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DIRECTIONAL ANTENNAS
AM - FM - TV
APPLICATIONS
PROOFS
FIELD MEASUREMENTS
AUDIO AND RF ENGINEERING
EMERGENCY REPAIR

ENGINEERING STATEMENT

Concerning an application for minor change for AM Broadcast Station KRCM.

KRCM is licensed to operate on 1380 kHz serving Beaumont, Texas. The applicant has received a construction permit to move to Shenandoah, Texas file number BMJ-20050118ADX. This filing requests a modification of the construction permit to specify a different power daytime and nighttime.

The licensee, Voice Broadcasting, Inc., requests a modified construction permit to move KRCM to serve Shenandoah, Texas on 1380 kHz with 10 kW daytime and nighttime secondary 0.035 kW using directional antenna (DA-2)

The applicant has retained Vir James P. C., Consulting Broadcast Engineers, to supply the necessary engineering studies and exhibits required for this application.

TRANSMITTER SITE

The proposed daytime transmitter site will be located east of Trails end Rd. and Clark Lane northeast of Tamina, Tx. The towers will not require registration as they are not near any airport and only 52.7m AGL overall.

PROPOSED OPERATION

The proposed KRCM Shenandoah operation will use a directional of two towers 75.7 degrees in electrical height. The ground system will consist of 120 buried copper radials 54 m long. A type approved transmitter will be used. The coverage contours are tabulated and mapped as attached.

The proposed KRCM operation fully encompasses Shenandoah in the daytime 5 mV/m contour as shown on the coverage contour map attached. There is no protected contour for a secondary nighttime operation and no requirement that the Night Limit 15.92 mV/m "City Grade" contour to reach Shenandoah.

DAYTIME ALLOCATIONS STUDY

All stations on 1380 kHz and adjacent channels were considered as required for a complete allocations study. The coverage and interference contours are shown on the attached m3 type allocations map.

The distances to all field strength contours shown herein were determined per Sec. 73.183, using ground conductivity values shown by the FCC Map M-3 except where measured conductivities are available in conjunction with the appropriate field strength versus distance chart. Ground conductivity measurements for KULP were submitted in BMJ20050118ADX.

Measurements from the proposed KRCM site and for KWWJ are submitted tabulated and analyzed herein.

NIGHTTIME INTERFERENCE STUDY

The proposed KRCM Shenandoah operation does not enter into the 25% exclusion RSS of any US Class B station or the 50% exclusion RSS of any foreign station.

No environmental impact study is required since the facility is located in a noncritical area and will comply fully with OET 65 RF energy levels at all locations outside of the standard tower base enclosure fence. There are no other AM broadcast stations within 3.2 km.

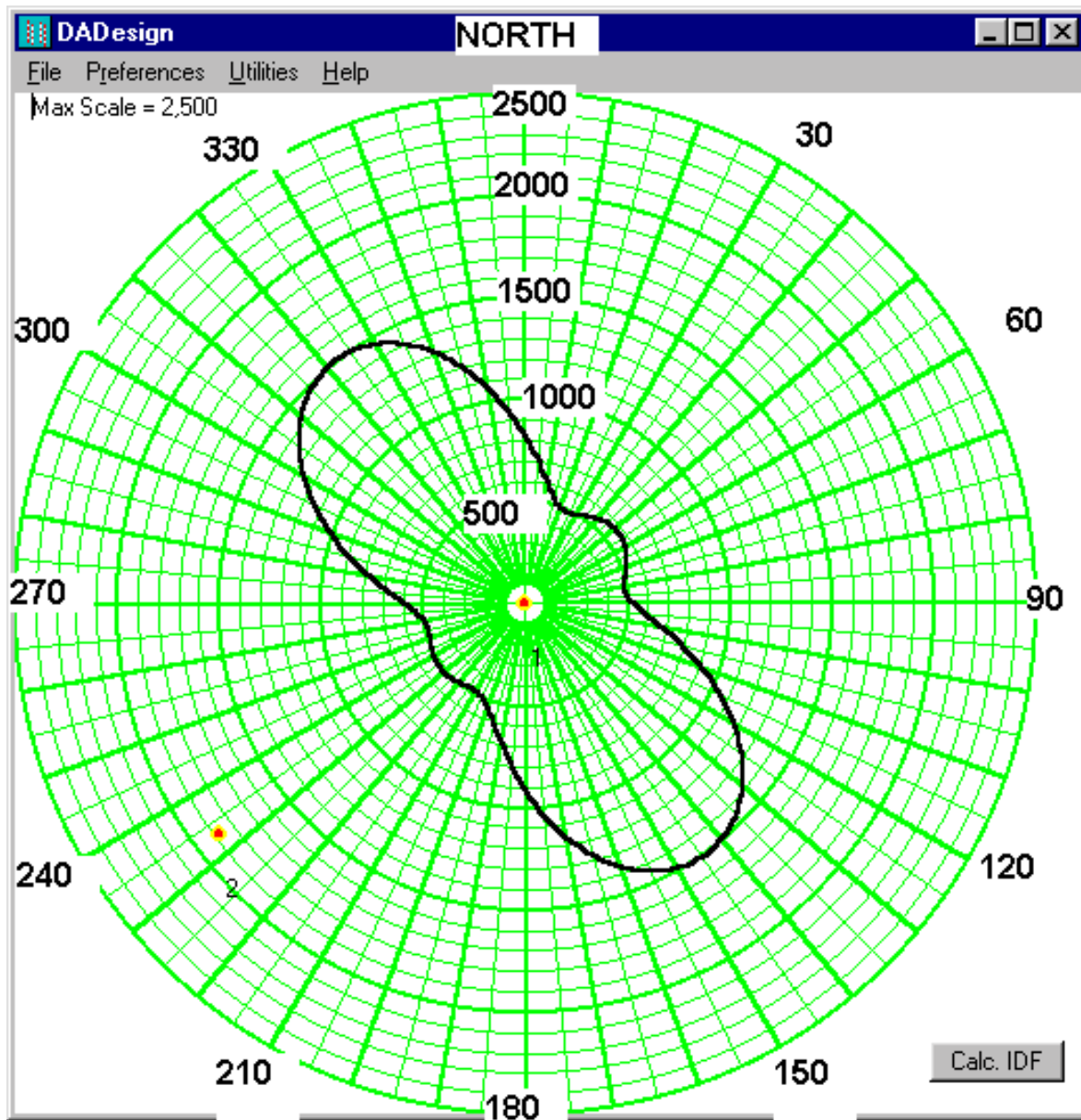
CONCLUSION

The engineering herein presented for the proposed 10 kW daytime, and 0.035 kW nighttime operation of the proposed KRCM on 1380 kHz has been prepared in accordance with applicable FCC Rules in effect as of this date. At the time of preparation, there are no known proposed, authorized or existing stations which would conflict with the proposed operation or which would require additional interference study.

Respectfully submitted

A handwritten signature in black ink that reads "Timothy C. Cutforth". The signature is written in a cursive, flowing style.

Timothy C. Cutforth, P.E.
26 February 2008



KRCM-D 30-11-42 N 95-23-25 W
 Frequency:1380 kHz Class:D
 Nominal Power = 10.0000 kW
 RSS/RMS = 1.19817

FCC RMS 1 OHM = 893.33 mV/m/km
 Std RMS 1 OHM = 938.58 mV/m/km
 Antenna RSS = 1,070.37 mV/m/km
 STANDARD Q = 31.62 mV/m/km

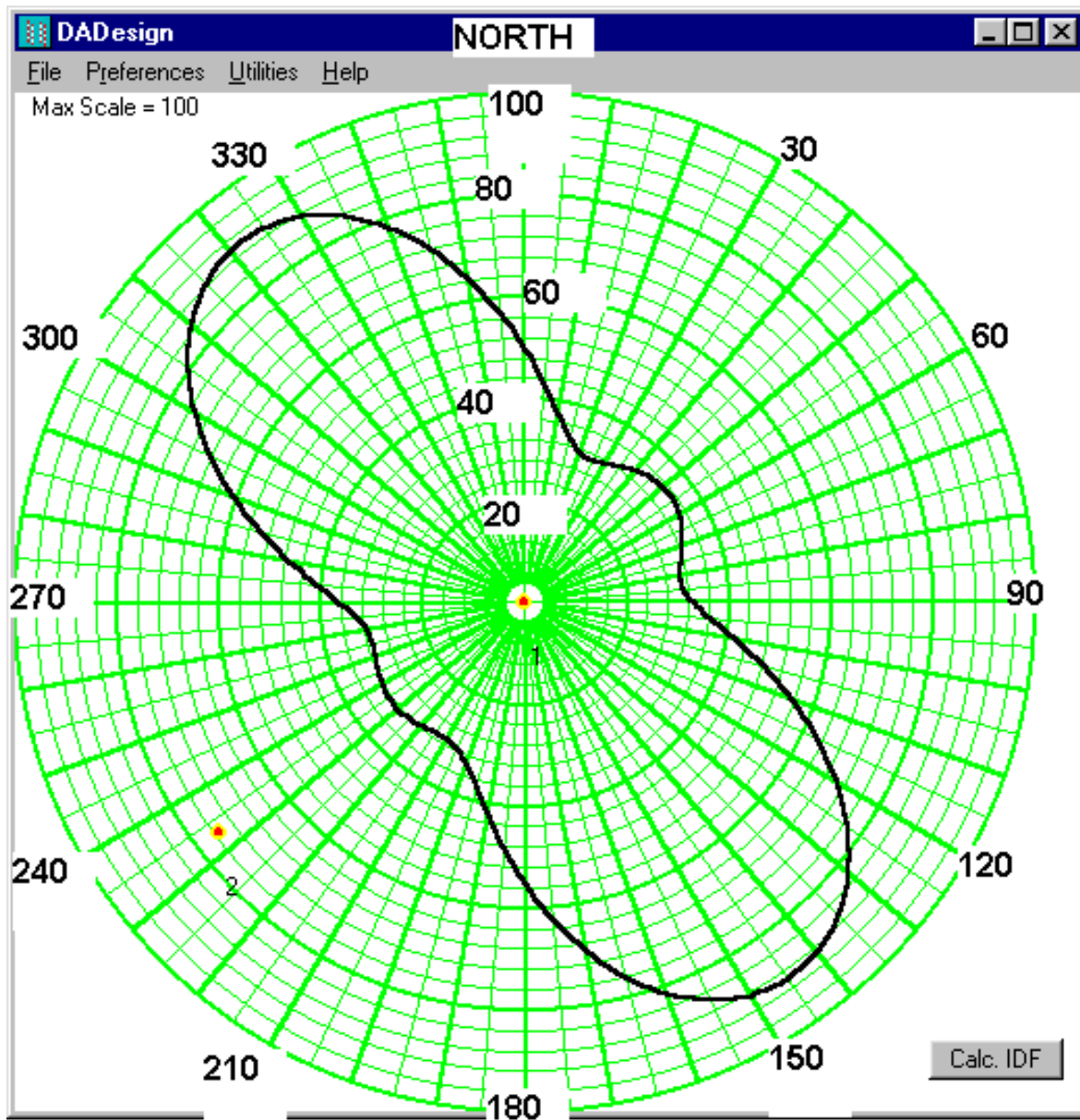
Twr.No.	Field	Phasing	Spacing	Azimuth	Height
1	1.000	+5.0	0.0	0.0	75.7
2	0.510	+0.0	199.0	233.0	75.7

KRCM-D 30-11-42 N 95-23-25 W

Twr.No.	Field	Phasing	Spacing	Azimuth	Height
1	1.000	+5.0	0.0	0.0	75.7
2	0.510	+0.0	199.0	233.0	75.7
Theo. RMS=	893.33	mV/m/km	RSS=1,070.37	Q=	31.62

