	315.0	85.58
50.0	64.59	140.0	274.08	230.0	212.47	320.0	111.52
55.0	41.37	145.0	304.07	235.0	179.12	325.0	136.60
60.0	23.04	150.0	330.88	240.0	146.68	330.0	159.92
65.0	18.49	155.0	354.08	245.0	116.75	335.0	180.74
70.0	27.21	160.0	373.36	250.0	91.37	340.0	198.50
75.0	36.00	165.0	388.51	255.0	72.85	345.0	212.76
80.0	40.65	170.0	399.40	260.0	62.86	350.0	223.20
85.0	40.29	175.0	405.97	265.0	60.18	355.0	229.61

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## STANDARD PATTERN RADIATION AT 5.0 DEGREES ELEVATION

BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M
.0	228.72	90.0	35.37	180.0	404.19	270.0	60.36
5.0	226.80	95.0	29.35	185.0	402.08	275.0	60.03
10.0	220.77	100.0	30.78	190.0	395.68	280.0	56.49
15.0	210.78	105.0	46.31	195.0	385.03	285.0	48.85
20.0	197.04	110.0	71.43	200.0	370.24	290.0	37.38
25.0	179.88	115.0	101.80	205.0	351.45	295.0	24.38
30.0	159.76	120.0	135.15	210.0	328.91	300.0	20.44
35.0	137.25	125.0	169.94	215.0	302.94	305.0	35.71
40.0	113.06	130.0	204.91	220.0	274.06	310.0	58.77
45.0	88.08	135.0	238.97	225.0	242.89	315.0	84.07
50.0	63.39	140.0	271.24	230.0	210.29	320.0	109.70
55.0	40.49	145.0	300.95	235.0	177.29	325.0	134.49
60.0	22.54	150.0	327.52	240.0	145.20	330.0	157.55
65.0	18.46	155.0	350.52	245.0	115.62	335.0	178.14
70.0	27.23	160.0	369.64	250.0	90.56	340.0	195.72
75.0	35.92	165.0	384.66	255.0	72.30	345.0	209.83
80.0	40.49	170.0	395.46	260.0	62.47	350.0	220.16
85.0	40.12	175.0	401.99	265.0	59.84	355.0	226.50

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## STANDARD PATTERN RADIATION AT 10.0 DEGREES ELEVATION

BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M
.0	219.50	90.0	34.99	180.0	392.36	270.0	59.38
5.0	217.64	95.0	29.15	185.0	390.30	275.0	59.09
10.0	211.81	100.0	30.34	190.0	384.06	280.0	55.72
15.0	202.13	105.0	45.09	195.0	373.68	285.0	48.39
20.0	188.83	110.0	69.25	200.0	359.26	290.0	37.33
25.0	172.23	115.0	98.58	205.0	340.96	295.0	24.59
30.0	152.78	120.0	130.85	210.0	319.01	300.0	19.58
35.0	131.03	125.0	164.54	215.0	293.76	305.0	33.33
40.0	107.68	130.0	198.44	220.0	265.69	310.0	55.33
45.0	83.60	135.0	231.51	225.0	235.44	315.0	79.66
50.0	59.85	140.0	262.84	230.0	203.83	320.0	104.37
55.0	37.93	145.0	291.73	235.0	171.88	325.0	128.30
60.0	21.15	150.0	317.59	240.0	140.85	330.0	150.58
65.0	18.41	155.0	339.99	245.0	112.30	335.0	170.50
70.0	27.28	160.0	358.62	250.0	88.17	340.0	187.51
75.0	35.66	165.0	373.28	255.0	70.67	345.0	201.18
80.0	40.01	170.0	383.83	260.0	61.31	350.0	211.20
85.0	39.60	175.0	390.20	265.0	58.85	355.0	217.34

