

SELLMEYER ENGINEERING
BROADCAST AND COMMUNICATIONS CONSULTING ENGINEERS
P.O. Box 356 McKinney, Texas 75070
MEMBER AFCCE
(214) 495-9764

EXHIBIT E1-0, PAGE 1
DIRECTIONAL ANTENNA SPECIFICATIONS

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COMMON SPECIFICATIONS

No. of Elements:	3	
Type of Elements:	Towers 1 & 2:	Self Supporting, Top Loaded, Tapered Vertical Radiator
	Tower 3:	Uniform Cross-section, Guyed, Vertical Radiator
Height of Elements:	Towers 1 & 2:	
Effective Height:	149.9 Degrees	
Top Loading:	6.8 Degrees	
Above Insulator:	126.2 Mtrs	(414 Ft)
Above Ground Level:	128.3 Mtrs	(421 Ft)
Above Mean Sea Level:	203.0 Mtrs	(666 Ft)
	Tower 3 (Daytime & Critical Hours Only)	
Effective Height:	90.6 Degrees	
Above Insulator:	76.2 Mtrs	(250 Ft)
Above Ground Level:	78.3 Mtrs	(257 Ft)
Above Mean Sea Level:	154.5 Mtrs	(507 Ft)*
Site Elevation AMSL	74.7 Mtrs	(245 Ft)
* Including Beacon, if required		
Geographical Coordinates:	NL: 35 Deg 11 Min 45 Sec	
(Center of Array)	WL: 90 Deg 00 Min 32 Sec	
Ground System:	Towers 1 & 2:	
	120 # 10 SD copper wire radials about base of each tower spaced 3 degrees, 400 feet long buried 6-12 inches below grade level, except where intersecting with other towers or where foreshortened by property line. Where intersecting other towers, radials are bonded to copper strap.	
	Tower 3:	
	120 # 10 SD copper wire radials about base of each tower spaced 3 degrees, 250 feet long buried 6-12 inches below grade level, except where intersecting with other towers or where foreshortened by property line. Where intersecting other towers, radials are bonded to copper strap.	

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EXHIBIT E1-0, PAGE 2
DIRECTIONAL ANTENNA SPECIFICATIONS

Orientation & Spacing:

Three towers referenced to Tower 1 as follows:

Twr 2: Spaced 410.0 Ft, (186.81 mtrs), (148.5 Deg) on a line bearing 204.0 Deg True

Twr 3: Spaced 612.9 Ft, (124.97 mtrs), (222.0 Deg) on a line bearing 167.0 Deg True

Theoretical Specifications:

DAYTIME ARRAY

<u>TWR</u>	<u>RATIO</u>	<u>PHASE</u>
1	1.000	0.0
2	0.520	-170.0
3	0.996	- 25.0

POWER: 10.0 kW

RMS (Theo): 1075.64 mV/m

RMS (Std): 1129.91 mV/m

RSS: 1270.15 mV/m

Q: 31.8

NIGHTTIME ARRAY

<u>TWR</u>	<u>RATIO</u>	<u>PHASE</u>
1	1.000	0.0
2	0.649	-49.5

0.33 kW

196.15 mV/m

206.22 mV/m

201.80 mV/m

10.00

CRITICAL HOURS

<u>TWR</u>	<u>RATIO</u>	<u>PHASE</u>
1	1.000	0.0
2	0.520	-170.0
3	0.996	- 25.0

POWER: 5.20 kW

RMS (Theo): 777.38 mV/m

RMS (Std): 816.60 mV/m

RSS: 917.96 mV/m

Q: 22.81

Registration Numbers:

Tower 1 (North) 1051771

Tower 2 (Southwest) 1051770

Tower 3 (Southeast) Pending

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EXHIBIT E1-13 TABULATION OF CRITICAL HOURS RADIATION TOWARD CANADIAN BORDER RADIO STATION KWAM MEMPHIS, TENNESSEE