STANDARD HORIZONTAL PLANE PATTERN

Azimuth	mV/m/km	Azimuth	mV/m/km
0	825.4	180	914.3
5	708.9	185	795.3
10	611.5	190	689.1
15	541.2	195	602.5
20	502.0	200	540.7
25	491.8	205	505.2
30	502.2	210	492.2
35	522.8	215	494.6
40	544.9	220	504.1
45	562.7	225	514.2
50	572.9	230	520.6
55	573.8	235	521.2
60	565.4	240	515.8
65	548.9	245	506.2
70	527.3	250	496.1
75	505.8	255	491.7
80	492.6	260	501.0
85	497.8	265	531.6
90	530.8	270	588.1
95	595.1	275	670.0
100	687.6	280	772.8
105	801.0	285	889.9
110	926.5	290	1013.7
115	1055.7	295	1136.8
120	1180.3	300	1251.9
125	1293.1	305	1352.3
130	1387.3	310	1431.8
135	1457.6	315	1485.8
140	1500.0	320	1510.7
145	1512.0	325	1504.8
150	1493.1	330	1468.4
155	1444.8	335	1403.4
160	1370.0	340	1313.6
165	1273.4	345	1204.0
170	1160.7	350	1081.2
175	1038.6	355	952.3



KRCM-N	30-11-42 N	95-23-25 W	FCC RMS 1 OHM =	52.85 mV/m/km	
Frequency:	1380 kHz	Class:D	Std RMS 1 OHM =	56.48 mV/m/km	
Nominal Power =	0.0350 kW		Antenna RSS =	63.32 mV/m/km	
RSS/RMS =	1.19817		STANDARD Q =	10.00 mV/m/km	
Twr.No.	Field	Phasing	Spacing	Azimuth	Height
1	1.000	+5.0	0.0	0.0	75.7
2	0.510	+0.0	199.0	233.0	75.7

KRCM-N 30-11-42 N 95-23-25 W

Twr.No.	Field	Phasing	Spacing	Azimuth	Height
1	1.000	+5.0	0.0	0.0	75.7
2	0.510	+0.0	199.0	233.0	75.7
Theo. RMS=	52.85	mV/m/km	RSS=	63.32	Q= 10.00

STANDARD HORIZONTAL PLANE PATTERN

Azimuth	mV/m/km	Azimuth	mV/m/km
0	49.9	180	55.1
5	43.2	185	48.2
10	37.6	190	42.1
15	33.6	195	37.1
20	31.4	200	33.6
25	30.9	205	31.6
30	31.4	210	30.9
35	32.6	215	31.0
40	33.8	220	31.6
45	34.9	225	32.1
50	35.4	230	32.5
55	35.5	235	32.5
60	35.0	240	32.2
65	34.1	245	31.7
70	32.9	250	31.1
75	31.7	255	30.9
80	30.9	260	31.4
85	31.2	265	33.1
90	33.1	270	36.3
95	36.7	275	41.0
100	42.0	280	46.9
105	48.5	285	53.6
110	55.8	290	60.9
115	63.3	295	68.0
120	70.6	300	74.8
125	77.2	305	80.7
130	82.7	310	85.3
135	86.8	315	88.5
140	89.3	320	90.0
145	90.0	325	89.6
150	88.9	330	87.5
155	86.1	335	83.7
160	81.7	340	78.4
165	76.0	345	72.0
170	69.4	350	64.8
175	62.3	355	57.3

KRCM-N

Standard Vertical Pattern
(mV/m at one kilometer)

Azimuth	VA= 5	VA= 10	VA= 15	VA= 20	VA= 25	VA= 30
0	49.9	49.8	49.7	49.5	49.1	48.4
5	43.2	43.3	43.4	43.5	43.5	43.4
10	37.7	37.8	38.0	38.3	38.6	38.9
15	33.6	33.7	33.8	34.0	34.4	34.9
20	31.4	31.2	31.1	31.0	31.2	31.6
25	30.7	30.3	29.7	29.3	29.0	29.2
30	31.2	30.5	29.5	28.5	27.8	27.6
35	32.3	31.3	30.0	28.5	27.3	26.6
40	33.5	32.4	30.7	28.9	27.2	26.0
45	34.4	33.2	31.4	29.3	27.3	25.8
50	35.0	33.7	31.8	29.6	27.4	25.7
55	35.0	33.8	31.9	29.6	27.4	25.7
60	34.6	33.4	31.5	29.4	27.3	25.8
65	33.7	32.6	30.9	29.0	27.2	26.0
70	32.5	31.6	30.1	28.6	27.2	26.4
75	31.4	30.6	29.6	28.5	27.7	27.3
80	30.7	30.3	29.6	29.0	28.7	28.8
85	31.1	30.9	30.7	30.6	30.7	31.1
90	33.0	33.1	33.1	33.3	33.7	34.2
95	36.7	36.8	37.0	37.3	37.7	38.0
100	42.0	42.1	42.2	42.4	42.5	42.5
105	48.5	48.5	48.4	48.2	47.9	47.4
110	55.7	55.5	55.1	54.5	53.7	52.5
115	63.2	62.7	62.0	60.9	59.4	57.6
120	70.4	69.7	68.6	67.0	64.9	62.4
125	76.9	76.0	74.5	72.4	69.8	66.6
130	82.4	81.3	79.5	77.0	73.9	70.2
135	86.4	85.2	83.2	80.4	76.9	72.8
140	88.9	87.6	85.4	82.4	78.8	74.4
145	89.6	88.3	86.1	83.1	79.3	74.9
150	88.5	87.2	85.1	82.2	78.6	74.3
155	85.7	84.5	82.6	79.9	76.5	72.6
160	81.4	80.3	78.7	76.3	73.4	69.8
165	75.8	74.9	73.6	71.7	69.2	66.3
170	69.2	68.7	67.7	66.2	64.4	62.1
175	62.2	61.8	61.2	60.3	59.1	57.4

KRCM-N

Standard Vertical Pattern
(mV/m at one kilometer)

Azimuth	VA= 5	VA= 10	VA= 15	VA= 20	VA= 25	VA= 30
180	55.0	54.9	54.6	54.2	53.5	52.6
185	48.2	48.2	48.3	48.2	48.1	47.7
190	42.1	42.2	42.5	42.7	43.0	43.1
195	37.2	37.3	37.6	38.0	38.5	39.0
200	33.6	33.7	33.9	34.2	34.7	35.4
205	31.6	31.5	31.4	31.5	31.9	32.5
210	30.8	30.4	30.0	29.8	29.8	30.3
215	30.8	30.3	29.5	28.9	28.6	28.7
220	31.3	30.6	29.5	28.5	27.8	27.7
225	31.8	31.0	29.7	28.5	27.5	27.1
230	32.1	31.2	29.9	28.5	27.4	26.9
235	32.2	31.3	29.9	28.5	27.4	26.8
240	31.9	31.0	29.8	28.5	27.5	27.1
245	31.4	30.6	29.6	28.5	27.8	27.6
250	30.9	30.3	29.5	28.8	28.4	28.5
255	30.7	30.3	29.9	29.5	29.5	29.9
260	31.3	31.2	31.0	31.1	31.4	32.0
265	33.1	33.1	33.3	33.6	34.1	34.8
270	36.3	36.5	36.8	37.2	37.7	38.2
275	41.0	41.2	41.4	41.7	42.0	42.3
280	46.9	47.0	47.0	47.1	47.0	46.8
285	53.6	53.5	53.3	53.0	52.4	51.6
290	60.8	60.4	59.9	59.1	58.0	56.4
295	67.9	67.3	66.4	65.1	63.4	61.2
300	74.5	73.7	72.5	70.7	68.3	65.5
305	80.3	79.4	77.7	75.5	72.6	69.2
310	84.9	83.8	81.9	79.3	76.0	72.1
315	88.1	86.8	84.7	81.8	78.2	74.0
320	89.5	88.2	86.0	83.0	79.3	74.9
325	89.2	87.8	85.7	82.7	79.0	74.6
330	87.1	85.8	83.7	80.9	77.4	73.2
335	83.3	82.2	80.3	77.8	74.6	70.8
340	78.1	77.1	75.6	73.4	70.7	67.4
345	71.7	71.0	69.8	68.1	65.9	63.3
350	64.6	64.1	63.3	62.1	60.6	58.6
355	57.2	56.9	56.5	55.8	54.8	53.5

KRCM-N Standard Vertical Pattern
(mV/m at one kilometer)

Azimuth	VA= 35	VA= 40	VA= 45	VA= 50	VA= 55	VA= 60
0	47.4	46.0	44.0	41.5	38.3	34.5
5	43.1	42.3	41.1	39.2	36.6	33.3
10	39.0	38.8	38.2	37.0	35.0	32.2
15	35.4	35.6	35.6	34.9	33.4	31.1
20	32.3	32.8	33.2	33.0	32.0	30.1
25	29.8	30.5	31.1	31.2	30.7	29.2
30	27.9	28.6	29.3	29.8	29.6	28.4
35	26.6	27.1	28.0	28.6	28.7	27.8
40	25.7	26.1	27.0	27.7	28.0	27.3
45	25.2	25.5	26.3	27.1	27.5	26.9
50	25.0	25.2	25.9	26.8	27.2	26.7
55	25.0	25.1	25.9	26.8	27.2	26.7
60	25.1	25.4	26.2	27.0	27.4	26.9
65	25.6	26.0	26.8	27.6	27.8	27.2
70	26.4	26.9	27.7	28.4	28.5	27.7
75	27.6	28.2	29.0	29.5	29.4	28.3
80	29.3	30.0	30.7	30.9	30.5	29.1
85	31.7	32.3	32.7	32.6	31.7	29.9
90	34.7	35.0	35.1	34.5	33.1	30.9
95	38.2	38.2	37.7	36.6	34.7	32.0
100	42.2	41.6	40.5	38.8	36.3	33.1
105	46.5	45.2	43.4	41.0	38.0	34.2
110	50.9	48.9	46.4	43.3	39.6	35.3
115	55.3	52.5	49.2	45.5	41.2	36.4
120	59.3	55.8	51.9	47.5	42.6	37.4
125	63.0	58.8	54.2	49.2	43.9	38.2
130	66.0	61.3	56.1	50.7	44.9	38.9
135	68.2	63.1	57.6	51.8	45.7	39.4
140	69.6	64.2	58.5	52.4	46.2	39.7
145	70.0	64.6	58.8	52.7	46.4	39.9
150	69.5	64.2	58.5	52.5	46.2	39.8
155	68.0	63.0	57.6	51.8	45.8	39.6
160	65.8	61.2	56.2	50.8	45.1	39.1
165	62.8	58.8	54.4	49.5	44.2	38.5
170	59.3	55.9	52.1	47.8	43.0	37.8
175	55.3	52.7	49.6	45.9	41.7	36.9

KRCM-N

Standard Vertical Pattern
(mV/m at one kilometer)

Azimuth	VA= 35	VA= 40	VA= 45	VA= 50	VA= 55	VA= 60
180	51.2	49.3	46.9	43.9	40.3	36.0
185	47.0	45.9	44.2	41.8	38.8	35.0
190	43.0	42.5	41.5	39.8	37.3	34.0
195	39.3	39.3	38.9	37.8	35.8	33.0
200	36.0	36.5	36.5	35.9	34.5	32.1
205	33.3	34.0	34.4	34.2	33.2	31.2
210	31.1	32.0	32.6	32.8	32.2	30.5
215	29.4	30.3	31.2	31.6	31.3	29.9
220	28.2	29.1	30.1	30.7	30.6	29.4
225	27.5	28.4	29.4	30.1	30.1	29.1
230	27.1	28.0	29.0	29.8	29.9	28.9
235	27.1	27.9	29.0	29.8	29.8	28.9
240	27.4	28.3	29.3	30.0	30.1	29.0
245	28.0	29.0	30.0	30.6	30.5	29.3
250	29.1	30.1	31.0	31.4	31.1	29.8
255	30.7	31.6	32.3	32.6	32.0	30.4
260	32.8	33.6	34.0	33.9	33.0	31.1
265	35.4	36.0	36.1	35.6	34.2	31.9
270	38.6	38.7	38.4	37.4	35.6	32.8
275	42.2	41.9	40.9	39.4	37.0	33.8
280	46.2	45.2	43.6	41.4	38.5	34.8
285	50.3	48.6	46.4	43.5	40.0	35.8
290	54.5	52.1	49.1	45.5	41.4	36.7
295	58.5	55.3	51.6	47.4	42.8	37.6
300	62.1	58.3	53.9	49.1	43.9	38.4
305	65.2	60.8	55.9	50.6	44.9	39.0
310	67.6	62.7	57.4	51.7	45.7	39.5
315	69.2	64.0	58.3	52.4	46.2	39.8
320	70.0	64.5	58.8	52.7	46.4	39.9
325	69.7	64.3	58.6	52.5	46.2	39.8
330	68.5	63.4	57.8	51.9	45.8	39.5
335	66.5	61.7	56.5	50.9	45.1	39.0
340	63.6	59.3	54.6	49.5	44.1	38.3
345	60.1	56.5	52.4	47.8	42.9	37.5
350	56.1	53.2	49.8	45.9	41.5	36.6
355	51.8	49.6	47.0	43.7	39.9	35.6