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## STANDARD PATTERN RADIATION AT 15.0 DEGREES ELEVATION

BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M
.0	204.70	90.0	34.36	180.0	373.16	270.0	57.77
5.0	202.95	95.0	28.81	185.0	371.20	275.0	57.54
10.0	197.42	100.0	29.66	190.0	365.22	280.0	54.43
15.0	188.25	105.0	43.15	195.0	355.28	285.0	47.61
20.0	175.67	110.0	65.75	200.0	341.47	290.0	37.23
25.0	159.97	115.0	93.40	205.0	323.97	295.0	24.96
30.0	141.60	120.0	123.92	210.0	303.00	300.0	18.45
35.0	121.08	125.0	155.85	215.0	278.92	305.0	29.65
40.0	99.10	130.0	188.03	220.0	252.19	310.0	49.89
45.0	76.48	135.0	219.46	225.0	223.43	315.0	72.64
50.0	54.25	140.0	249.29	230.0	193.42	320.0	95.85
55.0	33.92	145.0	276.83	235.0	163.16	325.0	118.40
60.0	19.09	150.0	301.52	240.0	133.84	330.0	139.43
65.0	18.46	155.0	322.94	245.0	106.94	335.0	158.26
70.0	27.36	160.0	340.79	250.0	84.32	340.0	174.36
75.0	35.23	165.0	354.84	255.0	68.04	345.0	187.31
80.0	39.23	170.0	364.96	260.0	59.43	350.0	196.81
85.0	38.75	175.0	371.08	265.0	57.22	355.0	202.65

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## STANDARD PATTERN RADIATION AT 20.0 DEGREES ELEVATION

BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M
.0	185.13	90.0	33.48	180.0	347.40	270.0	55.58
5.0	183.52	95.0	28.33	185.0	345.56	275.0	55.43
10.0	178.41	100.0	28.75	190.0	339.94	280.0	52.66
15.0	169.93	105.0	40.61	195.0	330.60	285.0	46.49
20.0	158.30	110.0	61.14	200.0	317.64	290.0	37.02
25.0	143.82	115.0	86.56	205.0	301.22	295.0	25.49
30.0	126.89	120.0	114.74	210.0	281.59	300.0	17.48
35.0	108.03	125.0	144.31	215.0	259.09	305.0	25.07
40.0	87.87	130.0	174.17	220.0	234.17	310.0	42.86
45.0	67.18	135.0	203.41	225.0	207.41	315.0	63.49
50.0	46.97	140.0	231.21	230.0	179.57	320.0	84.72
55.0	28.80	145.0	256.93	235.0	151.57	325.0	105.41
60.0	16.77	150.0	280.04	240.0	124.52	330.0	124.77
65.0	18.70	155.0	300.13	245.0	99.84	335.0	142.14
70.0	27.43	160.0	316.89	250.0	79.21	340.0	157.02
75.0	34.61	165.0	330.11	255.0	64.53	345.0	169.00
80.0	38.14	170.0	339.65	260.0	56.89	350.0	177.80
85.0	37.58	175.0	345.43	265.0	55.01	355.0	183.22

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STANDARD PATTERN RADIATION AT 25.0 DEGREES ELEVATION

BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M
.0	161.87	90.0	32.37	180.0	316.13	270.0	52.86
5.0	160.42	95.0	27.70	185.0	314.45	275.0	52.79
10.0	155.82	100.0	27.67	190.0	309.28	280.0	50.42
15.0	148.19	105.0	37.63	195.0	300.68	285.0	45.03
20.0	137.73	110.0	55.68	200.0	288.77	290.0	36.64
25.0	124.72	115.0	78.39	205.0	273.71	295.0	26.14
30.0	109.53	120.0	103.76	210.0	255.73	300.0	17.12
35.0	92.66	125.0	130.48	215.0	235.17	305.0	20.20
40.0	74.68	130.0	157.55	220.0	212.46	310.0	34.80
45.0	56.33	135.0	184.11	225.0	188.15	315.0	52.84
50.0	38.56	140.0	209.45	230.0	162.94	320.0	71.67
55.0	23.08	145.0	232.94	235.0	137.66	325.0	90.14
60.0	14.80	150.0	254.10	240.0	113.37	330.0	107.47
65.0	19.20	155.0	272.54	245.0	91.33	335.0	123.07
70.0	27.44	160.0	287.95	250.0	73.09	340.0	136.47
75.0	33.78	165.0	300.14	255.0	60.29	345.0	147.28
80.0	36.77	170.0	308.95	260.0	53.77	350.0	155.23
85.0	36.12	175.0	314.29	265.0	52.27	355.0	160.13

