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## ENGINEERING REPORT

### APPLICATION to CHANGE TRANSMITTER LOCATION

KMBZ-AM  
980 kHz  
Kansas City, MO.

Facility ID 6382

9 kW Day, 5 kW Night DA-N

Entercom License, LLC

July 2014

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## Purpose of Application

This Engineering Report is part of an application by Entercom License, LLC (“Entercom”) to relocate the transmitter site of KMBZ-AM, 980 kHz, Kansas City, MO. Entercom proposes to diplex KMBZ onto the antenna array presently used by KCCV-AM, 760 kHz, Overland Park, KS. (Facility ID 6491) No new tower construction or modification would be required by grant of this application.

## Allocation Considerations

### Daytime

The proposed 9 kW non-directional operation of KMBZ will not result in prohibited contour overlap with any licensed or proposed facility, as demonstrated by the daytime allocation study map exhibits included in this application. Measured ground conductivity was used for adjacent channel stations KCFO, Tulsa, and KRMO Cassville, MO as well as the proposed operation of KMBZ. The KMBZ data is based on measurements of the licensed daytime operation of KCCV. M3 conductivity was used in all other cases.

There are no Class A stations entitled to critical hours protection in operation on 980 kHz in the United States or Canada.

### Nighttime

The presently licensed nighttime operation of KMBZ enters the 50% RSS of 7 domestic facilities, and the 25% RSS of 4 additional domestic facilities. It also enters the 50% RSS of 1 Canadian and 3 Mexican facilities. The proposed nighttime operation will reduce KMBZ’s RSS contribution at each of these facilities, as demonstrated in the Nighttime Site to Site Allocation Study included in this application. Waiver of the “Ratchet Rule” provision of §73.182(q) with respect to KKMS Richfield, MN and KQUE Rosenberg-Richmond TX. is respectfully requested. Please see the included exhibit contained in this application for a discussion of the justification for this waiver request.

## Facilities Proposed

Entercom proposes continued operation of KMBZ on 980 kHz with a power of 9 kW daytime and 5 kW nighttime. KMBZ will be diplexed onto the existing towers of KCCV-AM. No tower construction or modification, or modification of the existing ground system will be required by grant of this application.

The proposed daytime and nighttime 5 mV/m contours will both cover 100% of Kansas City, MO, as demonstrated in the map exhibit titled *Proposed Coverage of City of License*.

The population within the proposed daytime 1V/m blanketing contour is 529 persons, which is 0.06% of the 852,356 persons within the proposed daytime 25 mV/m contour. The population within the proposed nighttime 1V/m blanketing contour is 393 persons, which is 0.06% of the 641,823 persons within the proposed 25 mV/m nighttime contour thus satisfying the requirements of §73.24(g).

The KMBZ studio is located at 7000 Squibb Rd, Mission, KS. This location is within the proposed 5 mV/m daytime contour of KMBZ, and therefore meets the requirements of §73.1125(a)(2).

Antenna tower access is restricted by fences with locked gates that are at least 2 meters from the tower bases, as required by OET-65. The antenna towers are posted with warning signs, and all station personnel and contractors will be required to follow appropriate safety procedures before any work is commenced on the antenna towers, including reduction in power or discontinuance of operation before any maintenance work is undertaken.

The following page contains a summary of a method of moments (MOM) study conducted to determine the distance required from each of the tower bases to the tower fence in order to comply with the Commission's limits on human exposure to electromagnetic fields as specified in OET-65. Calculations were performed for each of the five towers at the KCCV site, using the maximum power at each individual tower for both KCCV and KMBZ.

## Method of Moments Study of Electric & Magnetic Fields

Site Tower #	1	2	3	4	5
KCCV Day Twr #	1	2	3	-	-
KCCV Night Twr #	-	1	-	2	3
KMBZ Twr #	-	1	3	2	-
Required Distance to Fence (Meters)	0.6	1.8	1	1.1	0.5
KCCV Power (W)	275	3403	2313	114.6	12.4
KMBZ Power (W)	0	9000	34.5	9000	0
KCCV E field (V/m)	116	70.5	105.9	21.5	31.4
KMBZ E field (V/m)	0	324.8	37.7	549	0
Total E field (V/m)	116	395.3	143.6	570.5	31.4
FCC Limit (V/m)	614	614	614	614	614
KCCV H field (A/m)	1.3	0.793	1.14	0.223	0.345
KMBZ H field (A/m)	0	0.788	0.085	1.25	0
Total H field (A/m)	1.3	1.581	1.225	1.483	0.345
FCC Limit (A/m)	1.63	1.63	1.63	1.63	1.63