Station: KRCM-D		Frequency 1380 kHz		30-11-42	95-23-25		
Azim	Inverse	25 mV	5 mV	2.0 mV	0.5 mV	.250 mV	.025 mV
(deg)	(mV/m)	(km)	(km)	(km)	(km)	(km)	(km)
0	825.4	9.5	20.5	30.7	56.7	77.0	190.5
5	708.9	8.7	19.1	28.7	53.0	72.0	179.8
10	611.5	8.1	17.9	26.9	49.6	67.5	170.9
15	541.2	7.5	16.9	25.5	47.1	64.0	163.6
20	502.0	7.2	16.3	24.7	45.5	61.9	167.8
25	491.8	7.1	16.2	24.4	45.1	61.3	172.0
30	502.2	7.2	16.3	24.7	45.5	62.1	177.3
35	522.8	7.4	16.6	25.1	46.3	65.9	183.8
40	544.9	7.6	17.0	25.5	47.2	69.3	191.4
45	562.7	7.7	17.2	25.9	49.1	71.9	195.0
50	572.9	7.8	17.4	26.1	50.6	73.5	197.3
55	573.8	7.8	17.4	26.1	51.6	74.5	198.3
60	565.4	7.7	17.3	26.0	51.8	74.6	197.9
65	548.9	7.6	17.0	25.6	51.6	74.0	196.4
70	527.3	7.4	16.7	25.2	50.8	72.9	193.9
75	505.8	7.3	16.4	24.8	50.0	71.7	191.4
80	492.6	7.1	16.2	24.5	49.5	71.0	189.9
85	497.8	7.2	16.3	24.6	49.8	71.4	190.7
90	530.8	7.4	16.7	25.3	51.6	73.7	195.0
95	595.1	7.9	17.6	26.6	67.1	90.7	253.8
100	687.6	8.6	18.9	28.3	91.0	132.3	317.8
105	801.0	9.3	20.2	39.7	107.5	150.5	513.8
110	926.5	10.1	23.3	51.4	121.5	172.6	582.1
115	1055.7	10.8	29.0	61.0	133.1	239.6	654.3
120	1180.3	7.9	20.6	31.2	95.0	158.4	573.8
125	1293.1	8.3	21.5	32.5	102.9	189.0	604.9
130	1387.3	8.6	22.2	33.6	115.1	232.2	646.1
135	1457.6	8.8	22.7	34.3	140.5	261.0	674.7
140	1500.0	8.9	23.0	34.8	157.0	278.0	693.0
145	1512.0	16.1	33.5	49.4	212.7	333.9	749.2
150	1493.1	16.0	33.3	49.1	210.9	331.9	746.6
155	1444.8	15.7	32.8	48.5	160.7	281.0	694.4
160	1370.0	10.5	25.6	35.0	89.2	173.4	587.9
165	1273.4	10.1	24.8	35.0	84.9	152.5	568.2
170	1160.7	9.7	23.8	35.0	79.1	125.4	540.4
175	1038.6	9.1	19.5	33.9	71.5	116.8	500.9

Station: KRCM-D		Frequency 1380 kHz		30-11-42	95-23-25		
Azim	Inverse	25 mV	5 mV	2.0 mV	0.5 mV	.250 mV	.025 mV
(deg)	(mV/m)	(km)	(km)	(km)	(km)	(km)	(km)
180	914.3	8.6	15.2	23.2	44.2	74.5	378.4
185	795.3	8.0	14.2	21.7	41.4	64.5	321.6
190	689.1	7.4	13.3	20.3	38.7	54.8	267.0
195	602.5	6.9	12.4	19.1	36.4	50.2	241.9
200	540.7	6.5	11.8	18.2	34.6	47.8	211.1
205	505.2	5.1	11.5	21.3	43.4	71.5	277.9
210	492.2	5.1	11.3	21.0	42.5	70.3	233.9
215	494.6	5.1	11.4	21.1	42.6	70.5	231.3
220	504.1	6.3	11.5	17.6	39.7	54.5	209.0
225	514.2	6.3	11.6	17.7	40.1	55.0	210.8
230	520.6	6.4	11.6	17.8	40.4	55.2	211.3
235	521.2	6.4	11.6	17.8	40.4	55.3	206.2
240	515.8	5.2	11.6	17.7	33.9	51.8	197.1
245	506.2	5.1	11.5	17.6	33.6	50.9	193.3
250	496.1	5.1	11.4	17.4	33.3	50.0	191.7
255	491.7	5.0	11.3	17.4	33.1	49.6	190.9
260	501.0	5.1	11.4	17.5	33.4	50.4	192.4
265	531.6	7.5	16.8	25.3	58.8	85.2	229.2
270	588.1	7.9	17.6	26.4	48.8	66.3	213.0
275	670.0	8.5	18.7	28.0	51.7	70.1	219.5
280	772.8	9.2	19.9	29.8	55.1	74.7	228.6
285	889.9	9.9	21.2	31.7	58.7	79.6	236.2
290	1013.7	10.5	22.4	33.6	62.2	84.2	241.9
295	1136.8	11.2	23.6	35.4	65.3	88.3	245.0
300	1251.9	11.7	24.6	36.8	68.2	92.0	249.0
305	1352.3	12.2	25.5	38.2	70.4	95.0	247.3
310	1431.8	12.5	26.1	39.1	72.3	97.4	243.5
315	1485.8	12.7	26.6	39.8	73.5	98.8	242.7
320	1510.7	12.9	26.8	40.1	74.0	99.4	243.7
325	1504.8	12.8	26.7	40.0	73.9	99.3	240.5
330	1468.4	12.7	26.4	39.5	73.1	98.4	236.2
335	1403.4	12.4	25.9	38.8	71.7	96.5	229.4
340	1313.6	12.0	25.2	37.7	69.6	93.7	221.1
345	1204.0	11.5	24.2	36.3	67.0	90.5	216.1
350	1081.2	10.9	23.1	34.5	64.0	86.4	208.0
355	952.3	10.2	21.8	32.7	60.4	81.8	200.0

Vir James Engineers								
Station: KRCM 1380 kHz 30-11-42 95-23-25								
Distances are from Site to Conductivity Breaks								
AZIMUTH	mS/m	KM	mS/m	KM	mS/m	KM	mS/m	KM
0	4	186.4	8	339.8	4	359.3	30	413.5
	15	450.0						
5	4	184.7	8	341.4	4	438.1	15	450.0
10	4	185.2	8	347.9	4	439.0	15	450.0
15	4	187.6	8	353.3	4	450.0		
20	4	85.2	8	128.4	4	191.0	8	357.4
	4	450.0						
25	4	70.6	8	142.4	4	195.7	8	359.2
	4	450.0						
30	4	60.7	8	153.1	4	199.0	8	300.5
	15	368.6						
35	4	53.5	8	164.4	4	194.9	8	287.8
	15	380.7						
40	4	48.2	8	275.9	15	355.7	4	450.0
45	4	44.2	8	264.0	15	331.4	4	469.9
50	4	41.1	8	254.3	15	312.5	4	399.7
	8	450.0						
55	4	38.6	8	243.5	15	298.7	4	371.3
	8	450.0						
60	4	36.7	8	235.3	15	289.4	4	355.2
	8	450.0						
65	4	35.3	8	229.3	15	284.0	8	309.6
	4	341.0						
70	4	34.1	8	228.0	15	284.1	8	450.0
75	4	33.4	8	230.0	15	289.9	8	450.0
80	4	32.8	8	236.0	15	303.9	8	441.9
	4	450.0						
85	4	32.6	8	245.3	15	308.7	8	418.7
	4	450.0						
90	4	32.6	8	241.1	30	262.1	8	414.1
	15	450.0						
95	4	32.8	8	39.7	30	65.0	8	89.9
	30	148.1	8	185.4	30	199.4	50	203.1
	30	285.5	15	450.0				
100	4	28.3	15	33.2	30	195.7	50	208.9
	30	304.0	15	320.5	50	379.5	15	385.4
	50	393.8	15	404.1	50	405.9	15	450.0
105	4	23.4	15	33.6	30	181.7	50	450.0
110	4	20.1	15	34.4	30	161.0	50	450.0
115	4	17.8	15	35.5	30	140.6	50	450.0
120	-3	7.0	-2	15.1	-3	39.5	-6	64.9
	30	130.5						
125	-3	7.0	-2	15.1	-3	39.5	-6	64.9
	30	80.7						
130	-3	7.0	-2	15.1	-3	39.5	-6	64.9
	30	76.6						
	30	116.8						

Vir James Engineers

Station: KRCM		1380 kHz		30-11-42		95-23-25	
AZIMUTH	mS/m KM	mS/m KM	mS/m KM	mS/m KM	mS/m KM	mS/m KM	mS/m KM
135	-3 7.0	-2 15.1	-3 39.5	-6 64.9			
	30 75.4	50 92.1	30 101.6	50 108.3			
	30 113.0	50 450.0					
140	-3 7.0	-2 15.1	-3 39.5	-6 64.9			
	30 77.0	50 95.0	30 96.8	50 106.5			
	30 110.3	50 450.0					
145	-7 12.2	-6 49.5	-7 64.8	-10 82.4			
	50 107.5	30 111.3	50 450.0				
150	-7 12.2	-6 49.5	-7 64.8	-10 82.4			
	50 88.6	30 91.3	50 450.0				
155	-7 12.2	-6 49.5	-7 64.8	-10 82.4			
	30 109.3	50 450.0					
160	-4 3.8	-3 20.2	-4 35.0	-3 44.3			
	15 45.6	30 112.2	50 450.0				
165	-4 3.8	-3 20.2	-4 35.0	-3 44.3			
	15 45.4	30 117.4	50 450.0				
170	-4 3.8	-3 20.2	-4 35.0	-3 44.3			
	15 45.5	30 125.6	50 450.0				
175	-4 3.8	-3 20.2	-4 35.0	-3 44.3			
	15 46.9	30 138.8	50 450.0				
180	-3 9.2	-2 52.0	30 113.8	15 131.4			
	30 146.3	50 450.0					
185	-3 9.2	-2 52.0	15 55.0	30 74.3			
	15 142.1	30 155.6	50 450.0				
190	-3 9.2	-2 52.0	15 151.2	30 165.5			
	50 450.0						
195	-3 9.2	-2 52.0	15 140.6	30 169.6			
	50 450.0						
200	-3 9.2	-2 52.0	15 133.3	30 183.1			
	50 450.0						
205	-2 17.0	-3 36.3	15 128.0	30 184.3			
	50 450.0						
210	-2 17.0	-3 36.3	15 123.7	30 193.1			
	50 197.0	30 203.8	50 214.1	30 235.3			
	50 426.7	30 450.0					
215	-2 17.0	-3 36.3	15 120.5	30 202.0			
	50 209.0	30 240.6	50 244.3	30 276.7			
	50 281.5	30 315.2	50 332.0	30 366.8			
	50 370.0	30 383.8	50 388.7				
	30 389.9	50 392.0	30 455.9	15 0.0			
220	-3 10.0	-2 18.0	-3 55.3	15 118.8			
	30 432.4	15 450.0					
225	-3 10.0	-2 18.0	-3 55.3	15 119.8			
	30 387.9	15 450.0					
230	-3 10.0	-2 18.0	-3 55.3	15 121.7			
	30 271.4	15 450.0					