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STANDARD PATTERN RADIATION AT 30.0 DEGREES ELEVATION

BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M
.0	136.20	90.0	31.03	180.0	280.66	270.0	49.67
5.0	134.94	95.0	26.90	185.0	279.16	275.0	49.69
10.0	130.92	100.0	26.46	190.0	274.52	280.0	47.74
15.0	124.24	105.0	34.38	195.0	266.80	285.0	43.20
20.0	115.10	110.0	49.66	200.0	256.11	290.0	36.03
25.0	103.75	115.0	69.34	205.0	242.62	295.0	26.80
30.0	90.53	120.0	91.54	210.0	226.56	300.0	17.60
35.0	75.90	125.0	115.04	215.0	208.24	305.0	15.96
40.0	60.37	130.0	138.95	220.0	188.06	310.0	26.40
45.0	44.64	135.0	162.48	225.0	166.54	315.0	41.42
50.0	29.66	140.0	184.99	230.0	144.30	320.0	57.54
55.0	17.47	145.0	205.93	235.0	122.11	325.0	73.50
60.0	13.81	150.0	224.85	240.0	100.90	330.0	88.56
65.0	19.91	155.0	241.37	245.0	81.82	335.0	102.17
70.0	27.33	160.0	255.22	250.0	66.23	340.0	113.88
75.0	32.70	165.0	266.19	255.0	55.49	345.0	123.36
80.0	35.11	170.0	274.15	260.0	50.18	350.0	130.34
85.0	34.38	175.0	278.98	265.0	49.07	355.0	134.66

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## STANDARD PATTERN RADIATION AT 35.0 DEGREES ELEVATION

BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M
.0	109.51	90.0	29.49	180.0	242.47	270.0	46.08
5.0	108.46	95.0	25.92	185.0	241.18	275.0	46.19
10.0	105.06	100.0	25.15	190.0	237.13	280.0	44.67
15.0	99.41	105.0	31.04	195.0	230.38	285.0	41.00
20.0	91.68	110.0	43.40	200.0	221.05	290.0	35.09
25.0	82.11	115.0	59.85	205.0	209.30	295.0	27.31
30.0	71.00	120.0	78.66	210.0	195.35	300.0	18.77
35.0	58.74	125.0	98.73	215.0	179.47	305.0	13.52
40.0	45.83	130.0	119.23	220.0	162.06	310.0	18.59
45.0	32.90	135.0	139.50	225.0	143.55	315.0	30.07
50.0	21.02	140.0	158.95	230.0	124.52	320.0	43.24
55.0	12.98	145.0	177.11	235.0	105.63	325.0	56.51
60.0	14.09	150.0	193.56	240.0	87.72	330.0	69.14
65.0	20.69	155.0	207.98	245.0	71.77	335.0	80.61
70.0	27.02	160.0	220.09	250.0	58.95	340.0	90.52
75.0	31.37	165.0	229.72	255.0	50.33	345.0	98.56
80.0	33.19	170.0	236.71	260.0	46.22	350.0	104.50
85.0	32.41	175.0	240.98	265.0	45.49	355.0	108.18

