METHOD OF MEASUREMENT

The azimuth pattern developed for WRXS was optimized in the following manner.

A single model of the SKM radiator at a scale of 4.4:1 was mounted on a similarly scaled model of the tower according to information provided to Dielectric by the station. Both the horizontal and vertical polarization azimuth patterns were measured in a anechoic test range. Spacing and location of the radiator off the tower in conjunction with parasitic elements were used to optimize the azimuth pattern.

In WRXS's case, a second tower was located 23' from the first. Due to measurement limitations, the second tower could not be included in the scale model measurement. For this case, the estimated effect of the second tower in the presence of the measured horizontal and vertical polarized azimuth patterns was calculated using the following theoretical approach. The scatter from each tower member (legs, horizontals, ect.) is calculated when illuminated by a horizontal and vertically polarized incident wave. The scatter from each member in each polarization is vectorally added and summed with the measured (free space) pattern to generate a composite pattern, which includes the effect of the second tower.

In order for this to be a practical method of calculation, the following assumptions have been made.

1. All tower members are modeled as cylinders and are highly conductive.
2. Second order reflection are neglected. This can be done if the first reflection from any of the opposing structures is small compared to the primary field of the transmitting antenna.
3. Linear interpolation is used when the modeled structures are of different lengths than the radiating antenna aperture.

This described theoretical method of prediction the azimuth pattern of an antenna in the presence of towers has been used by Dielectric for a number of years to optimize all UHF side-mounted TV antennas.

STATEMENT OF QUALIFICATIONS

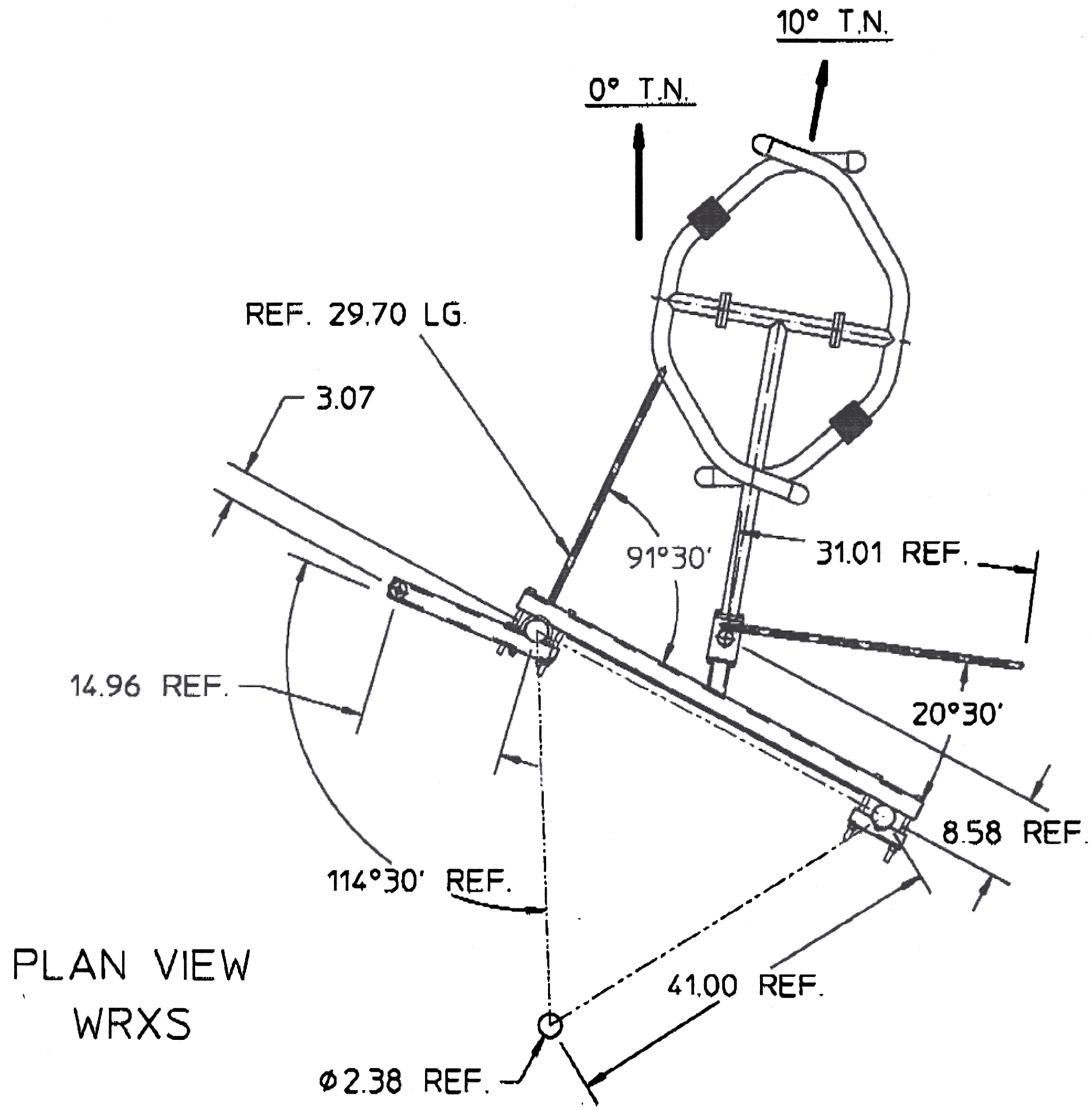
John Schadler is the Principal Engineer here at Dielectric. He has been working for Dielectric since 1986. He received a BS in Electrical Engineering from Penn State University, and a Masters in Electrical Engineering from Drexel University. He has multiple patents in the areas of circular polarization, centerfed antennas, broadband and multi-channel antennas, common aperture antennas, and DTV antennas.