Vir James Engineers

Station: KRCM 1380 kHz		30-11-42		95-23-25	
AZIMUTH	mS/m KM	mS/m KM	mS/m KM	mS/m KM	mS/m KM
235	-3 10.0	-2 18.0	-3 55.3	15 122.9	
	30 173.9	15 450.0			
240	-2 42.2	15 123.7	30 139.5	15 450.0	
245	-2 42.2	15 451.4	8 0.0		
250	-2 42.2	15 440.5	8 450.0		
255	-2 42.2	15 434.4	8 450.0		
260	-2 42.2	15 263.8	8 450.0		
265	4 25.5	15 50.0	4 61.5	15 242.7	
	8 450.0				
270	4 66.3	15 232.0	8 450.0		
275	4 72.4	15 225.1	8 450.0		
280	4 79.0	15 195.7	30 220.8	8 450.0	
285	4 87.7	15 179.5	30 220.3	8 450.0	
290	4 99.3	15 170.1	30 222.3	8 450.0	
295	4 112.7	15 164.6	30 223.0	8 450.0	
300	4 129.0	15 161.4	30 224.3	15 450.4	
305	4 152.1	15 161.9	30 226.7	15 450.0	
310	4 164.1	15 186.0	30 225.8	15 450.0	
315	4 167.0	15 450.0			
320	4 171.5	15 450.0			
325	4 179.3	15 448.5	30 450.0		
330	4 189.5	15 257.1	30 294.2	15 421.7	
	30 450.0				
335	4 202.5	15 229.0	30 345.6	15 402.6	
	30 450.0				
340	4 213.0	8 219.4	30 423.3	15 442.4	
	30 450.0				
345	4 202.4	8 239.4	30 394.7	15 450.0	
350	4 194.5	8 266.0	30 391.9	15 450.0	
355	4 189.5	8 304.4	30 399.3	15 450.0	

Negative mS/m are MEASURED Conductivity Values
 Tabulated 50 mS/m represents 5000 mS/m

Station: KRCM-N		Frequency 1380 kHz		30-11-42	95-23-25	
Azim	Inverse	1000 mV	25 mV	15.9 mV	5.0 mV	2.00 mV
(deg)	(mV/m)	(km)	(km)	(km)	(km)	(km)
0	49.9	0.05	1.5	2.1	4.7	8.1
5	43.2	0.04	1.3	1.9	4.3	7.5
10	37.6	0.04	1.2	1.7	3.9	7.0
15	33.6	0.03	1.1	1.5	3.6	6.5
20	31.4	0.03	1.0	1.4	3.5	6.3
25	30.9	0.03	1.0	1.4	3.4	6.2
30	31.4	0.03	1.0	1.4	3.5	6.3
35	32.6	0.03	1.0	1.5	3.6	6.4
40	33.8	0.03	1.1	1.5	3.7	6.5
45	34.9	0.03	1.1	1.6	3.7	6.7
50	35.4	0.04	1.1	1.6	3.8	6.7
55	35.5	0.04	1.1	1.6	3.8	6.7
60	35.0	0.04	1.1	1.6	3.7	6.7
65	34.1	0.03	1.1	1.5	3.7	6.6
70	32.9	0.03	1.0	1.5	3.6	6.4
75	31.7	0.03	1.0	1.5	3.5	6.3
80	30.9	0.03	1.0	1.4	3.4	6.2
85	31.2	0.03	1.0	1.4	3.5	6.2
90	33.1	0.03	1.0	1.5	3.6	6.5
95	36.7	0.04	1.1	1.6	3.9	6.9
100	42.0	0.04	1.3	1.8	4.2	7.4
105	48.5	0.05	1.4	2.0	4.6	8.0
110	55.8	0.06	1.6	2.3	5.1	8.7
115	63.3	0.06	1.8	2.5	5.5	9.3
120	70.6	0.07	1.7	2.4	5.1	7.0
125	77.2	0.08	1.9	2.6	5.4	7.2
130	82.7	0.08	2.0	2.7	5.6	7.4
135	86.8	0.09	2.0	2.8	5.8	7.6
140	89.3	0.09	2.1	2.9	5.8	7.7
145	90.0	0.09	2.7	3.9	8.8	13.8
150	88.9	0.09	2.7	3.9	8.7	13.8
155	86.1	0.09	2.6	3.8	8.6	13.5
160	81.7	0.08	2.2	3.0	5.6	9.1
165	76.0	0.08	2.0	2.9	5.3	8.7
170	69.4	0.07	1.9	2.7	5.1	8.4
175	62.3	0.06	1.7	2.5	4.7	7.9

Station: KRCM-N		Frequency 1380 kHz		30-11-42	95-23-25	
Azim	Inverse	1000 mV	25 mV	15.9 mV	5.0 mV	2.00 mV
(deg)	(mV/m)	(km)	(km)	(km)	(km)	(km)
180	55.1	0.06	1.4	2.0	4.4	7.4
185	48.2	0.05	1.3	1.8	4.1	6.9
190	42.1	0.04	1.2	1.7	3.7	6.4
195	37.1	0.04	1.1	1.5	3.4	6.0
200	33.6	0.03	1.0	1.4	3.2	5.6
205	31.6	0.03	0.8	1.2	2.6	4.5
210	30.9	0.03	0.8	1.1	2.6	4.4
215	31.0	0.03	0.8	1.2	2.6	4.4
220	31.6	0.03	0.9	1.3	3.1	5.4
225	32.1	0.03	0.9	1.4	3.1	5.5
230	32.5	0.03	0.9	1.4	3.1	5.5
235	32.5	0.03	0.9	1.4	3.1	5.5
240	32.2	0.03	0.8	1.2	2.6	4.5
245	31.7	0.03	0.8	1.2	2.6	4.5
250	31.1	0.03	0.8	1.2	2.6	4.4
255	30.9	0.03	0.8	1.1	2.6	4.4
260	31.4	0.03	0.8	1.2	2.6	4.5
265	33.1	0.03	1.0	1.5	3.6	6.5
270	36.3	0.04	1.1	1.6	3.8	6.8
275	41.0	0.04	1.2	1.8	4.2	7.3
280	46.9	0.05	1.4	2.0	4.5	7.9
285	53.6	0.05	1.5	2.2	5.0	8.5
290	60.9	0.06	1.7	2.4	5.4	9.1
295	68.0	0.07	1.9	2.6	5.7	9.6
300	74.8	0.07	2.0	2.8	6.1	10.1
305	80.7	0.08	2.1	3.0	6.4	10.5
310	85.3	0.09	2.2	3.1	6.6	10.8
315	88.5	0.09	2.3	3.2	6.7	11.0
320	90.0	0.09	2.3	3.2	6.8	11.1
325	89.6	0.09	2.3	3.2	6.8	11.1
330	87.5	0.09	2.3	3.2	6.7	11.0
335	83.7	0.08	2.2	3.1	6.5	10.7
340	78.4	0.08	2.1	2.9	6.3	10.4
345	72.0	0.07	2.0	2.8	5.9	9.9
350	64.8	0.06	1.8	2.5	5.6	9.4
355	57.3	0.06	1.6	2.3	5.2	8.8

Station: KWWJM		Frequency 1360 kHz		29-46-28	95-00-55		
Azim	Inverse	25 mV	5 mV	2.0 mV	0.5 mV	.250 mV	.025 mV
(deg)	(mV/m)	(km)	(km)	(km)	(km)	(km)	(km)
0	750.5	20.9	49.4	63.5	97.3	122.6	241.7
5	661.4	19.0	47.9	61.5	93.5	117.7	235.3
10	584.2	17.3	46.8	59.8	90.2	113.2	228.9
15	523.6	15.8	46.2	58.6	87.7	109.7	224.1
20	482.1	14.8	45.2	58.2	86.4	107.7	221.1
25	459.0	14.3	44.0	58.2	85.9	106.8	223.7
30	449.6	14.0	43.5	58.3	85.7	106.5	222.7
35	447.2	14.0	43.3	58.9	86.3	107.0	223.1
40	445.0	13.9	43.2	60.3	87.6	108.2	224.2
45	438.1	13.7	42.8	62.0	89.2	109.7	225.2
50	423.7	13.3	41.9	64.2	91.0	111.2	225.5
55	401.1	12.8	40.5	67.3	93.7	113.5	227.9
60	371.5	12.0	38.7	64.7	98.1	117.3	229.5
65	337.9	11.1	36.4	61.6	103.9	122.3	231.4
70	305.3	10.2	34.1	58.5	108.9	126.5	232.8
75	280.5	9.4	32.3	55.8	107.4	131.7	234.8
80	270.8	9.2	31.6	54.8	106.0	139.4	278.0
85	280.3	9.4	34.8	58.4	110.0	143.8	296.1
90	307.3	10.2	36.4	60.8	113.8	149.0	325.9
95	345.6	11.3	41.2	66.7	137.3	247.2	645.5
100	388.8	12.4	45.1	71.6	222.3	333.5	734.3
105	431.8	13.6	48.9	76.3	267.1	379.0	780.0
110	471.0	14.5	51.7	104.3	299.9	413.2	815.1
115	504.1	15.4	53.9	126.5	325.2	437.9	842.7
120	529.8	16.0	62.2	155.3	355.7	469.4	874.7
125	547.6	16.4	64.4	158.7	360.2	474.6	880.1
130	557.4	16.6	77.3	172.2	374.3	489.1	894.7
135	560.0	16.7	82.2	177.3	379.5	494.4	900.0
140	556.5	16.6	85.8	180.7	382.7	497.5	903.1
145	548.8	16.7	85.3	179.7	381.3	495.7	901.2
150	538.9	18.6	86.6	180.4	381.4	495.4	900.8
155	528.9	19.2	91.3	184.3	384.7	498.3	903.6
160	520.9	18.9	90.1	182.3	382.2	495.5	900.7
165	516.1	18.4	74.9	166.7	366.2	479.3	884.5
170	514.9	18.0	55.2	146.9	346.3	459.3	864.5
175	516.0	17.5	50.9	132.1	331.7	444.7	849.9

Station: KWWJM		Frequency 1360 kHz		29-46-28	95-00-55		
Azim	Inverse	25 mV	5 mV	2.0 mV	0.5 mV	.250 mV	.025 mV
(deg)	(mV/m)	(km)	(km)	(km)	(km)	(km)	(km)
180	517.5	16.6	48.1	114.0	313.7	426.8	832.0
185	516.2	16.6	48.1	100.0	299.5	412.6	817.7
190	509.0	16.5	47.7	85.1	284.2	396.9	802.0
195	492.8	16.1	46.8	75.4	225.0	338.0	741.9
200	465.0	15.2	45.2	73.2	190.4	303.5	704.8
205	424.0	14.1	42.6	69.9	116.9	221.2	622.5
210	369.0	12.6	39.2	65.2	104.9	135.9	535.7
215	301.1	10.7	34.5	58.7	96.7	121.2	471.7
220	224.3	8.4	28.4	49.9	86.4	107.7	371.8
225	152.8	5.8	21.7	39.9	74.6	93.5	255.6
230	134.4	5.1	19.7	36.9	69.9	88.1	215.6
235	204.7	7.7	26.6	47.4	79.3	100.1	240.7
240	316.4	11.0	35.5	56.2	90.8	114.6	273.6
245	442.0	14.4	43.5	62.5	100.8	131.3	292.7
250	571.9	17.5	48.5	67.6	109.3	144.0	302.5
255	701.2	20.4	51.6	72.0	116.6	153.1	310.6
260	826.3	23.0	54.2	75.6	122.7	160.2	316.9
265	944.5	25.3	55.8	78.2	127.2	163.0	322.5
270	1053.4	27.2	56.2	79.1	130.3	165.7	328.1
275	1151.3	28.0	56.2	79.9	132.4	169.0	333.9
280	1236.8	27.2	56.1	80.4	134.2	171.2	338.0
285	1308.7	26.5	55.9	80.7	135.4	173.3	340.8
290	1366.2	26.2	56.1	81.1	136.6	175.0	356.7
295	1408.9	13.0	25.9	38.9	90.1	119.5	297.1
300	1436.3	13.0	26.2	39.2	91.0	116.0	282.4
305	1448.5	13.0	26.3	39.3	86.5	111.6	264.0
310	1445.3	13.0	26.2	39.3	81.7	106.8	245.3
315	1427.0	11.5	22.5	34.0	65.0	90.0	218.5
320	1394.0	11.5	22.2	33.7	61.9	86.7	214.5
325	1346.8	11.5	21.9	33.2	62.5	87.0	213.8
330	1286.4	11.5	21.5	32.5	79.9	103.9	229.6
335	1214.1	14.4	30.4	32.6	59.3	82.9	206.9
340	1131.4	13.9	29.5	32.6	57.4	80.1	202.0
345	1040.6	13.3	28.5	32.6	55.2	77.1	196.5
350	944.5	12.6	27.3	32.6	52.8	73.5	190.3
355	846.5	22.8	47.8	58.2	84.6	105.0	218.1