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Call: KWAM Frequency: 990.0 kHz
Power: 5.200 kW
ERSS: 917.96 mV/m at 1 km
Multiplying Constant (K factor): 610.29 mV/m at 1 km
Q Factor (elevation angle = 0 degrees): 22.81
Theoretical Pattern RMS: 777.38 mV/m at 1 km
Standard Pattern RMS: 816.60 mV/m at 1 km

ANTENNA TOWER PARAMETERS:

Field Phase Spac. Bear. TL HT TLA TLB TLC TLD
Ratio (deg.) (deg.) (deg.) SW (deg.) (deg.) (deg.) (deg.) (deg.) (deg.)

1 1.000 .0 .0 .0 1 156.7 149.9 6.8 .0 .0
2 .520 -170.0 148.5 204.0 1 156.7 149.9 6.8 .0 .0
3 .996 -25.0 222.0 167.0 0 90.6 .0 .0 .0 .0

CALCULATED STANDARD PATTERN DATA:

Azimuth Elevation Angle (degrees):
(deg.) .00 1.00 2.00 3.00 4.00 5.00

.0 984.88 982.74 979.98 976.60 972.59 967.97
5.0 930.53 928.46 925.78 922.47 918.55 914.01
10.0 856.10 854.13 851.55 848.36 844.58 840.19
15.0 762.31 760.46 758.03 755.01 751.41 747.23
20.0 651.03 649.32 647.06 644.25 640.89 636.98
25.0 526.46 524.91 522.84 520.27 517.20 513.63
30.0 398.61 397.17 395.30 393.01 390.29 387.16
35.0 294.29 292.91 291.26 289.33 287.14 284.68
40.0 274.04 272.79 271.51 270.21 268.88 267.54
45.0 365.18 364.08 363.08 362.19 361.41 360.75
50.0 511.66 510.51 509.46 508.51 507.68 506.94
55.0 671.16 669.83 668.56 667.34 666.18 665.07
60.0 823.93 822.39 820.85 819.30 817.74 816.18
65.0 958.23 956.50 954.70 952.84 950.90 948.90
70.0 1065.63 1063.74 1061.74 1059.62 1057.38 1055.03
75.0 1139.96 1137.97 1135.83 1133.55 1131.12 1128.55
80.0 1177.25 1175.23 1173.06 1170.72 1168.23 1165.59
85.0 1175.85 1173.87 1171.75 1169.49 1167.08 1164.52
90.0 1136.41 1134.55 1132.58 1130.50 1128.31 1126.01
95.0 1061.80 1060.13 1058.40 1056.62 1054.77 1052.87
100.0 956.80 955.37 953.96 952.56 951.16 949.78
105.0 827.67 826.54 825.50 824.54 823.67 822.89
110.0 681.74 680.94 680.31 679.84 679.54 679.40
115.0 527.10 526.65 526.44 526.47 526.73 527.23
120.0 372.90 372.82 373.02 373.50 374.26 375.30
125.0 232.48 232.72 233.23 233.99 235.00 236.27
130.0 141.60 141.92 142.19 142.42 142.62 142.83
135.0 167.45 167.16 166.37 165.09 163.31 161.07
140.0 255.47 254.72 253.32 251.28 248.61 245.31
145.0 343.19 342.14 340.40 337.97 334.86 331.07
150.0 415.34 414.08 412.11 409.43 406.04 401.95
155.0 467.66 466.25 464.12 461.27 457.71 453.43
160.0 498.84 497.33 495.10 492.16 488.50 484.13