Signed by: [signature]

Date: 10/12/00

SYM	DESCRIPTION	DATE	APPROVED

REVISIONS



DIMENSIONAL TOLERANCES (UNLESS OTHERWISE NOTED) 4 PLACE DIMENSIONS ± .0005 3 PLACE DIMENSIONS ± .005 2 PLACE DIMENSIONS ± .02 ANGULAR DIMENSIONS ± 0°-30' REFERANCE DIMENSIONS ARE NOT FOR MANUFACTURING OR INSPECTION USE WORKMANSHIP STDS DWG. No. D78691	PART NO: SK111300MCD	Dielectric A Unit of SPX Corporation
SK111300MCD 13-Nov-2000 10:56:39	MATERIAL: N/A FINISH: N/A	TITLE WRXS PLAN VIEW
	DATE: 11-13-00 DR. BY: M. DAVISON CHKD BY: ENG/MFG APPVL: /	CODE IDENT. NO. 08441 | A | SK111300MCD | REV: -

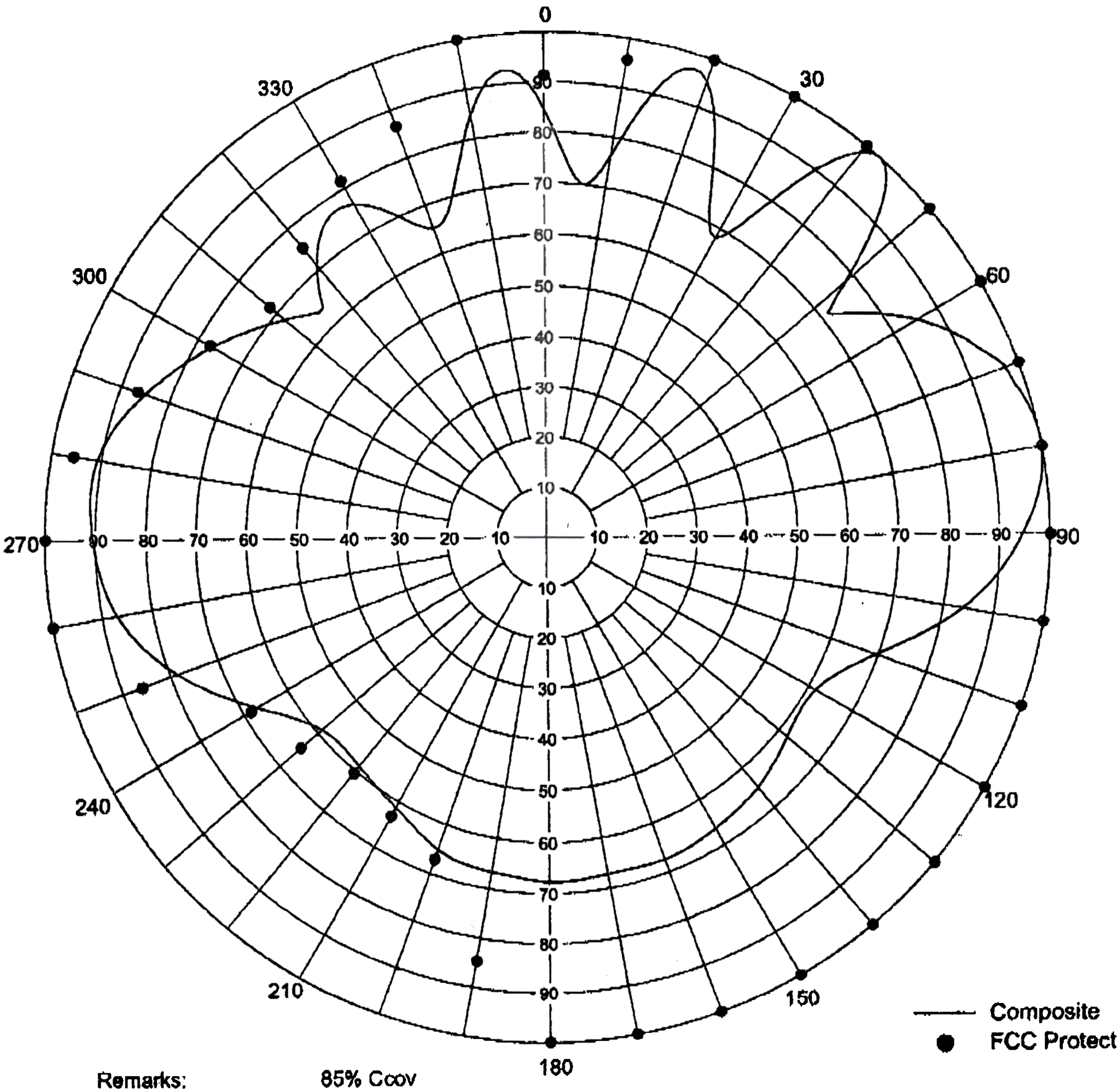
Dielectric

Proposal Number
Date Oct 12, 2000
Call Letters WRXS
Location
Customer
Antenna Type