Vir James Engineers									
Station: KWWJM 1360 kHz 29-46-28 95-00-55									
Distances are from Site to Conductivity Breaks									
AZIMUTH	mS/m	KM	mS/m	KM	mS/m	KM	mS/m	KM	
0	30	43.0	8	160.4	4	229.6	8	250.0	
5	30	43.4	8	172.5	4	228.7	8	250.0	
10	30	44.1	8	181.4	4	229.2	8	250.0	
15	30	45.2	8	186.9	4	229.3	8	250.0	
20	30	46.6	8	194.3	4	222.3	8	250.0	
25	30	48.0	8	250.0					
30	30	48.7	8	250.0					
35	30	49.9	8	250.0					
40	30	52.5	8	252.6					
45	30	56.0	8	236.7	15	250.0			
50	30	60.6	8	224.3	15	250.0			
55	30	67.5	8	217.5	15	250.0			
60	30	78.6	8	214.1	15	250.0			
65	30	93.2	8	214.5	15	250.0			
70	30	106.8	8	216.9	15	250.0			
75	30	121.7	8	223.1	15	250.0			
80	30	164.9	50	168.3	30	234.4	8	250.0	
85	30	30.3	50	35.0	30	162.0	50	171.3	
	30	248.4	15	250.0					
90	30	29.8	50	33.7	30	147.5	50	156.7	
	30	160.7	50	181.2	30	250.0			
95	30	24.1	50	29.5	30	29.7	50	32.7	
	30	114.3	50	253.6					
100	30	21.0	50	32.0	30	87.4	50	250.0	
105	30	18.7	50	32.5	30	76.9	50	250.0	
110	30	18.4	50	33.4	30	69.2	50	250.0	
115	30	18.4	50	34.3	30	63.2	50	250.0	
120	30	18.5	50	34.2	30	48.1	50	56.3	
	30	59.3	50	250.0					
125	30	18.8	50	34.5	30	44.2	50	49.2	
	30	56.3	50	250.0					
130	30	18.6	50	35.0	30	41.1	50	50.2	
	30	54.0	50	250.0					
135	30	18.0	50	35.8	30	38.7	50	48.3	
	30	52.2	50	250.0					
140	30	17.5	50	47.7	30	51.5	50	250.0	
145	30	8.9	50	9.9	30	17.2	50	48.2	
	30	52.0	50	250.0					
150	30	9.0	50	15.1	30	17.1	50	49.0	
	30	52.8	50	250.0					
155	30	9.1	50	250.0					
160	30	9.4	50	250.0					
165	30	9.7	50	11.9	30	12.4	50	31.5	
	30	34.3	50	38.0	30	46.9	50	250.0	
170	30	8.2	50	11.2	30	13.4	50	29.1	
	30	53.5	50	250.0					

Vir James Engineers								
Station: KWWJM			1360 kHz		29-46-28		95-00-55	
AZIMUTH	mS/m	KM	mS/m	KM	mS/m	KM	mS/m	KM
175	30	7.1	50	10.7	30	14.9	50	17.7
	30	23.2	50	27.2	30	56.3	50	250.0
180	30	6.3	50	10.3	30	61.0	50	250.0
185	30	5.7	50	10.0	30	67.1	50	250.0
190	30	5.2	50	9.8	30	66.5	50	72.6
	30	78.8	50	250.0				
195	30	4.8	50	9.6	30	95.4	50	250.0
200	30	4.5	50	8.9	30	106.3	50	250.0
205	30	4.3	50	8.4	30	80.1	15	99.9
	30	120.4	50	250.0				
210	30	4.2	50	8.0	30	75.1	15	117.4
	30	134.3	50	250.0				
215	30	4.0	50	7.7	30	70.0	15	117.6
	30	144.8	50	250.0				
220	30	3.9	50	7.4	30	65.0	15	114.9
	30	169.3	50	250.0				
225	30	3.9	50	7.3	30	59.8	15	113.6
	30	173.4	50	199.9	30	228.0	50	250.0
230	30	3.9	50	7.2	30	55.5	15	113.8
	30	196.0	50	204.4	30	232.6	50	234.6
	30	250.0						
235	30	3.9	50	7.1	30	52.1	15	114.3
	30	250.0						
240	30	3.9	50	7.1	30	49.4	15	115.8
	30	250.0						
245	30	4.0	50	7.2	30	47.4	15	118.1
	30	246.3	15	250.0				
250	30	4.1	50	7.3	30	45.0	15	122.8
	30	204.1	15	250.0				
255	30	4.2	50	7.5	30	43.0	15	130.6
	30	180.2	15	250.0				
260	30	4.4	50	7.7	30	40.8	15	138.4
	30	163.3	15	250.0				
265	30	4.6	50	8.1	30	37.7	15	145.4
	30	150.4	15	250.0				
270	30	4.9	50	7.8	30	31.9	15	250.0
275	30	5.3	50	7.2	30	26.4	15	250.0
280	30	5.8	50	6.8	30	21.2	15	250.0
285	30	6.4	50	6.7	30	16.3	15	250.0
290	30	12.9	15	241.2	30	250.0		
295	-3	4.7	-5	13.0	-4	48.0	-5	59.4
	15	97.8	4	113.8	15	227.8	30	250.0
300	-4	4.7	-5	13.0	-4	48.0	-5	59.4
	15	90.7	4	138.6	15	220.0	30	250.0
305	-4	4.7	-5	13.0	-4	48.0	-5	59.4
	15	78.8	4	170.2	15	217.4	30	250.0

Vir James Engineers								
Station: KWWJM			1360 kHz		29-46-28		95-00-55	
AZIMUTH	mS/m	KM	mS/m	KM	mS/m	KM	mS/m	KM
310	-4	4.7	-5	13.0	-4	48.0	-5	59.4
	15	66.6	4	208.7	15	219.3	30	250.0
315	-3	3.8	-5	11.5	-3	56.7	15	58.1
	4	223.7	15	250.0				
320	-3	4.8	-5	11.5	-3	56.7	15	52.1
	4	229.4	15	250.0				
325	-3	4.8	-5	11.5	-3	56.7	4	239.7
	15	250.0						
330	-3	4.8	-5	11.5	-3	56.7	-6	59.0
	4	253.2	30	279.6				
335	-3	3.8	-6	32.6	-3	59.0	4	250.0
	30	279.6						
340	-3	3.8	-6	32.6	-3	59.0	4	259.1
	30	279.6						
345	-3	3.8	-6	32.6	-3	59.0	4	246.6
	8	250.0						
350	-3	3.8	-6	32.6	-3	59.0	4	238.5
	8	250.0						
355	30	40.2	15	42.9	4	232.5	8	250.0

Negative mS/m are MEASURED Conductivity Values
 Tabulated 50 mS/m represents 5000 mS/m

Station: KULP		Frequency 1390 kHz		29-12-34	96-15-50		
Azim	Inverse	25 mV	5 mV	2.0 mV	0.5 mV	.250 mV	.025 mV
(deg)	(mV/m)	(km)	(km)	(km)	(km)	(km)	(km)
0	220.8	7.7	26.5	40.6	71.3	92.6	181.5
5	220.8	7.7	27.5	47.5	66.2	87.4	173.4
10	220.8	7.7	27.5	47.5	66.2	87.4	170.0
15	220.8	7.7	27.5	47.5	66.2	87.4	168.4
20	220.8	7.7	27.5	47.5	66.2	87.4	171.7
25	220.8	7.7	27.5	40.8	66.2	87.4	173.9
30	220.8	7.7	27.5	40.8	66.2	87.4	175.5
35	220.8	7.7	27.5	40.8	66.2	87.4	177.4
40	220.8	7.7	27.5	40.8	66.2	87.4	179.9
45	220.8	7.7	24.8	38.9	69.7	90.9	191.2
50	220.8	7.7	24.8	38.9	69.7	90.9	202.3
55	220.8	7.7	24.8	38.9	69.7	90.9	212.6
60	220.8	7.7	24.9	39.0	69.8	91.5	229.6
65	220.8	7.7	25.0	39.1	69.9	93.5	243.5
70	220.8	7.7	25.2	39.3	70.1	95.3	263.7
75	220.8	7.7	25.4	39.5	70.3	96.5	258.2
80	220.8	7.7	25.7	39.8	70.6	97.3	357.0
85	220.8	7.7	26.1	40.2	71.0	97.6	413.9
90	220.8	7.7	26.7	40.7	71.5	97.7	445.0
95	220.8	7.7	27.3	41.4	72.2	96.6	458.8
100	220.8	7.7	27.5	42.3	73.1	95.7	466.3
105	220.8	7.7	27.5	43.6	74.4	99.9	483.9
110	220.8	7.7	27.5	45.5	76.3	122.0	510.7
115	220.8	7.7	27.5	48.7	80.0	157.2	545.9
120	220.8	7.7	27.5	48.9	90.4	194.5	583.2
125	220.8	7.7	27.5	48.9	130.6	234.7	623.4
130	220.8	7.7	27.5	48.9	137.5	241.5	630.3
135	220.8	7.7	27.5	48.9	149.9	254.0	642.7
140	220.8	7.7	27.5	48.9	161.4	265.4	654.2
145	220.8	7.7	27.5	48.9	165.9	270.0	658.7
150	220.8	7.7	27.5	48.9	168.4	272.5	661.3
155	220.8	7.7	27.5	48.9	154.5	258.6	647.3
160	220.8	7.7	27.5	48.9	167.9	271.9	660.7
165	220.8	7.7	27.5	48.9	166.8	270.9	659.6
170	220.8	7.7	27.5	48.9	164.8	268.9	657.6
175	220.8	7.7	27.5	48.9	177.3	281.4	670.1