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Azimuth (degs.)	Elevation Angle (degrees):					
	.00	1.00	2.00	3.00	4.00	5.00
165.0	508.88	507.31	505.04	502.06	498.38	494.01
170.0	498.72	497.13	494.86	491.91	488.28	483.99
175.0	470.37	468.78	466.55	463.69	460.20	456.08
180.0	427.53	425.97	423.83	421.12	417.86	414.03
185.0	377.29	375.75	373.76	371.31	368.40	365.05
190.0	333.36	331.87	330.10	328.05	325.73	323.14
195.0	318.92	317.53	316.10	314.64	313.15	311.65
200.0	356.26	355.01	353.94	353.06	352.38	351.90
205.0	445.30	444.10	443.21	442.62	442.33	442.34
210.0	569.28	568.02	567.09	566.47	566.17	566.19
215.0	712.16	710.75	709.63	708.79	708.23	707.96
220.0	862.02	860.40	859.02	857.85	856.91	856.18
225.0	1009.28	1007.44	1005.76	1004.22	1002.83	1001.59
230.0	1145.47	1143.40	1141.42	1139.51	1137.67	1135.91
235.0	1262.79	1260.53	1258.27	1256.02	1253.78	1251.54
240.0	1354.28	1351.86	1349.39	1346.87	1344.29	1341.65
245.0	1414.13	1411.62	1409.00	1406.29	1403.47	1400.56
250.0	1438.09	1435.55	1432.88	1430.08	1427.16	1424.11
255.0	1423.84	1421.34	1418.71	1415.95	1413.06	1410.03
260.0	1371.21	1368.84	1366.35	1363.74	1361.02	1358.18
265.0	1282.30	1280.12	1277.86	1275.52	1273.11	1270.61
270.0	1161.35	1159.44	1157.50	1155.53	1153.53	1151.51
275.0	1014.63	1013.03	1011.48	1009.96	1008.48	1007.03
280.0	850.28	849.04	847.92	846.90	845.99	845.19
285.0	678.74	677.90	677.23	676.73	676.40	676.24
290.0	514.77	514.32	514.08	514.05	514.22	514.60
295.0	383.73	383.61	383.66	383.87	384.26	384.81
300.0	328.82	328.77	328.71	328.63	328.55	328.45
305.0	373.42	373.09	372.51	371.69	370.62	369.32
310.0	476.43	475.72	474.61	473.10	471.20	468.91
315.0	594.46	593.41	591.88	589.85	587.35	584.37
320.0	707.60	706.25	704.37	701.96	699.00	695.52
325.0	807.57	805.99	803.83	801.10	797.81	793.94
330.0	890.74	888.96	886.59	883.62	880.06	875.91
335.0	955.45	953.52	950.97	947.82	944.06	939.70
340.0	1000.93	998.88	996.21	992.92	989.03	984.51
345.0	1026.81	1024.69	1021.94	1018.56	1014.57	1009.96
350.0	1032.89	1030.72	1027.93	1024.51	1020.47	1015.81
355.0	1018.97	1016.80	1014.01	1010.58	1006.54	1001.87

DETAIL OF RADIATION WITHIN THE ARC FROM 325.0° THROUGH 355°

CALCULATED STANDARD PATTERN DATA:

Azimuth (degs.)	Elevation Angle (degrees):					
	.00	1.00	2.00	3.00	4.00	5.00
325.0	807.57	805.99	803.83	801.10	797.81	793.94
326.0	825.62	823.99	821.79	819.01	815.65	811.73
327.0	842.98	841.31	839.06	836.23	832.82	828.83
328.0	859.62	857.92	855.62	852.74	849.28	845.24
329.0	875.55	873.81	871.47	868.54	865.03	860.94
330.0	890.74	888.96	886.59	883.62	880.06	875.91
331.0	905.20	903.38	900.97	897.96	894.35	890.16
332.0	918.90	917.05	914.60	911.55	907.91	903.67
333.0	931.85	929.97	927.48	924.40	920.71	916.43
334.0	944.03	942.12	939.61	936.49	932.77	928.45
335.0	955.45	953.52	950.97	947.82	944.06	939.70