AZIMUTH PATTERN

Calculated / Measured **Measured/Calculated**

Frequency **106.9 MHz**
Drawing # **WRXS101200-2**



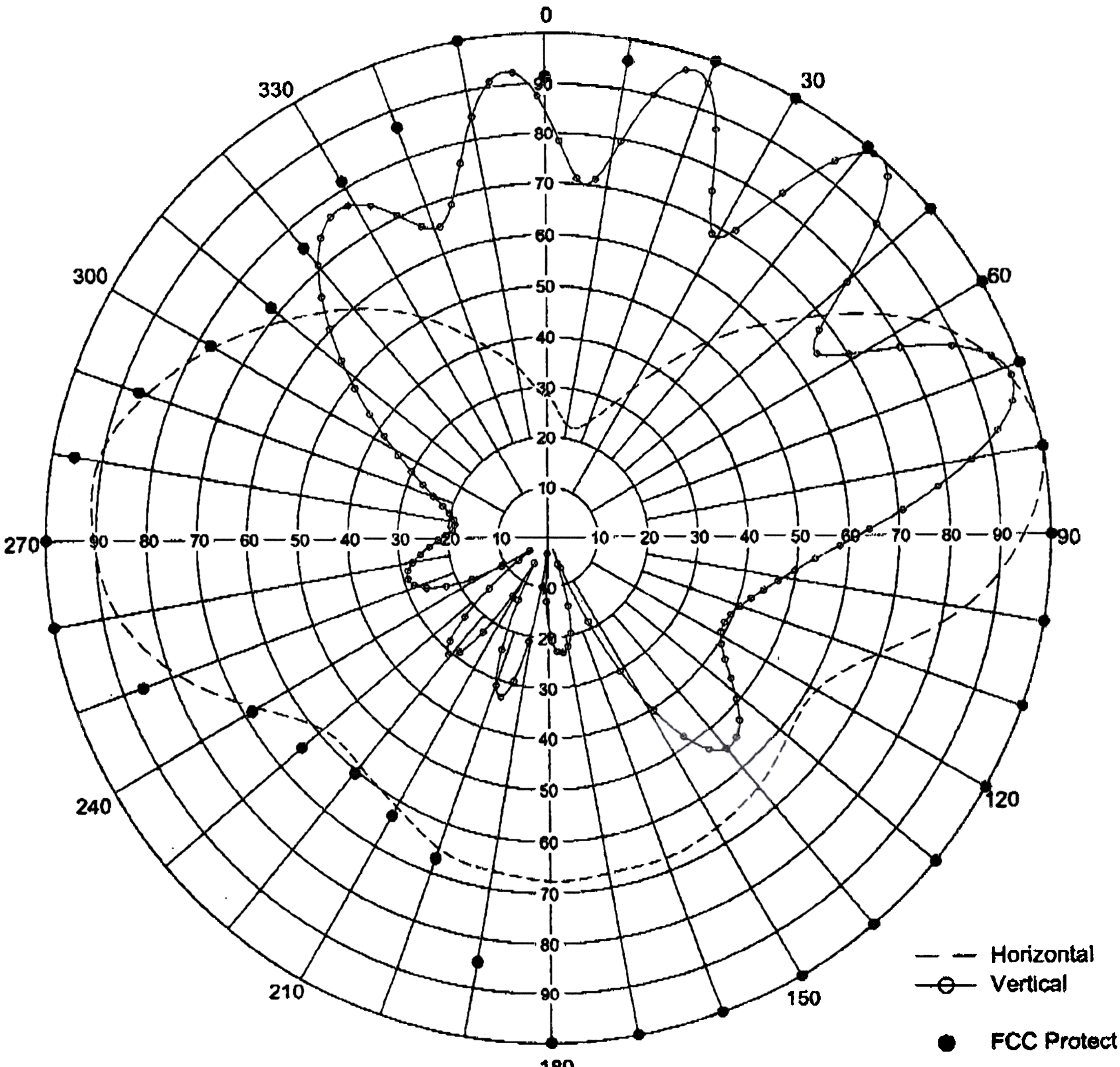
Remarks: 85% Ccov

Dielectric

Proposal Number
Date Oct 12, 2000
Call Letters WRXS
Location
Customer
Antenna Type

AZIMUTH PATTERN

Frequency 106.9 MHz
Calculated / Measured **Measured/Calculated** Drawing # WRXS101200-1