Station: KULP		Frequency 1390 kHz		29-12-34	96-15-50		
Azim	Inverse	25 mV	5 mV	2.0 mV	0.5 mV	.250 mV	.025 mV
(deg)	(mV/m)	(km)	(km)	(km)	(km)	(km)	(km)
180	220.8	7.7	27.5	48.9	184.0	288.0	676.8
185	220.8	7.7	27.5	48.9	178.0	282.0	670.8
190	220.8	7.7	27.5	48.9	174.8	278.8	667.6
195	220.8	7.7	27.5	48.9	135.0	239.0	490.7
200	220.8	7.7	27.5	48.9	102.7	205.4	432.0
205	220.8	7.7	27.5	48.9	105.1	209.2	412.2
210	220.8	7.7	27.5	48.9	101.4	143.8	335.5
215	220.8	7.7	27.5	48.9	97.6	129.4	293.4
220	220.8	7.7	27.5	48.9	97.1	128.9	277.5
225	220.8	7.7	27.5	48.9	97.1	128.9	277.5
230	220.8	7.7	27.5	48.9	97.1	128.9	270.1
235	220.8	7.7	27.5	48.9	97.1	128.9	259.0
240	220.8	7.7	27.5	48.9	97.1	128.9	250.6
245	220.8	7.7	27.5	48.9	97.1	126.0	242.2
250	220.8	7.7	27.5	48.9	97.1	119.3	235.5
255	220.8	7.7	27.5	48.9	93.4	114.6	230.8
260	220.8	7.7	27.5	48.9	89.8	111.0	227.2
265	220.8	7.7	27.5	48.9	86.9	108.1	224.2
270	220.8	7.7	27.5	48.9	85.1	106.3	222.5
275	220.8	7.7	27.5	48.9	83.8	105.0	221.2
280	220.8	7.7	27.5	48.9	82.9	104.1	220.2
285	220.8	7.7	27.5	48.9	82.1	103.3	215.3
290	220.8	7.7	27.5	48.9	81.5	102.7	213.2
295	220.8	7.7	27.5	48.9	81.1	102.3	212.1
300	220.8	7.7	27.5	48.9	80.9	102.1	211.8
305	220.8	7.7	27.5	48.9	80.8	102.1	212.3
310	220.8	7.7	27.5	48.9	80.9	102.1	212.9
315	220.8	7.7	27.5	48.9	81.1	102.3	215.9
320	220.8	7.7	27.5	48.9	81.4	102.7	219.4
325	220.8	7.7	27.5	48.9	82.0	103.2	225.6
330	220.8	7.7	27.5	48.9	82.7	103.9	228.2
335	220.8	7.7	27.5	48.9	79.7	100.9	223.8
340	220.8	7.7	27.5	44.2	75.0	96.2	216.1
345	220.8	7.7	27.5	42.8	73.6	94.8	211.8
350	220.8	7.7	27.5	41.8	72.6	93.8	200.7
355	220.8	7.7	27.0	41.1	71.9	93.1	188.5

Vir James Engineers								
Station: KULP 1390 kHz 29-12-34 96-15-50								
Distances are from Site to Conductivity Breaks								
AZIMUTH	mS/m	KM	mS/m	KM	mS/m	KM	mS/m	KM
0	30	24.2	15	130.5	4	298.9	15	311.5
	30	490.5	15	703.2	8	799.8	30	950.0
5	-30	47.5	-20	65.0	-15	73.1	15	117.8
	4	306.3	8	363.7	30	508.2	15	855.0
10	30	881.4	15	950.0				
	-30	47.5	-20	65.0	-15	73.1	15	109.4
	4	304.5	8	456.5	4	481.1	30	536.6
15	15	698.1	8	900.5	15	950.0		
	-30	47.5	-20	65.0	-15	73.1	15	105.3
	4	306.6	8	466.6	4	562.7	15	713.9
20	8	950.0						
	-30	47.5	-20	65.0	-15	73.1	15	113.6
	4	311.3	8	481.0	4	643.3	15	734.0
25	8	950.0						
	-30	35.1	-20	54.5	-15	72.9	15	118.7
30	4	320.6	8	491.5	4	738.9	8	950.0
	-30	35.1	-20	54.5	-15	72.9	15	123.1
	4	224.5	8	271.9	4	331.6	8	447.5
35	15	483.1	8	486.7	4	751.0	8	950.0
	-30	35.1	-20	54.5	-15	72.9	15	127.8
	4	198.5	8	297.8	4	335.4	8	427.2
40	15	519.4	4	745.8	8	950.0		
	-30	35.1	-20	54.5	-15	72.9	15	134.1
	4	179.1	8	409.2	15	485.9	4	686.7
45	8	950.0						
	30	18.6	15	145.2	4	164.3	8	391.7
50	15	453.3	4	557.9	8	926.8	4	950.0
	30	18.6	15	152.1	30	165.5	8	371.7
	15	429.4	4	504.6	8	857.5	2	913.0
55	4	950.0						
	30	18.7	15	99.2	30	112.9	15	143.0
	30	181.6	8	356.3	15	413.5	8	429.1
60	4	479.0	8	759.3	2	950.0		
	30	19.0	15	90.2	30	136.4	15	137.5
	30	204.8	8	350.1	15	407.1	8	654.6
65	4	763.6	2	950.0				
	30	19.4	15	86.2	30	129.9	50	133.7
	30	240.1	8	351.0	15	412.6	8	610.7
70	4	758.9	2	934.2	4	950.0		
	30	20.0	15	83.5	30	130.9	50	161.8
	30	271.7	8	357.6	15	423.3	8	551.6
75	4	703.1	2	873.1	8	950.0		
	30	20.7	15	81.5	30	131.7	50	152.0
	30	286.4	50	302.0	30	373.0	15	391.2
	8	520.2	4	661.0	2	823.9	1.0	968.0

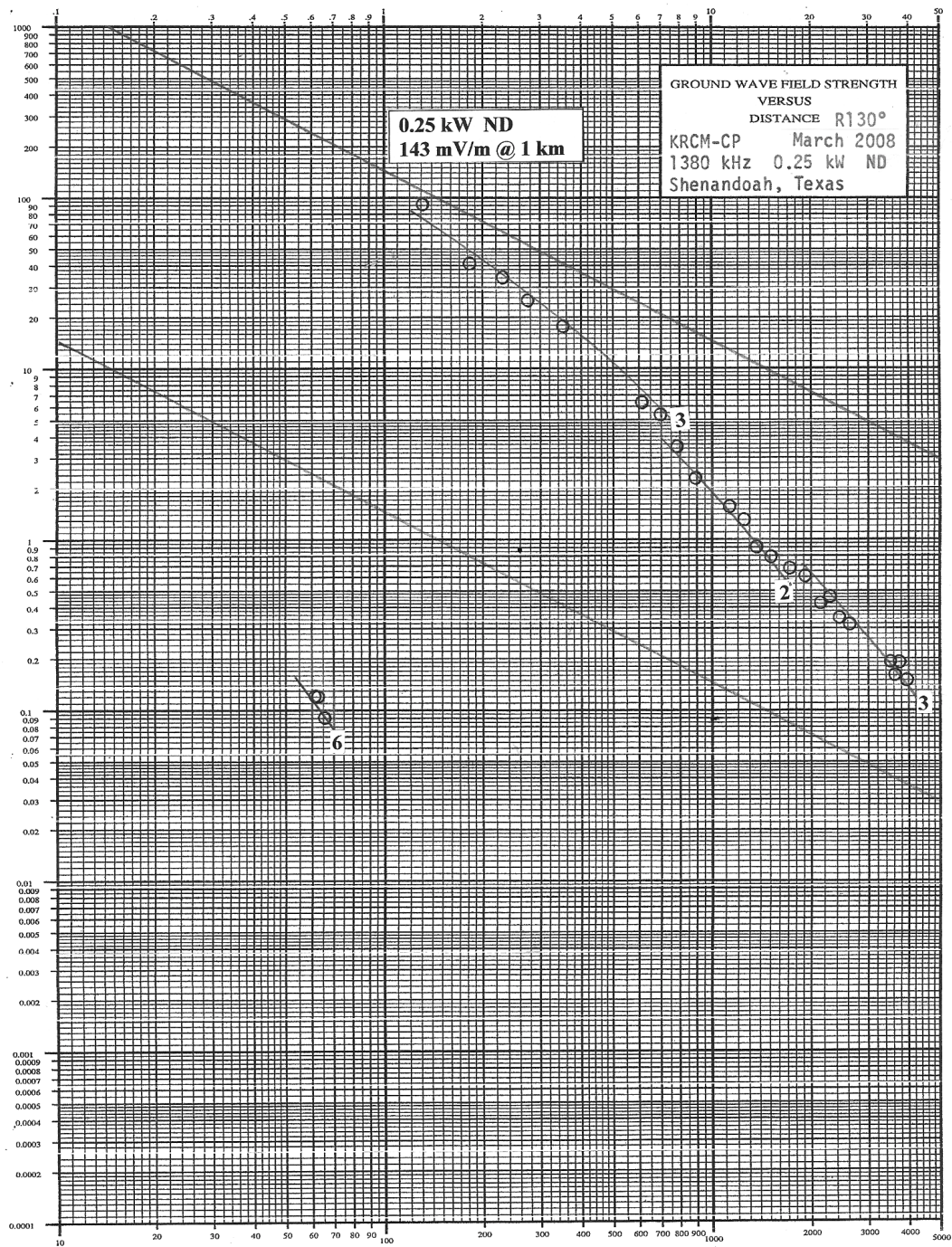
Vir James Engineers

Station: KULP		1390 kHz		29-12-34		96-15-50	
AZIMUTH	mS/m KM	mS/m KM	mS/m KM	mS/m KM	mS/m KM	mS/m KM	mS/m KM
80	30 21.8	15 80.4	30 135.3	50 153.7			
	30 163.5	50 329.5	30 386.5	15 419.7			
	50 434.3	15 631.3	50 634.7	2 641.5			
	50 812.3	2 841.2	1.0 848.4				
	50 950.0						
85	30 23.1	15 81.0	30 133.9	50 478.1			
	15 484.3	50 486.1	15 587.6	50 593.8			
	15 637.9	50 950.0					
90	30 24.8	15 82.7	30 105.6	50 106.2			
	30 118.9	50 672.2	15 677.4	50 950.0			
95	30 26.9	15 86.9	30 109.5	50 950.0			
100	30 29.8	15 92.2	30 104.5	50 950.0			
105	30 33.6	15 87.3	30 102.2	50 950.0			
110	30 39.2	15 83.3	30 96.6	50 950.0			
115	30 48.2	15 78.6	30 91.2	50 950.0			
120	30 58.8	15 74.9	30 86.9	50 950.0			
125	30 83.1	50 950.0					
130	30 80.2	50 950.0					
135	30 74.9	50 950.0					
140	30 69.9	50 950.0					
145	30 68.1	50 950.0					
150	30 66.9	50 950.0					
155	30 72.9	50 950.0					
160	30 67.1	50 950.0					
165	30 67.7	50 950.0					
170	30 51.9	50 52.1	30 68.7	50 950.0			
175	30 57.9	50 65.3	30 70.3	50 950.0			
180	30 59.9	50 950.0					
185	30 62.6	50 950.0					
190	30 61.5	50 85.1	30 87.6	50 820.4			
	2 887.9	5 950.0					
195	30 56.5	50 58.0	30 68.6	50 80.5			
	30 94.5	50 360.0	30 361.7	50 368.4			
	30 373.7	20 440.6	50 592.6	5 595.5			
	2 819.6	5 951.9					
200	30 68.9	50 76.9	30 103.4	50 332.0			
	30 383.7	20 456.1	5 609.2	2 667.5			
	3 800.1	5 815.9	4 950.0				
205	30 68.6	50 76.9	30 102.0	50 293.4			
	30 385.6	20 476.8	5 552.1	3 730.5			
	1.5 812.9	4 950.0					
210	30 64.9	50 71.1	30 103.0	50 107.3			
	30 132.7	50 200.8	30 244.9	50 252.7			
	30 398.4	20 493.2	3 661.9	1.5 787.0			
	4 950.0						
215	30 67.6	50 68.3	30 146.0	50 155.9			
	30 179.2	50 190.9	30 244.7	50 247.3			
	30 311.9	15 399.0	20 452.4	3 600.9			
	1.5 785.9	4 950.0					