484.0 WATTS

630.0 KHZ.

## STANDARD PATTERN RADIATION AT 40.0 DEGREES ELEVATION

BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M
.0	83.24	90.0	27.74	180.0	203.17	270.0	42.18
5.0	82.39	95.0	24.75	185.0	202.09	275.0	42.36
10.0	79.63	100.0	23.76	190.0	198.67	280.0	41.25
15.0	75.04	105.0	27.79	195.0	192.96	285.0	38.42
20.0	68.75	110.0	37.24	200.0	185.08	290.0	33.77
25.0	60.99	115.0	50.39	205.0	175.17	295.0	27.50
30.0	52.03	120.0	65.73	210.0	163.43	300.0	20.20
35.0	42.20	125.0	82.27	215.0	150.13	305.0	13.60
40.0	31.95	130.0	99.28	220.0	135.58	310.0	12.75
45.0	21.97	135.0	116.18	225.0	120.20	315.0	19.75
50.0	13.69	140.0	132.47	230.0	104.46	320.0	29.69
55.0	10.97	145.0	147.72	235.0	88.96	325.0	40.18
60.0	15.30	150.0	161.59	240.0	74.39	330.0	50.32
65.0	21.33	155.0	173.78	245.0	61.60	335.0	59.61
70.0	26.42	160.0	184.06	250.0	51.54	340.0	67.67
75.0	29.76	165.0	192.25	255.0	44.97	345.0	74.24
80.0	31.03	170.0	198.22	260.0	42.00	350.0	79.11
85.0	30.22	175.0	201.87	265.0	41.60	355.0	82.13

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STANDARD PATTERN RADIATION AT 45.0 DEGREES ELEVATION

BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M
.0	58.75	90.0	25.79	180.0	164.38	270.0	38.04
5.0	58.10	95.0	23.36	185.0	163.53	275.0	38.28
10.0	55.96	100.0	22.28	190.0	160.75	280.0	37.53
15.0	52.40	105.0	24.73	195.0	156.11	285.0	35.46
20.0	47.53	110.0	31.44	200.0	149.70	290.0	31.98
25.0	41.55	115.0	41.39	205.0	141.65	295.0	27.20
30.0	34.68	120.0	53.33	210.0	132.15	300.0	21.41
35.0	27.23	125.0	66.41	215.0	121.42	305.0	15.31
40.0	19.69	130.0	79.97	220.0	109.74	310.0	10.82
45.0	12.96	135.0	93.53	225.0	97.46	315.0	11.90
50.0	9.46	140.0	106.66	230.0	84.98	320.0	17.96
55.0	11.75	145.0	119.01	235.0	72.79	325.0	25.53
60.0	16.73	150.0	130.28	240.0	61.49	330.0	33.18
65.0	21.62	155.0	140.23	245.0	51.74	335.0	40.30
70.0	25.47	160.0	148.64	250.0	44.27	340.0	46.55
75.0	27.86	165.0	155.36	255.0	39.59	345.0	51.67
80.0	28.64	170.0	160.27	260.0	37.61	350.0	55.48
85.0	27.84	175.0	163.29	265.0	37.48	355.0	57.86

484.0 WATTS

630.0 KHZ.

STANDARD PATTERN RADIATION AT 50.0 DEGREES ELEVATION

BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M
.0	37.25	90.0	23.66	180.0	127.68	270.0	33.73
5.0	36.79	95.0	21.75	185.0	127.04	275.0	34.00
10.0	35.23	100.0	20.69	190.0	124.90	280.0	33.56
15.0	32.64	105.0	21.93	195.0	121.30	285.0	32.16
20.0	29.11	110.0	26.26	200.0	116.32	290.0	29.72
25.0	24.80	115.0	33.23	205.0	110.09	295.0	26.28
30.0	19.94	120.0	41.98	210.0	102.76	300.0	22.01
35.0	14.88	125.0	51.78	215.0	94.50	305.0	17.21
40.0	10.34	130.0	62.07	220.0	85.57	310.0	12.46
45.0	8.07	135.0	72.44	225.0	76.24	315.0	9.16
50.0	9.79	140.0	82.56	230.0	66.83	320.0	9.74
55.0	13.68	145.0	92.12	235.0	57.76	325.0	13.71
60.0	17.81	150.0	100.89	240.0	49.49	330.0	18.75
65.0	21.40	155.0	108.65	245.0	42.53	335.0	23.76
70.0	24.08	160.0	115.24	250.0	37.38	340.0	28.26
75.0	25.66	165.0	120.53	255.0	34.31	345.0	32.00
80.0	26.04	170.0	124.40	260.0	33.14	350.0	34.81
85.0	25.29	175.0	126.80	265.0	33.21	355.0	36.58