Remarks: 85% Ccov

Dielectric

Date 12-Oct-00
Call Letters WRXS
Location
Customer
Antenna Type

TABULATION OF HORIZONTAL AZIMUTH PATTERN

Azimuth Pattern Drawing #: **WRXS101200**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.286	45	0.591	90	0.946	135	0.636	180	0.677	225	0.582	270	0.905	315	0.638
1	0.280	46	0.608	91	0.937	136	0.639	181	0.676	226	0.582	271	0.907	316	0.630
2	0.273	47	0.624	92	0.928	137	0.642	182	0.675	227	0.583	272	0.909	317	0.622
3	0.266	48	0.641	93	0.919	138	0.644	183	0.674	228	0.584	273	0.910	318	0.614
4	0.258	49	0.659	94	0.909	139	0.647	184	0.672	229	0.587	274	0.912	319	0.606
5	0.251	50	0.676	95	0.899	140	0.649	185	0.671	230	0.590	275	0.913	320	0.598
6	0.245	51	0.694	96	0.888	141	0.651	186	0.670	231	0.594	276	0.913	321	0.590
7	0.239	52	0.713	97	0.877	142	0.653	187	0.668	232	0.599	277	0.913	322	0.582
8	0.233	53	0.731	98	0.865	143	0.655	188	0.667	233	0.605	278	0.912	323	0.573
9	0.229	54	0.750	99	0.852	144	0.656	189	0.667	234	0.612	279	0.910	324	0.565
10	0.225	55	0.768	100	0.839	145	0.657	190	0.666	235	0.620	280	0.908	325	0.556
11	0.223	56	0.787	101	0.825	146	0.659	191	0.665	236	0.629	281	0.905	326	0.548
12	0.222	57	0.805	102	0.811	147	0.660	192	0.665	237	0.638	282	0.901	327	0.539
13	0.222	58	0.822	103	0.796	148	0.661	193	0.664	238	0.648	283	0.896	328	0.530
14	0.223	59	0.838	104	0.781	149	0.663	194	0.663	239	0.659	284	0.891	329	0.521
15	0.224	60	0.854	105	0.766	150	0.664	195	0.662	240	0.670	285	0.885	330	0.511
16	0.227	61	0.869	106	0.751	151	0.665	196	0.661	241	0.682	286	0.879	331	0.502
17	0.230	62	0.883	107	0.737	152	0.667	197	0.659	242	0.693	287	0.872	332	0.493
18	0.234	63	0.896	108	0.722	153	0.668	198	0.657	243	0.705	288	0.865	333	0.483
19	0.238	64	0.908	109	0.709	154	0.670	199	0.654	244	0.717	289	0.858	334	0.474
20	0.243	65	0.920	110	0.696	155	0.671	200	0.651	245	0.729	290	0.850	335	0.464
21	0.249	66	0.930	111	0.683	156	0.672	201	0.648	246	0.741	291	0.843	336	0.455
22	0.256	67	0.940	112	0.672	157	0.673	202	0.644	247	0.752	292	0.835	337	0.446
23	0.264	68	0.949	113	0.662	158	0.674	203	0.640	248	0.764	293	0.827	338	0.437
24	0.272	69	0.957	114	0.652	159	0.674	204	0.636	249	0.775	294	0.819	339	0.428
25	0.281	70	0.965	115	0.644	160	0.674	205	0.632	250	0.786	295	0.811	340	0.419
26	0.291	71	0.972	116	0.636	161	0.674	206	0.627	251	0.796	296	0.802	341	0.411
27	0.302	72	0.978	117	0.629	162	0.674	207	0.624	252	0.806	297	0.794	342	0.403
28	0.314	73	0.983	118	0.624	163	0.673	208	0.620	253	0.816	298	0.786	343	0.395
29	0.327	74	0.988	119	0.619	164	0.673	209	0.616	254	0.825	299	0.777	344	0.388
30	0.341	75	0.992	120	0.616	165	0.672	210	0.613	255	0.834	300	0.768	345	0.381
31	0.356	76	0.996	121	0.613	166	0.671	211	0.610	256	0.843	301	0.760	346	0.374
32	0.371	77	0.998	122	0.611	167	0.671	212	0.607	257	0.851	302	0.751	347	0.367
33	0.387	78	1.000	123	0.611	168	0.671	213	0.605	258	0.858	303	0.742	348	0.360
34	0.404	79	1.000	124	0.611	169	0.671	214	0.602	259	0.865	304	0.733	349	0.353
35	0.421	80	0.899	125	0.611	170	0.671	215	0.600	260	0.871	305	0.724	350	0.345
36	0.438	81	0.998	126	0.612	171	0.672	216	0.597	261	0.876	306	0.715	351	0.337
37	0.456	82	0.995	127	0.614	172	0.673	217	0.595	262	0.881	307	0.706	352	0.328
38	0.473	83	0.991	128	0.616	173	0.674	218	0.593	263	0.885	308	0.698	353	0.320
39	0.491	84	0.987	129	0.619	174	0.675	219	0.591	264	0.889	309	0.689	354	0.312
40	0.508	85	0.982	130	0.621	175	0.675	220	0.589	265	0.892	310	0.680	355	0.304
41	0.525	86	0.976	131	0.624	176	0.676	221	0.587	266	0.895	311	0.672	356	0.296
42	0.542	87	0.969	132	0.627	177	0.677	222	0.585	267	0.898	312	0.663	357	0.290
43	0.558	88	0.962	133	0.630	178	0.677	223	0.584	268	0.901	313	0.655	358	0.285
44	0.575	89	0.954	134	0.633	179	0.677	224	0.583	269	0.903	314	0.647	359	0.282