Vir James Engineers								
Station: KULP			1390 kHz		29-12-34		96-15-50	
AZIMUTH	mS/m	KM	mS/m	KM	mS/m	KM	mS/m	KM
220	30	296.0	15	408.5	20	425.1	3	562.9
	1.5	779.9	4	950.0				
225	30	279.2	15	409.8	3	549.0	1.5	740.6
	4	950.0						
230	30	231.5	15	394.3	3	548.4	1.5	726.4
	4	950.0						
235	30	179.7	15	383.9	3	548.1	1.5	710.1
	4	950.0						
240	30	147.7	15	369.7	3	547.2	1.5	685.2
	4	950.0						
245	30	119.9	15	360.1	8	379.9	3	545.6
	1.5	688.6	4	950.0				
250	30	100.4	15	344.6	8	385.9	3	541.8
	1.5	722.7	4	950.0				
255	30	86.9	15	335.0	8	401.3	3	542.9
	1.5	769.3	4	950.0				
260	30	76.5	15	331.6	8	407.6	3	550.7
	1.5	771.2	4	950.0				
265	30	68.7	15	332.6	8	418.9	3	571.0
	1.5	789.3	4	950.0				
270	30	63.7	15	334.6	8	432.7	3	613.5
	1.5	663.4	8	686.1	1.5	690.4	8	690.8
	1.5	840.1	4	950.0				
275	30	60.2	15	313.1	8	473.7	3	633.8
	8	795.1	1.5	860.1	4	950.0		
280	30	57.5	15	226.6	8	827.5	1.5	870.5
	4	950.0						
285	30	55.5	15	194.9	8	918.3	4	950.0
290	30	53.9	15	185.0	8	950.0		
295	30	52.9	15	180.7	8	949.6	4	950.0
300	30	52.2	15	180.1	8	592.6	15	625.9
	8	920.5	4	950.0				
305	30	52.0	15	182.4	8	562.9	15	933.2
	8	950.0						
310	30	52.2	15	186.2	8	535.3	15	950.0
315	30	52.7	15	187.0	30	194.0	8	552.0
	15	571.3	30	640.7	15	801.2	30	846.1
	15	950.0						
320	30	53.7	15	180.3	30	203.6	8	329.4
	15	496.0	8	542.4	30	640.9	15	722.3
	30	879.6	15	950.0				
325	30	55.2	15	177.8	30	220.1	8	280.5
	15	495.4	8	518.0	30	920.9	15	950.0
330	30	57.2	15	178.8	30	236.0	8	242.3
	15	498.0	30	707.2	15	815.6	30	950.0
335	30	48.8	15	182.7	30	252.9	15	504.1
	30	607.5	15	812.4	30	950.0		

Vir James Engineers								
Station: KULP			1390 kHz		29-12-34		96-15-50	
AZIMUTH	mS/m	KM	mS/m	KM	mS/m	KM	mS/m	KM
340	30	35.3	15	189.8	30	267.6	15	505.6
	30	585.4	15	893.0	30	950.0		
345	30	31.3	15	201.6	30	241.5	15	489.4
	30	655.2	15	740.6	30	950.0		
350	30	28.3	15	181.4	4	223.5	15	342.3
	30	370.9	15	479.5	30	677.9	15	686.5
	30	950.0						
355	30	26.0	15	147.6	4	252.2	15	323.8
	30	499.8	15	578.5	30	641.3	15	709.7
	8	758.9	30	950.0				

Negative mS/m are MEASURED Conductivity Values BMJ-20050118ADX
 Tabulated 50 mS/m represents 5000 mS/m



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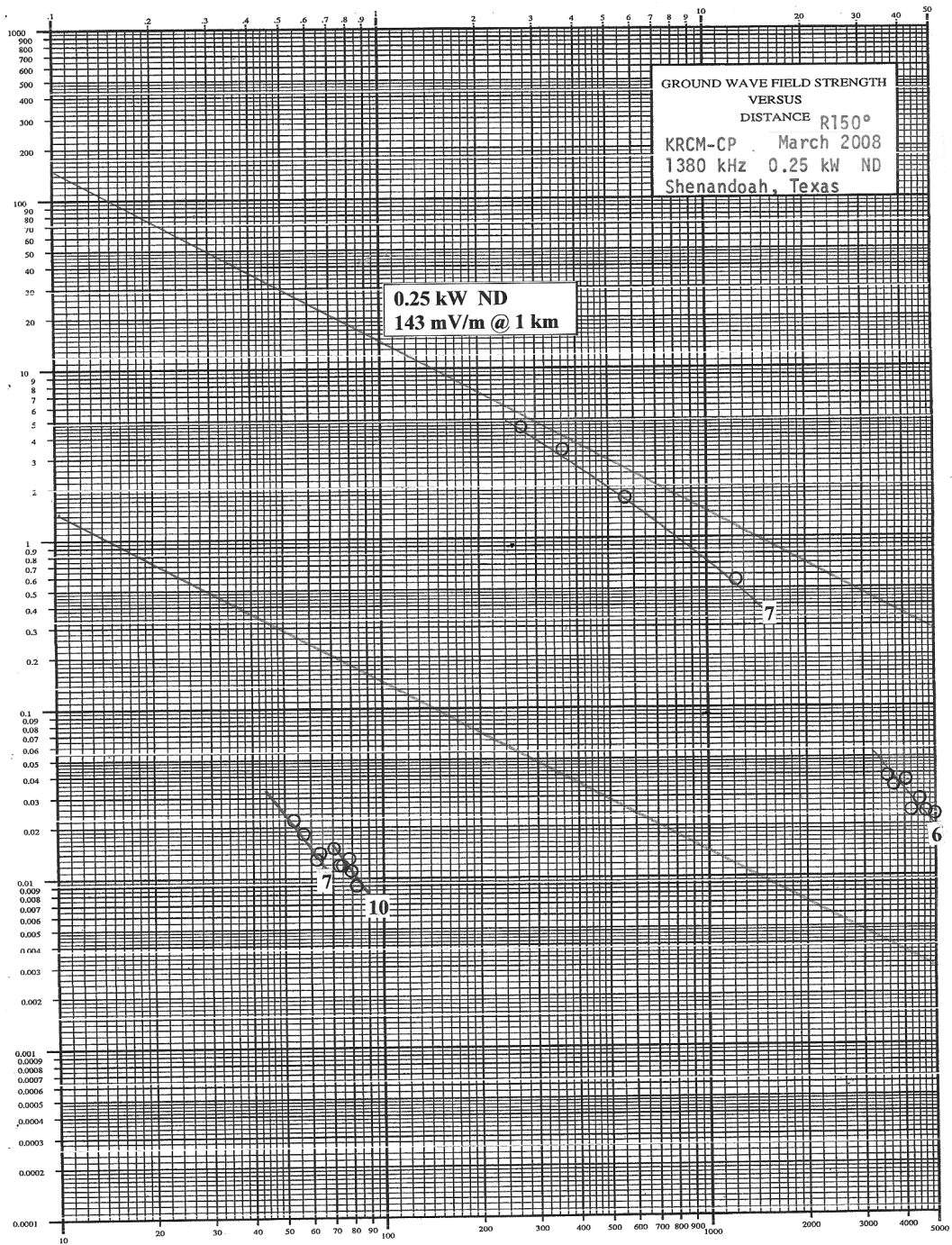
EXHIBIT E-5.01

PROPOSED KRCM
VOICE BROADCASTING, INC.
1380 kHz 10 kW DA-D
SHENANDOAH, TEXAS

FIELD STRENGTH MEASUREMENTS - DATA -
KRCM-CP Shenandoah, Texas, 1380 kHz, 0.25 kW ND

RADIAL 130 DEGREE

DISTANCE (km)	N-DA (mV/m)	TIME (CDT)	DATE YEAR: 2007
1.32	90	1434	6-11
1.83	42	1429	6-11
2.32	34	1423	6-11
2.78	25	1415	6-11
3.52	18	1402	6-11
6.20	6.4	1348	6-11
7.03	5.5	1343	6-11
7.84	3.5	1339	6-11
8.80	2.3	1332	6-11
11.30	1.6	1321	6-11
12.60	1.3	1318	6-11
13.76	0.90	1302	6-11
15.06	0.78	1255	6-11
17.19	0.67	1248	6-11
19.15	0.62	1217	6-11
21.69	0.43	1207	6-11
22.85	0.46	1158	6-11
24.48	0.35	1144	6-11
26.22	0.32	1134	6-11
34.92	0.19	1701	6-11
36.63	0.16	1710	6-11
37.35	0.19	1714	6-11
39.45	0.15	1720	6-11
61.54	0.12	1740	6-11
62.72	0.12	1805	6-11
64.92	0.090	1815	6-11



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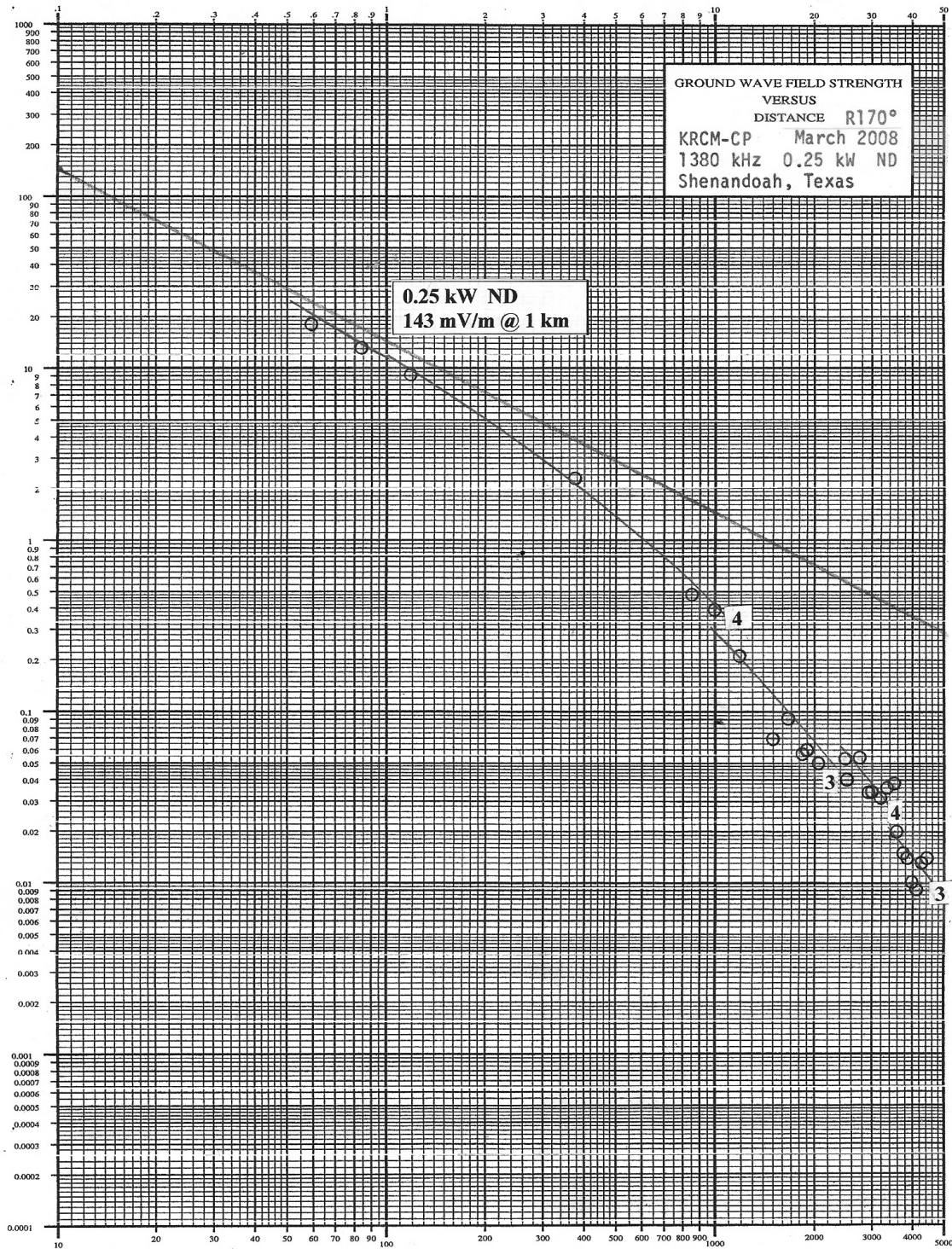
EXHIBIT E-5.02

PROPOSED KRCM
VOICE BROADCASTING, INC.
1380 kHz 10 kW DA-D
SHENANDOAH, TEXAS

FIELD STRENGTH MEASUREMENTS – DATA –
KRCM-CP Shenandoah, Texas, 1380 kHz, 0.25 kW ND