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Azimuth (degs.)	Elevation Angle (degrees):					
	.00	1.00	2.00	3.00	4.00	5.00
336.0	966.10	964.14	961.57	958.38	954.59	950.20
337.0	975.97	973.99	971.39	968.18	964.36	959.93
338.0	985.07	983.06	980.44	977.20	973.35	968.90
339.0	993.39	991.36	988.71	985.45	981.58	977.09
340.0	1000.93	998.88	996.21	992.92	989.03	984.51
341.0	1007.68	1005.61	1002.92	999.62	995.70	991.16
342.0	1013.65	1011.56	1008.86	1005.53	1001.59	997.03
343.0	1018.82	1016.73	1014.00	1010.66	1006.70	1002.12
344.0	1023.21	1021.10	1018.36	1015.01	1011.03	1006.43
345.0	1026.81	1024.69	1021.94	1018.56	1014.57	1009.96
346.0	1029.62	1027.48	1024.72	1021.34	1017.33	1012.70
347.0	1031.63	1029.49	1026.71	1023.32	1019.30	1014.66
348.0	1032.85	1030.69	1027.91	1024.51	1020.48	1015.83
349.0	1033.27	1031.11	1028.32	1024.91	1020.87	1016.22
350.0	1032.89	1030.72	1027.93	1024.51	1020.47	1015.81
351.0	1031.71	1029.54	1026.75	1023.33	1019.28	1014.61
352.0	1029.73	1027.56	1024.76	1021.34	1017.29	1012.62
353.0	1026.95	1024.78	1021.98	1018.55	1014.51	1009.83
354.0	1023.36	1021.19	1018.39	1014.97	1010.92	1006.25
355.0	1018.97	1016.80	1014.01	1010.58	1006.54	1001.87

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EXHIBIT E1-14
TABULATION OF PERMISSIBLE & ACTUAL RADIATION
TOWARD CANADIAN BORDER
RADIO STATION KWAM
MEMPHIS, TENNESSEE

POINT	COORDINATES	DISTANCE	BEARING	PERMISSIBLE	RADIATION
	NAD-27	KM	DEGREES	RADIATION MV/M @ 1 KM	MV/M @ 1 KM
A	48-21-14 91-45-00	1472	354.1	1034.8	1023.4
B	48-32-28 93-29-33	1511	350.0	1069.9	1032.9
C	49-00-17 95-40-59	1604	345.0	1154.6	1026.8
D	49-00-05 97-41-24	1658	340.0	1202.2	1000.9
E	49-00-07 100-00-25	1739	335.0	1275.1	955.5
F	49-00-21 102-36-34	1846	330.0	1371.4	890.7
G	49-00-22 105-21-41	1982	325.0	1493.8	807.6