KMBZ

Freq: 980 kHz

Class: B

Latitude: 39-02-25 N

Longitude: 094-30-30 W

Power: 9 kW

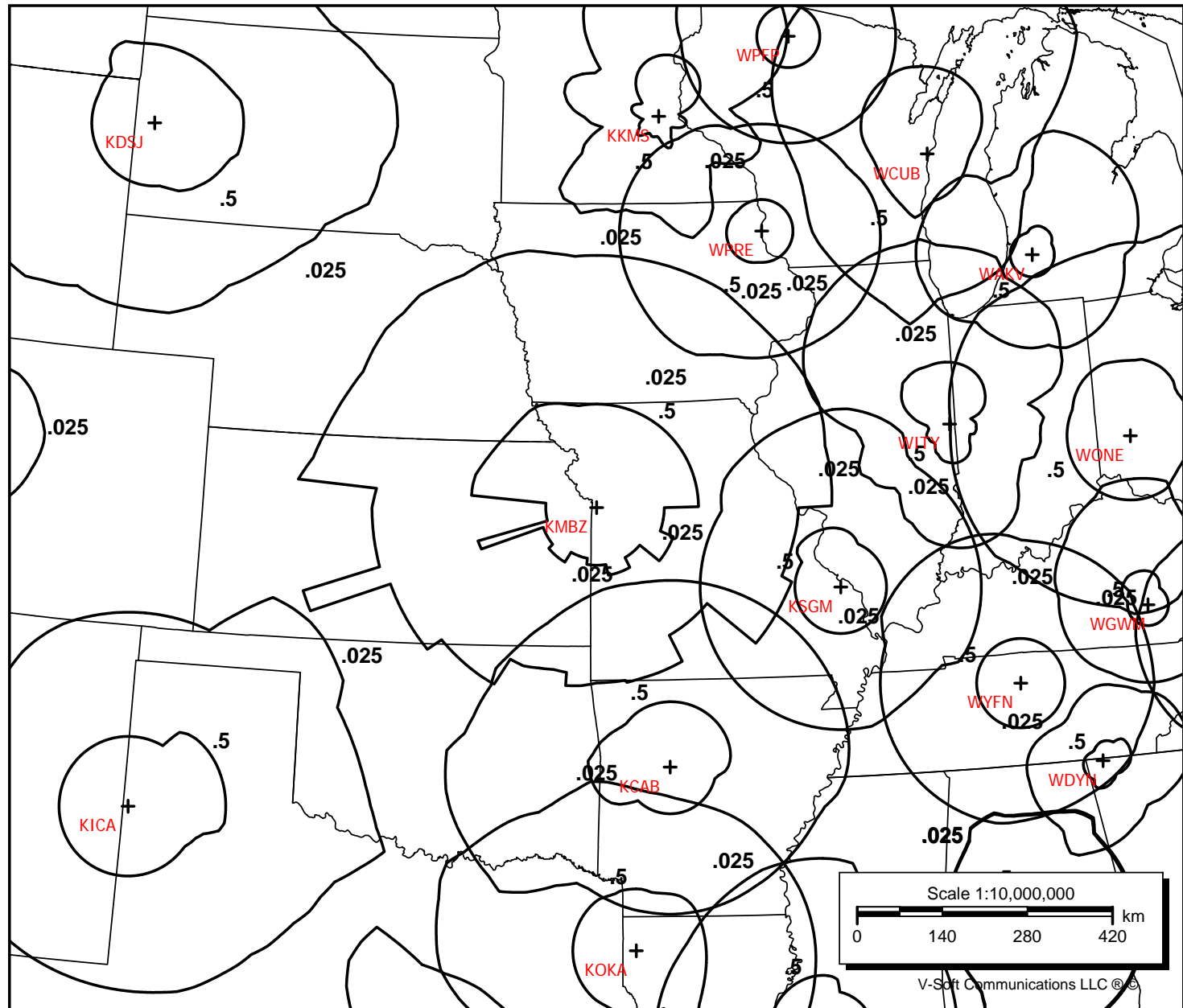
RMS: 322.513 mV/m @1km

# Towers: 1

# Augs: 0

Daytime Allocation Study  
Co-Channel