RADIAL 150 DEGREE

DISTANCE (km)	N-DA (mV/m)	TIME (CDT)	DATE YEAR: 2007
2.69	45	1427	6-11
3.65	33	1419	6-11
5.71	18	1440	6-11
12.17	5.6	1010	6-11
35.59	0.38	1042	6-13
37.19	0.34	1054	6-13
40.59	0.36	1021	6-13
42.27	0.24	1013	6-13
44.83	0.28	1006	6-13
46.83	0.24	0956	6-13
49.49	0.23	0947	6-13
54.00	0.22	0928	6-13
57.60	0.18	0920	6-13
62.55	0.13	0914	6-13
64.75	0.14	0904	6-13
70.50	0.15	0852	6-13
73.12	0.12	0845	6-13
74.51	0.12	0838	6-13
78.09	0.13	0830	6-13
79.90	0.11	0824	6-13
82.39	0.090	0815	6-11



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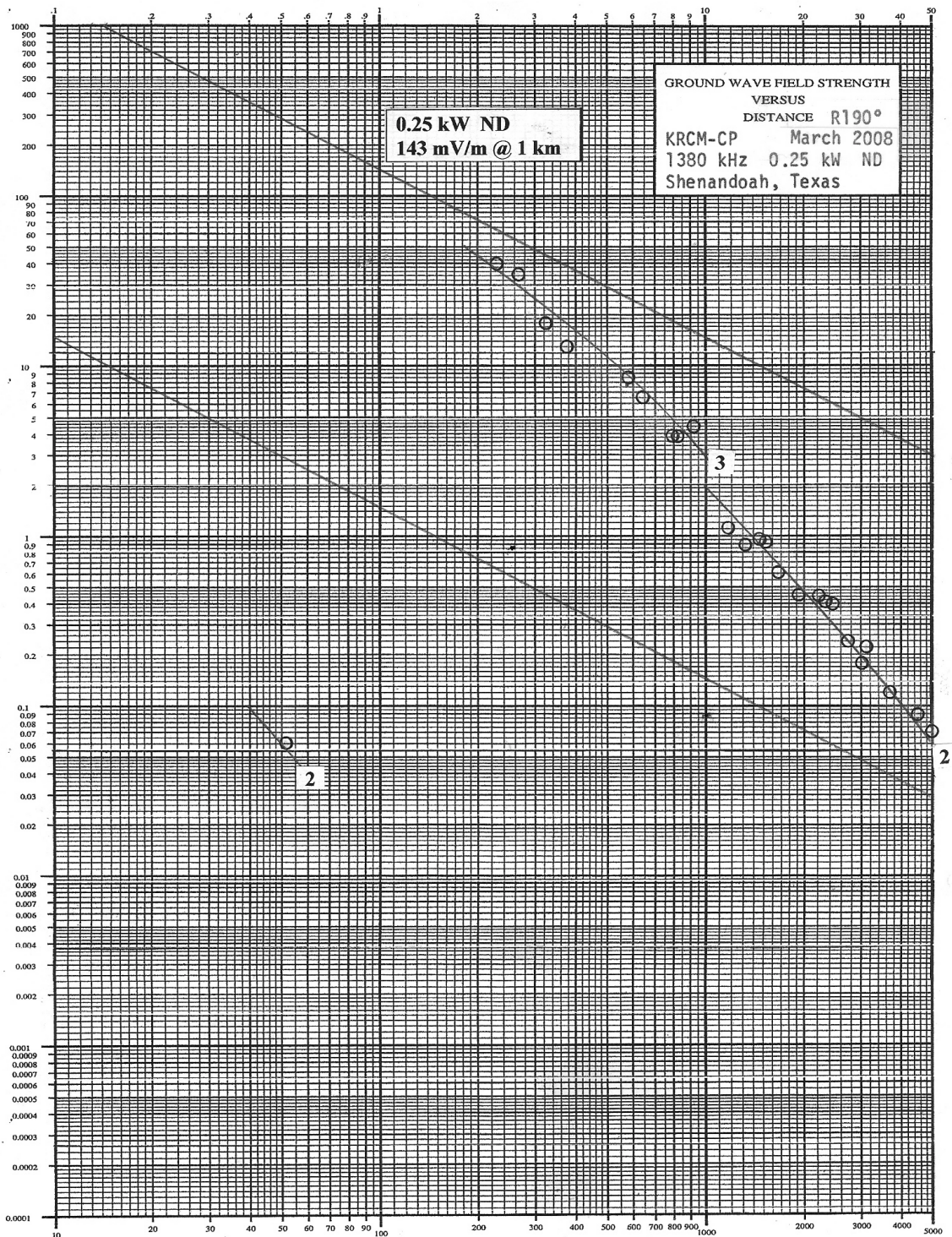
EXHIBIT E-5.03

PROPOSED KRCM
VOICE BROADCASTING, INC.
1380 kHz 10 kW DA-D
SHENANDOAH, TEXAS

FIELD STRENGTH MEASUREMENTS – DATA –
KRCM-CP Shenandoah, Texas, 1380 kHz, 0.25 kW ND

RADIAL 170 DEGREE

DISTANCE (km)	N-DA (mV/m)	TIME (CDT)	DATE YEAR: 2007
0.58	180	1153	6-13
0.84	130	1201	6-13
1.17	88	1207	6-13
3.75	23	1219	6-13
8.53	4.7	1244	6-13
9.98	3.8	1315	6-13
11.93	2.1	1302	6-13
15.00	0.71	1121	6-13
16.54	0.90	1113	6-13
18.38	0.58	1100	6-13
19.05	0.61	1052	6-13
20.23	0.50	1040	6-13
24.62	0.53	1019	6-13
25.27	0.40	1023	6-13
27.41	0.54	1011	6-13
29.16	0.34	1004	6-13
30.27	0.34	0958	6-13
32.01	0.32	0954	6-13
33.35	0.36	0944	6-13
34.95	0.38	0937	6-13
35.84	0.20	0927	6-13
37.01	0.15	0919	6-13
38.46	0.14	0910	6-13
39.70	0.10	0903	6-13
41.13	0.090	0856	6-13
42.63	0.13	0847	6-13
44.26	0.14	0838	6-13



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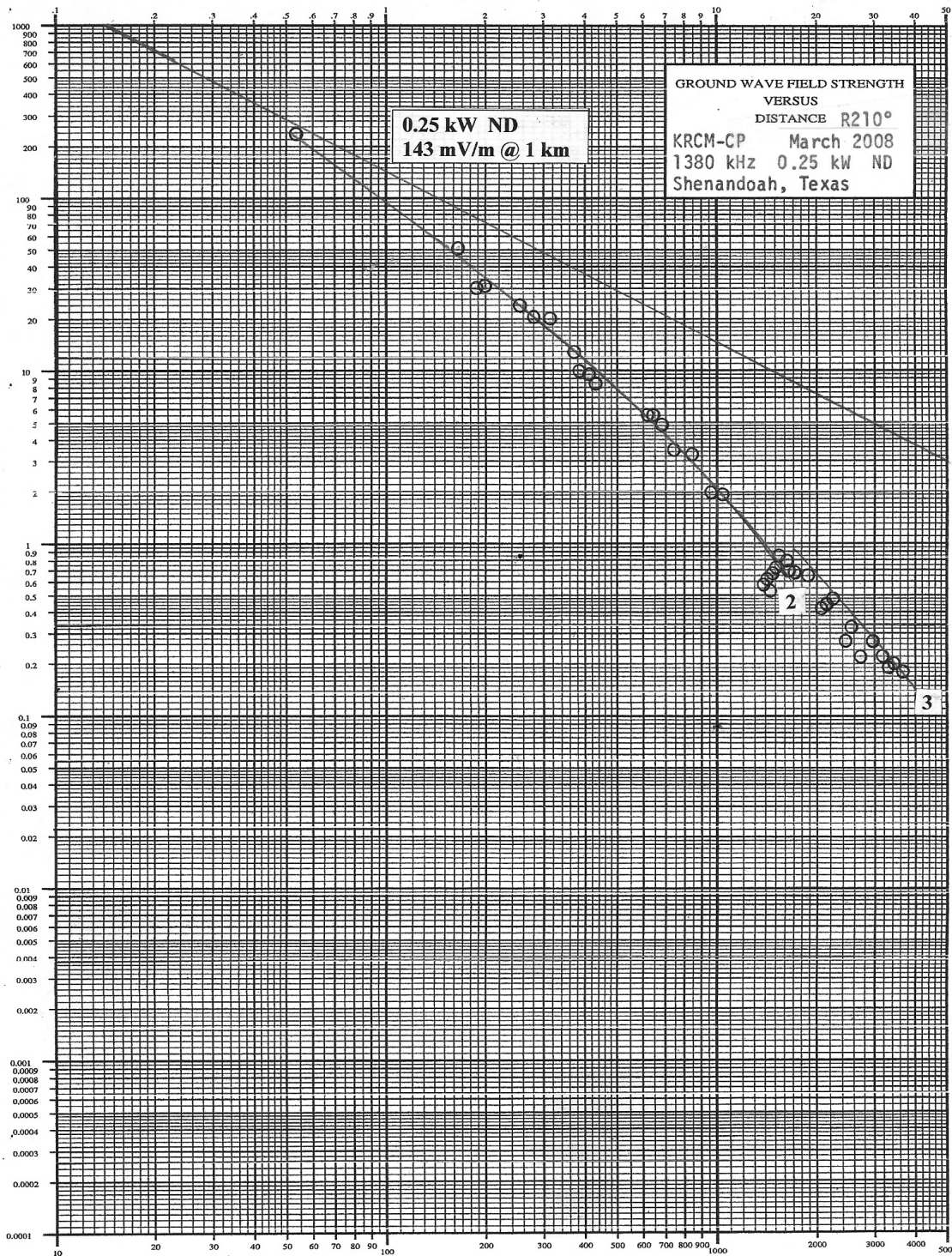
EXHIBIT E-5.04

PROPOSED KRCM
VOICE BROADCASTING, INC.
1380 kHz 10 kW DA-D
SHENANDOAH, TEXAS

FIELD STRENGTH MEASUREMENTS – DATA –
KRCM-CP Shenandoah, Texas, 1380 kHz, 0.25 kW ND

RADIAL 190 DEGREE

DISTANCE (km)	N-DA (mV/m)	TIME (CDT)	DATE YEAR: 2007
2.27	40	1531	6-13
2.62	35	1536	6-13
3.22	18	1520	6-13
3.75	13	1512	6-13
5.79	8.6	1408	6-13
6.49	6.5	1334	6-13
7.95	3.9	1344	6-13
8.30	3.9	1349	6-13
9.21	4.4	1232	6-13
11.67	1.1	1205	6-13
13.29	0.88	1141	6-13
14.66	0.95	1129	6-13
15.45	0.93	1015	6-16
16.80	0.62	1021	6-16
19.12	0.45	1042	6-16
22.21	0.44	1058	6-16
23.82	0.42	1109	6-16
24.66	0.40	1122	6-16
27.81	0.24	1140	6-16
30.18	0.18	1133	6-16
31.12	0.22	1151	6-16
37.18	0.12	1225	6-16
44.93	0.090	1208	6-16
49.02	0.070	1259	6-16
51.98	0.060	1316	6-16



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EXHIBIT E-5.05

Page 1 of 2

PROPOSED KRCM
VOICE BROADCASTING, INC.
1380 kHz 10 kW DA-D
SHENANDOAH, TEXAS

FIELD STRENGTH MEASUREMENTS – DATA –
KRCM-CP Shenandoah, Texas, 1380 kHz, 0.25 kW ND

RADIAL 210 DEGREE

DISTANCE (km)	N-DA (mV/m)	TIME (CDT)	DATE YEAR: 2007
0.53	240	0835	6-14
1.64	52	1601	6-13
1.88	31	0920	6-14
2.01	32	0925	6-14
2.53	24	1556	6-13
2.77	21	1341	6-13
3.12	20	1544	6-13
3.69	13	1455	6-13
3.83	10	1459	6-13
4.10	9.5	1501	6-13
4.31	8.6	1505	6-13
6.16	5.6	1417	6-13
6.42	5.5	1410	6-13
6.76	4.8	1359	6-13
7.40	3.5	1347	6-13
8.38	3.3	0944	6-16
9.70	2.1	0952	6-16
10.14	1.9	0951	6-16
13.97	0.58	1539	6-14
14.18	0.63	1543	6-14
14.47	0.53	1546	6-14