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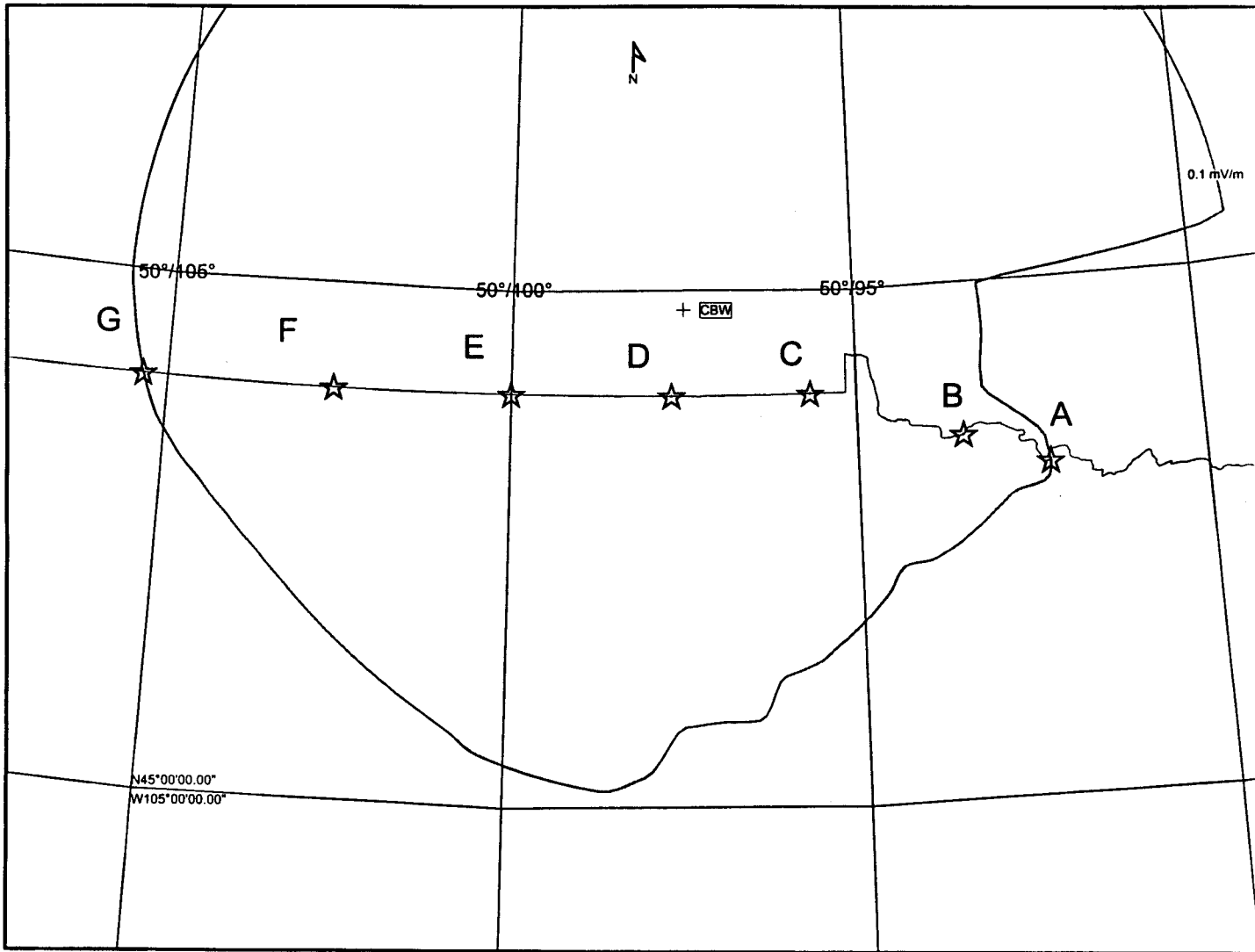
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EXHIBIT E1-15
MAP SHOWING CANADIAN BORDER POINTS
RADIO STATION KWAM
MEMPHIS, TENNESSEE



AMENDED: 20020104

Call sign: KWAM
Frequency: 990 kHz
Power: 5.200 kW
ERSS: 917.96 mV/m at 1 km
Q factor at zero degrees:
22.80 mV/m at 1 km
Theoretical pattern RMS:
777.38 mV/m at 1 km
Standard pattern RMS:
816.60 mV/m at 1 km
Modified pattern RMS:
801.45 mV/m at 1 km

Coordinates:
N35°11'45.00" W90°00'32.00"