KMBZ-AM  
Kansas City, MO



KMBZ

Freq: 980 kHz

Class: B

Latitude: 39-02-25 N

Longitude: 094-30-30 W

Power: 9 kW

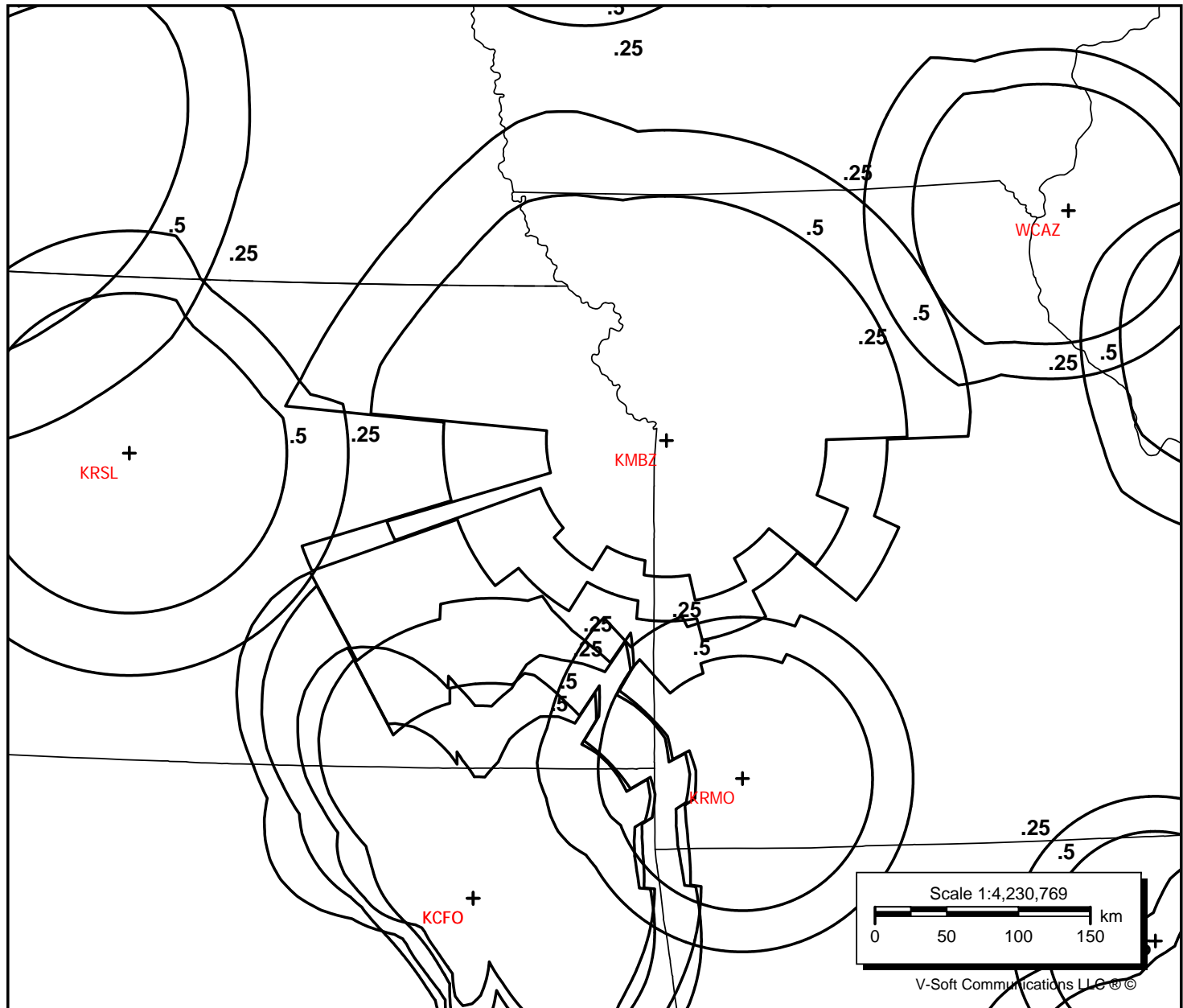
RMS: 322.513 mV/m @1km