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484.0 WATTS

630.0 KHZ.

## STANDARD PATTERN RADIATION AT 55.0 DEGREES ELEVATION

BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M
.0	19.78	90.0	21.34	180.0	94.48	270.0	29.32
5.0	19.49	95.0	19.91	185.0	94.04	275.0	29.60
10.0	18.46	100.0	18.97	190.0	92.48	280.0	29.39
15.0	16.76	105.0	19.39	195.0	89.85	285.0	28.53
20.0	14.48	110.0	21.82	200.0	86.21	290.0	26.95
25.0	11.82	115.0	26.22	205.0	81.67	295.0	24.67
30.0	9.11	120.0	32.10	210.0	76.33	300.0	21.77
35.0	7.10	125.0	38.92	215.0	70.36	305.0	18.39
40.0	7.02	130.0	46.24	220.0	63.94	310.0	14.75
45.0	9.07	135.0	53.71	225.0	57.29	315.0	11.19
50.0	12.10	140.0	61.07	230.0	50.67	320.0	8.34
55.0	15.27	145.0	68.06	235.0	44.39	325.0	7.33
60.0	18.17	150.0	74.51	240.0	38.79	330.0	8.64
65.0	20.55	155.0	80.25	245.0	34.24	335.0	11.17
70.0	22.25	160.0	85.14	250.0	31.02	340.0	13.87
75.0	23.16	165.0	89.08	255.0	29.23	345.0	16.27
80.0	23.26	170.0	91.98	260.0	28.66	350.0	18.13
85.0	22.59	175.0	93.79	265.0	28.87	355.0	19.32

484.0 WATTS

630.0 KHZ.

## STANDARD PATTERN RADIATION AT 60.0 DEGREES ELEVATION

BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M	BEARING DEGREES	FIELD MV/M
.0	7.65	90.0	18.85	180.0	65.92	270.0	24.88
5.0	7.51	95.0	17.83	185.0	65.65	275.0	25.14
10.0	7.06	100.0	17.06	190.0	64.61	280.0	25.10
15.0	6.40	105.0	17.01	195.0	62.84	285.0	24.64
20.0	5.78	110.0	18.12	200.0	60.39	290.0	23.73
25.0	5.56	115.0	20.50	205.0	57.33	295.0	22.36
30.0	6.14	120.0	23.99	210.0	53.75	300.0	20.57
35.0	7.53	125.0	28.26	215.0	49.77	305.0	18.44
40.0	9.45	130.0	33.00	220.0	45.54	310.0	16.06
45.0	11.61	135.0	37.94	225.0	41.20	315.0	13.56
50.0	13.80	140.0	42.87	230.0	36.96	320.0	11.09
55.0	15.85	145.0	47.62	235.0	33.03	325.0	8.84
60.0	17.63	150.0	52.02	240.0	29.65	330.0	7.05
65.0	19.03	155.0	55.97	245.0	27.02	335.0	6.03
70.0	19.96	160.0	59.35	250.0	25.27	340.0	5.88
75.0	20.39	165.0	62.09	255.0	24.41	345.0	6.33
80.0	20.31	170.0	64.12	260.0	24.24	350.0	6.96
85.0	19.75	175.0	65.41	265.0	24.50	355.0	7.44