Dielectric

Date 12-Oct-00
Call Letters WRXS
Location
Customer
Antenna Type

TABULATION OF VERTICAL AZIMUTH PATTERN

Azimuth Pattern Drawing #: **WRXS101200**

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
0	0.845	45	0.960	90	0.619	135	0.536	180	0.177	225	0.269	270	0.214	315	0.622
1	0.815	46	0.932	91	0.600	136	0.543	181	0.154	226	0.251	271	0.208	316	0.640
2	0.784	47	0.899	92	0.581	137	0.548	182	0.127	227	0.230	272	0.204	317	0.659
3	0.755	48	0.862	93	0.564	138	0.551	183	0.096	228	0.206	273	0.199	318	0.676
4	0.730	49	0.822	94	0.549	139	0.553	184	0.063	229	0.181	274	0.195	319	0.693
5	0.711	50	0.781	95	0.534	140	0.551	185	0.031	230	0.154	275	0.192	320	0.709
6	0.701	51	0.742	96	0.520	141	0.547	186	0.028	231	0.127	276	0.190	321	0.723
7	0.702	52	0.708	97	0.508	142	0.540	187	0.061	232	0.100	277	0.189	322	0.737
8	0.713	53	0.679	98	0.497	143	0.530	188	0.099	233	0.073	278	0.188	323	0.748
9	0.734	54	0.659	99	0.486	144	0.516	189	0.138	234	0.051	279	0.189	324	0.757
10	0.762	55	0.649	100	0.476	145	0.500	190	0.176	235	0.039	280	0.190	325	0.764
11	0.796	56	0.648	101	0.467	146	0.480	191	0.211	236	0.045	281	0.192	326	0.769
12	0.832	57	0.658	102	0.458	147	0.458	192	0.243	237	0.064	282	0.195	327	0.772
13	0.868	58	0.676	103	0.450	148	0.432	193	0.271	238	0.086	283	0.199	328	0.771
14	0.901	59	0.700	104	0.443	149	0.403	194	0.294	239	0.109	284	0.203	329	0.769
15	0.929	60	0.730	105	0.436	150	0.372	195	0.312	240	0.132	285	0.208	330	0.763
16	0.951	61	0.762	106	0.429	151	0.338	196	0.325	241	0.153	286	0.214	331	0.755
17	0.965	62	0.796	107	0.423	152	0.303	197	0.331	242	0.174	287	0.220	332	0.745
18	0.970	63	0.829	108	0.417	153	0.265	198	0.331	243	0.192	288	0.227	333	0.733
19	0.967	64	0.860	109	0.412	154	0.226	199	0.324	244	0.210	289	0.235	334	0.720
20	0.955	65	0.888	110	0.407	155	0.185	200	0.312	245	0.225	290	0.243	335	0.705
21	0.934	66	0.913	111	0.402	156	0.145	201	0.294	246	0.239	291	0.252	336	0.691
22	0.906	67	0.935	112	0.399	157	0.104	202	0.270	247	0.252	292	0.261	337	0.678
23	0.873	68	0.952	113	0.395	158	0.064	203	0.242	248	0.262	293	0.271	338	0.666
24	0.835	69	0.964	114	0.393	159	0.029	204	0.210	249	0.271	294	0.281	339	0.657