# Towers: 1

# AUs: 0

Daytime Allocation Study  
1st adjacent Channel

KMBZ-AM  
Kansas City, MO



KMBZ

Freq: 980 kHz

Class: B

Latitude: 39-02-25 N

Longitude: 094-30-30 W

Power: 9 kW

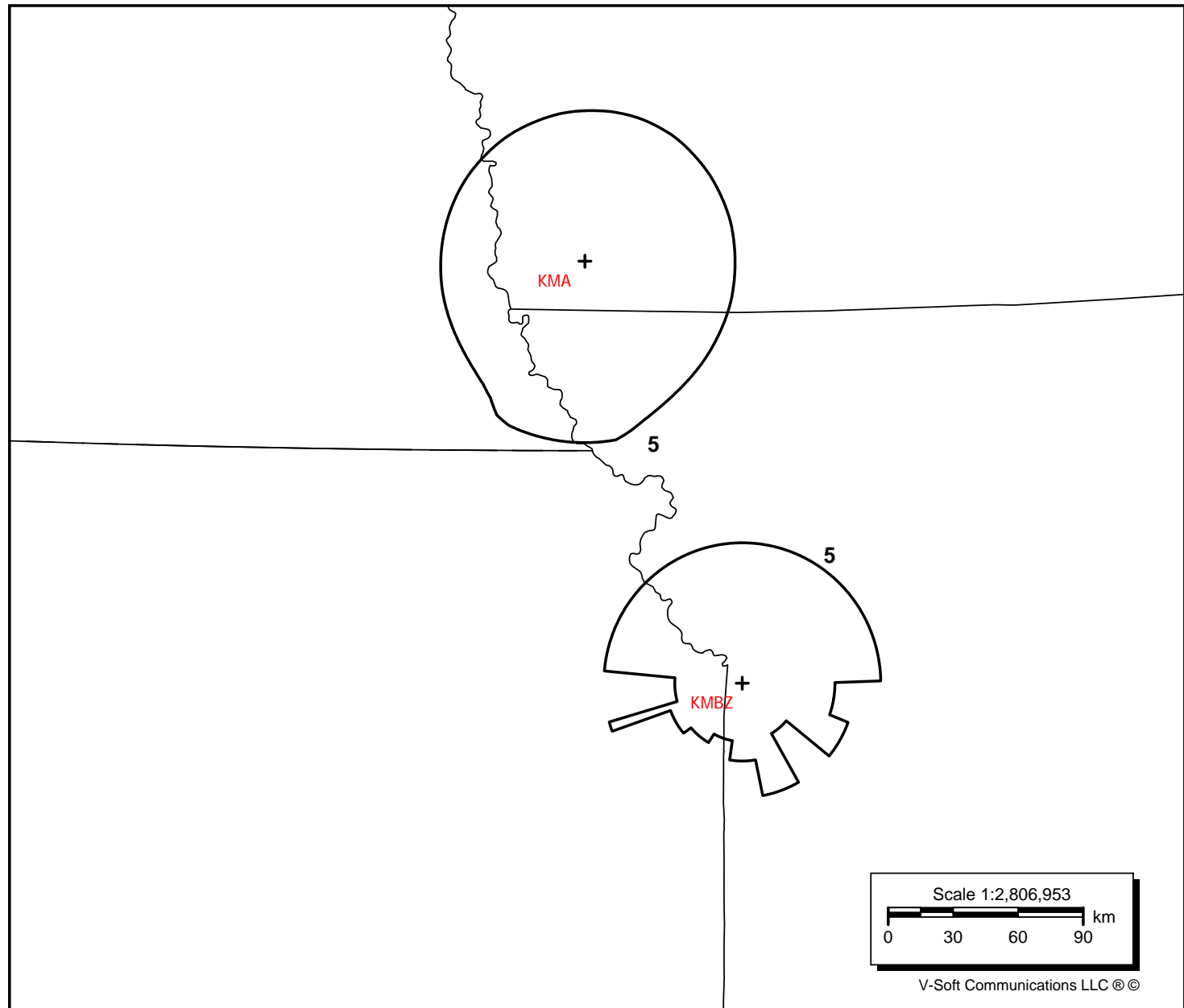