No. of augmentations: 0

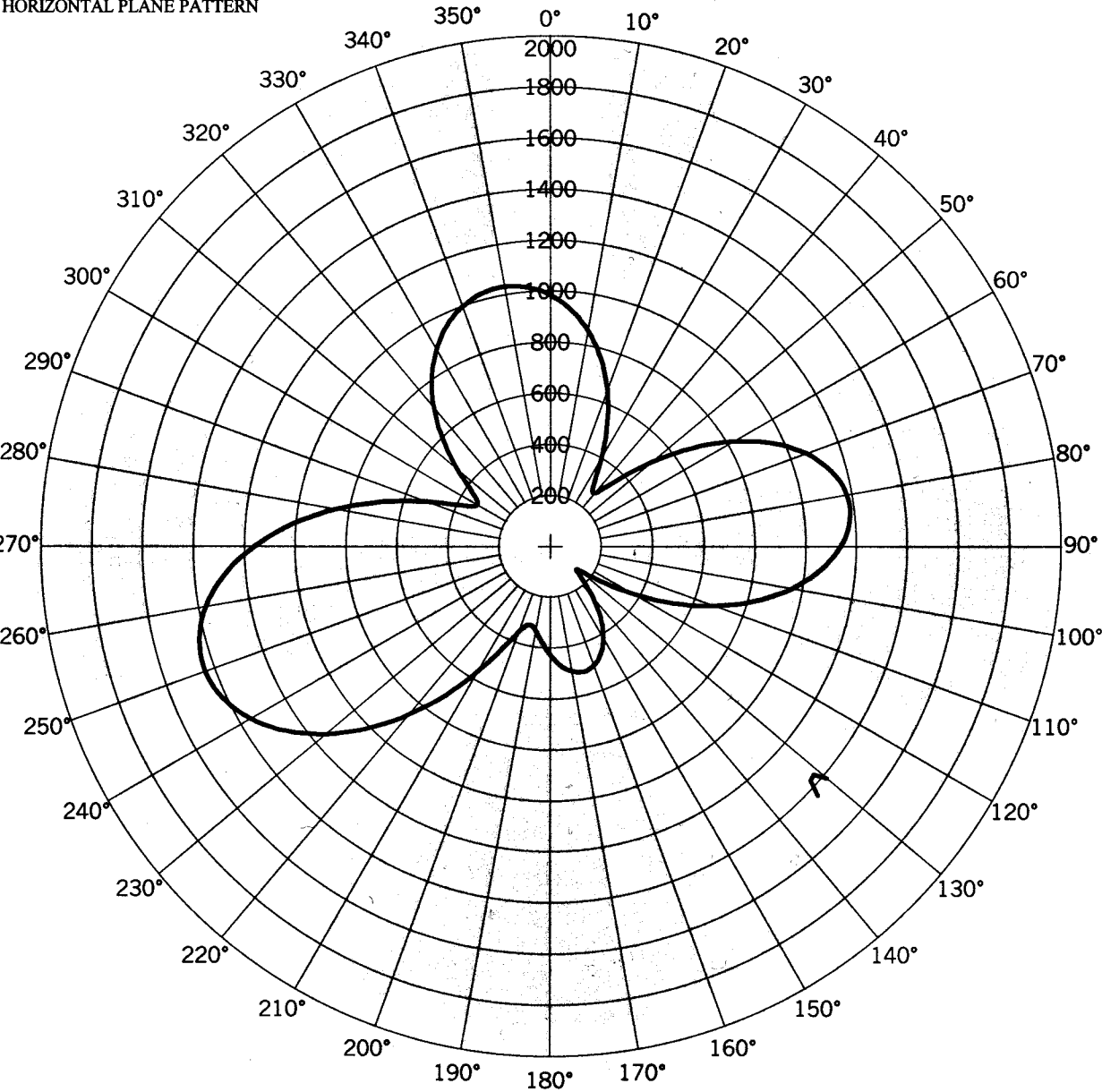
TOWER PARAMETERS

	Field	Phase	Spacing	Bearing	Tower	Elec.	Length	Length	Length	Length
##	Ratio	(deg.)	(deg.)	(deg.)	Ref.	Height	Twr. A	Twr. B	Twr. C	Twr. D
					Switch	(deg.)	(deg.)	(deg.)	(deg.)	(deg.)
1	1.000	0.0	0.0	0.0	0	156.7	149.9	6.8	0.0	0.0
2	0.520	-170.0	148.5	204.0	0	156.7	149.9	6.8	0.0	0.0
3	0.996	-25.0	222.0	167.0	0	90.6	0.0	0.0	0.0	0.0

EXHIBIT E1-16

CRITICAL HOURS STANDARD PATTERN

HORIZONTAL PLANE PATTERN



outer curve: x10 scale

Field in mV/m

EXHIBIT E1-17
MAP SHOWING 5.0 MV/M CRITICAL HOURS CONTOUR
RADIO STATION KWAM
MEMPHIS, TENNESSEE