25	0.796	70	0.972	115	0.391	160	0.025	205	0.175	250	0.278	295	0.292	340	0.652
26	0.758	71	0.976	116	0.390	161	0.056	206	0.138	251	0.284	296	0.303	341	0.652
27	0.724	72	0.975	117	0.390	162	0.087	207	0.102	252	0.288	297	0.315	342	0.658
28	0.698	73	0.971	118	0.391	163	0.116	208	0.071	253	0.291	298	0.328	343	0.669
29	0.683	74	0.962	119	0.393	164	0.142	209	0.058	254	0.292	299	0.341	344	0.686
30	0.681	75	0.951	120	0.396	165	0.164	210	0.072	255	0.291	300	0.355	345	0.707
31	0.691	76	0.936	121	0.400	166	0.181	211	0.102	256	0.290	301	0.369	346	0.732
32	0.714	77	0.919	122	0.405	167	0.195	212	0.136	257	0.288	302	0.384	347	0.760
33	0.745	78	0.899	123	0.412	168	0.206	213	0.169	258	0.284	303	0.400	348	0.790
34	0.783	79	0.878	124	0.420	169	0.214	214	0.200	259	0.280	304	0.416	349	0.819
35	0.824	80	0.855	125	0.428	170	0.221	215	0.228	260	0.275	305	0.433	350	0.847
36	0.865	81	0.832	126	0.438	171	0.225	216	0.253	261	0.270	306	0.451	351	0.872
37	0.904	82	0.807	127	0.449	172	0.229	217	0.273	262	0.264	307	0.469	352	0.894
38	0.937	83	0.782	128	0.460	173	0.232	218	0.289	263	0.258	308	0.487	353	0.911
39	0.965	84	0.757	129	0.472	174	0.233	219	0.300	264	0.251	309	0.506	354	0.922
40	0.985	85	0.733	130	0.483	175	0.232	220	0.306	265	0.245	310	0.525	355	0.926
41	0.997	86	0.708	131	0.495	176	0.228	221	0.307	266	0.238	311	0.544	356	0.924
42	1.000	87	0.685	132	0.506	177	0.221	222	0.304	267	0.232	312	0.564	357	0.915
43	0.995	88	0.662	133	0.517	178	0.211	223	0.296	268	0.226	313	0.583	358	0.898
44	0.981	89	0.640	134	0.527	179	0.196	224	0.285	269	0.220	314	0.602	359	0.875

Dielectric

SKM-2AE **WRXS**

Ocean City MD

Input:

Required ERP at Peak of HP:	6.0 kW	
Peak value of HP:	100.00%	
Peak value of VP:	100.00%	
Horizontal Pat. Gain of HP:	2.130	3.28 dB
Horizontal Pat. Gain of VP:	3.160	5.00 dB
Vertical Pat. Gain of HP:	1.906	2.80 dB
Vertical Pat. Gain of VP:	1.906	2.80 dB

Output:

Power into HP:	59.7%	
Power into VP:	40.3%	
Peak Gain of HP:	**2.43**	**3.85 dB**
Peak Gain of VP:	**2.43**	**3.85 dB**
Power at Antenna:	2.5 kW	
ERP of VP:	6.0 kW	100.0%
Actual ERP at Peak of HP:	6.0 kW	100.0%