RMS: 322.513 mV/m @1km

# Towers: 1

# AUs: 0

Daytime Allocation Study  
2nd adjacent Channel

KMBZ-AM  
Kansas City, MO





KMBZ

Freq: 980 kHz

Class: B

Latitude: 39-02-25 N

Longitude: 094-30-30 W

Power: 9 kW

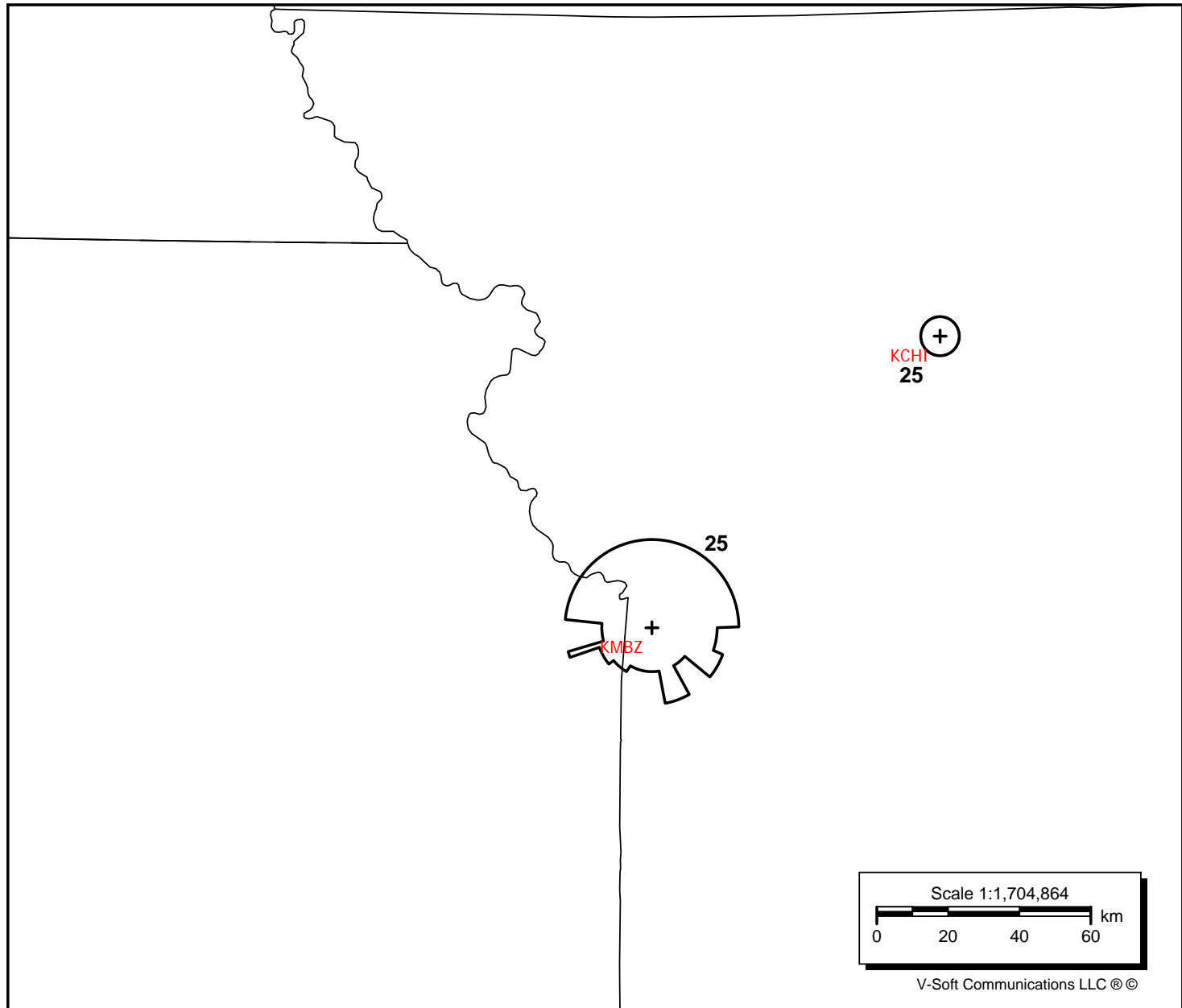
RMS: 322.513 mV/m @1km

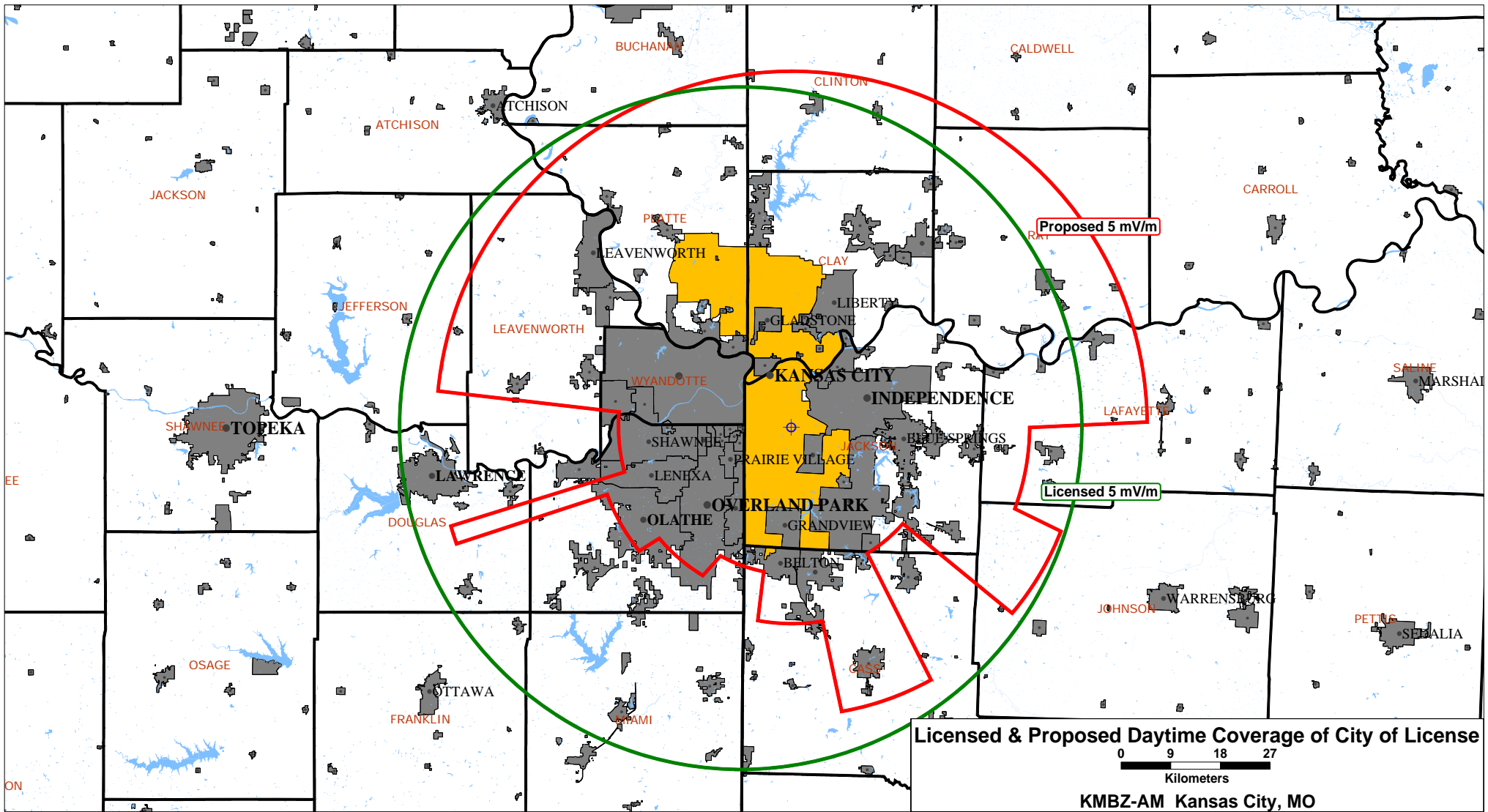
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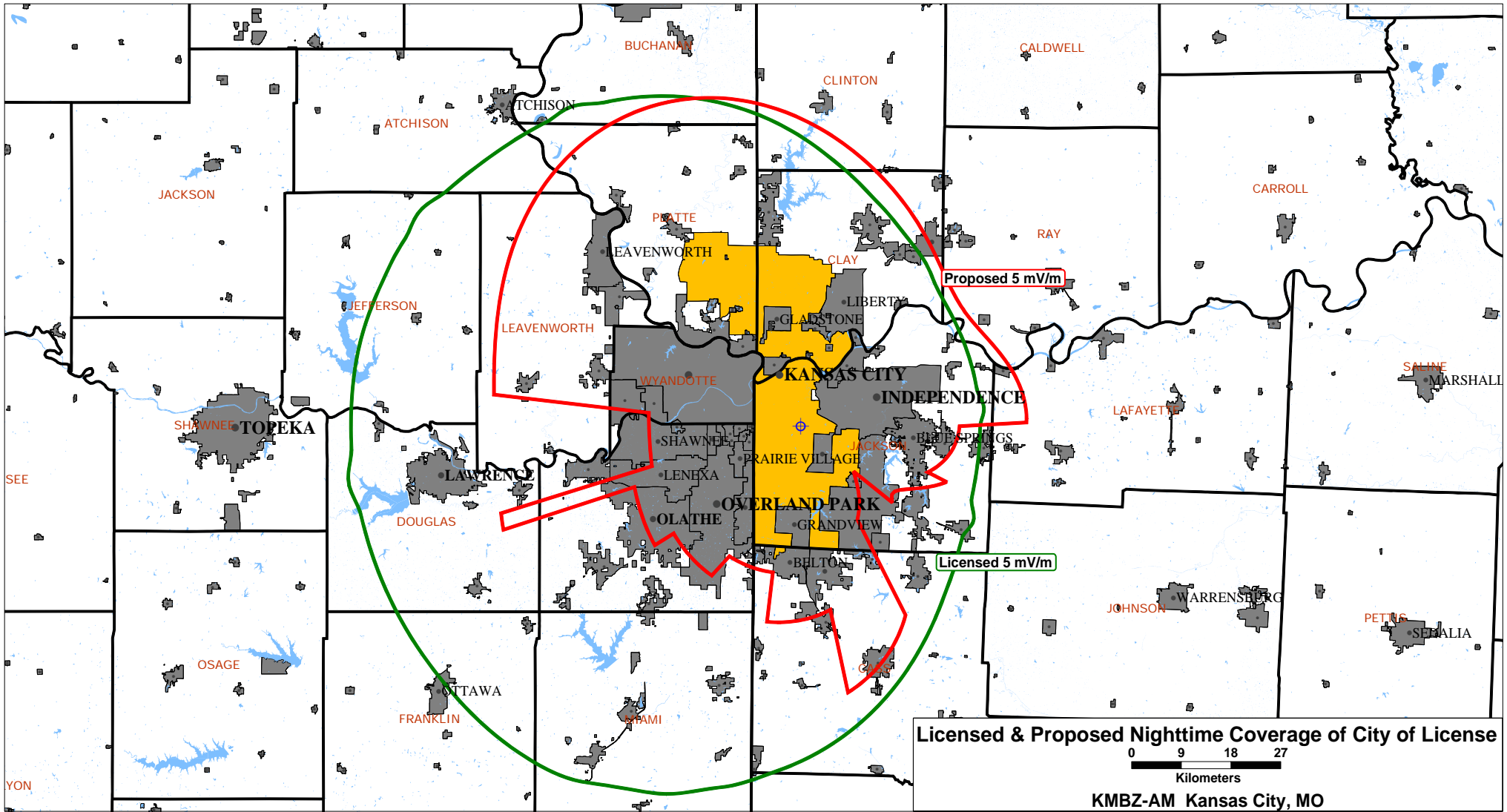
# AUs: 0

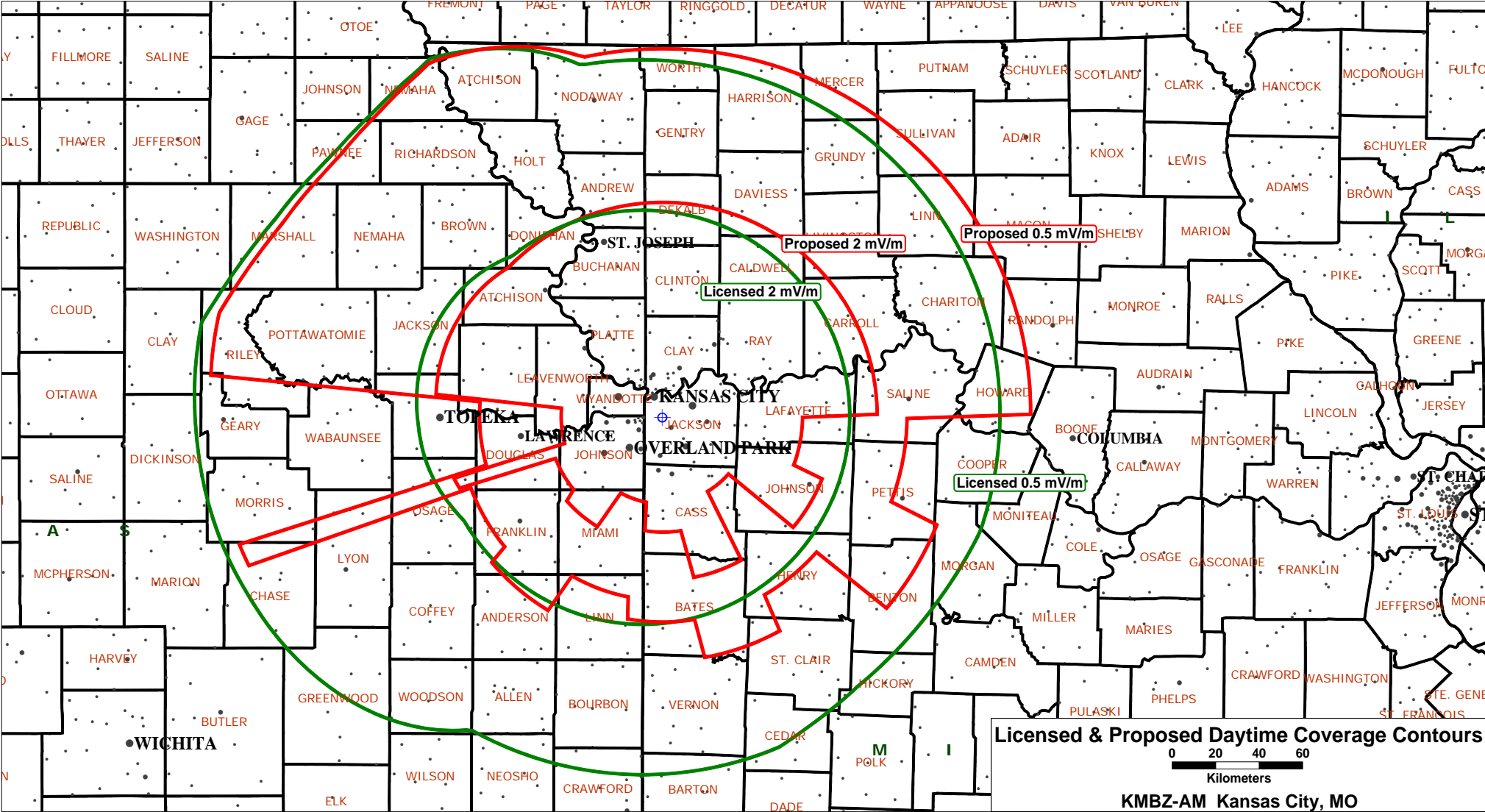
Daytime Allocation Study  
3rd adjacent Channel

KMBZ-AM  
Kansas City, MO









**Nighttime Site to Site RSS Allocation Study**  
**KMBZ-AM**  
**Kansas City, MO**

Protected Station: KKMS, 980 kHz - RICHFIELD, MN, US [44-47-18 N, 093-12-54 W]

Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
*KMBZ	0980	9.178	100.0
WONE	0980	8.880	96.8
WITY	0980	6.474	50.7
-----	50%	-----	
WYFN	0980	4.517	31.5
KDSJ	0980	4.055	27.0
-----	25%	-----	
WCUB	0980	3.728	24.0
ZYH-707-A	0980	3.269	20.4
CBW/A	0990	2.918	17.9
CJME/	0980	2.600	15.7
KSGM	0980	2.591	15.4

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
*KMBZ-PRO	0980	9.140	100.0
WONE	0980	8.880	97.2
WITY	0980	6.474	50.8
-----	50%	-----	
WYFN	0980	4.517	31.6
KDSJ	0980	4.055	27.0
-----	25%	-----	
WCUB	0980	3.728	24.0
ZYH-707-A	0980	3.269	20.5
CBW/A	0990	2.918	17.9
CJME/	0980	2.600	15.7
KSGM	0980	2.591	15.5

Protected Station: WITY, 980 kHz - DANVILLE, IL, US [40-04-41 N, 087-38-20 W]

Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
WYFN	0980	17.344	100.0
WONE	0980	13.482	77.7
-----	50%	-----	
KSGM	0980	9.187	41.8
*KMBZ	0980	6.366	26.7
-----	25%	-----	
WCUB	0980	5.242	21.3
ZYH-707-A	0980	4.354	17.3
WTEM	0980	4.093	16.0

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
WYFN	0980	17.344	100.0
WONE	0980	13.482	77.7
-----	50%	-----	
KSGM	0980	9.187	41.8
*KMBZ-PRO	0980	6.300	26.5
-----	25%	-----	
WCUB	0980	5.242	21.3
ZYH-707-A	0980	4.354	17.3
WTEM	0980	4.093	16.0

Protected Station: WONE, 980 kHz - DAYTON, OH, US [39-40-03 N, 084-10-01 W]  
Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
WTEM	0980	7.718	100.0
WYFN	0980	6.640	86.0
-----	50%	-----	
ZYH-707-A	0980	4.701	46.2
WILK	0980	4.096	36.5
*KMBZ	0980	3.905	32.7
KSGM	0980	3.839	30.6
WFHG	0980	3.685	28.1
-----	25%	-----	
WITY	0980	3.195	23.4
WAAV	0980	2.839	20.3
WOFX	0980	2.688	18.8

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
WTEM	0980	7.718	100.0
WYFN	0980	6.640	86.0
-----	50%	-----	
ZYH-707-A	0980	4.701	46.2
WILK	0980	4.096	36.5
KSGM	0980	3.839	32.2
*KMBZ-PRO	0980	3.799	30.3
WFHG	0980	3.685	28.1
-----	25%	-----	
WITY	0980	3.195	23.5
WAAV	0980	2.839	20.3
WOFX	0980	2.688	18.8

Protected Station: KQAQ, 970 kHz - AUSTIN, MN, US [43-42-27 N, 092-56-45 W]  
Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
KMA	0960	3.258	100.0
WDAY	0970	2.410	74.0
-----	50%	-----	
XEJ/A	0970	1.949	48.1
WKHM	0970	1.186	26.4
-----	25%	-----	
*KMBZ	0980	1.100	23.6
KSYL	0970	1.082	22.6
XEDF/A	0970	0.987	20.1
WGTK	0970	0.955	19.1
KCFO	0970	0.878	17.2
KHVN	0970	0.875	17.0
WONE	0980	0.855	16.3
WBGG	0970	0.830	15.6

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
KMA	0960	3.258	100.0
WDAY	0970	2.410	74.0
-----	50%	-----	
XEJ/A	0970	1.949	48.1
WKHM	0970	1.186	26.4
-----	25%	-----	
*KMBZ-PRO	0980	1.130	24.3
KSYL	0970	1.082	22.6
XEDF/A	0970	0.987	20.1
WGTK	0970	0.955	19.1
KCFO	0970	0.878	17.2
KHVN	0970	0.875	16.9
WONE	0980	0.855	16.3
WBGG	0970	0.830	15.6

Protected Station: KQUE, 980 kHz - ROSENBERG-RICHMOND, TX, US [29-49-19 N, 095-52-58 W]

Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
WYFN	0980	10.553	100.0
*KMBZ	0980	8.507	80.6
-----	50%	-----	-----
WRNE	0980	5.603	41.3
ZYH-707-A	0980	5.291	36.1
XENR/A	0980	4.401	28.2
XEFF/A	0980	4.300	26.5
-----	25%	-----	-----
XETU1/A	0980	3.392	20.2
XEOT/A	0980	2.992	17.5
KSGM	0980	2.743	15.8

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
WYFN	0980	10.553	100.0
*KMBZ-PRO	0980	8.298	78.6
-----	50%	-----	-----
WRNE	0980	5.603	41.7
ZYH-707-A	0980	5.291	36.4
XENR/A	0980	4.401	28.4
XEFF/A	0980	4.300	26.7
-----	25%	-----	-----
XETU1/A	0980	3.392	20.4
XEOT/A	0980	2.992	17.6
KSGM	0980	2.743	15.9

Protected Station: WDAY, 970 kHz - FARGO, ND, US [46-38-48 N, 096-21-50 W]

Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
KMA	0960	2.001	100.0
XEJ/A	0970	1.686	84.3
-----	50%	-----	-----
KQAO	0970	0.940	35.9
KFTA	0970	0.831	29.9
KCFO	0970	0.815	28.1
XEDF/A	0970	0.781	25.9
-----	25%	-----	-----
KSYL	0970	0.759	24.4
KIXL	0970	0.750	23.4
*KMBZ	0980	0.746	22.7
KDSJ	0980	0.711	21.1
KNIH	0970	0.701	20.3
KBUL	0970	0.646	18.4
WSBT	0960	0.595	16.6
KHVN	0970	0.585	16.1

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
KMA	0960	2.001	100.0
XEJ/A	0970	1.686	84.3
-----	50%	-----	-----
KQAO	0970	0.940	35.9
KFTA	0970	0.831	29.9
KCFO	0970	0.815	28.1
XEDF/A	0970	0.781	25.9
-----	25%	-----	-----
KSYL	0970	0.759	24.4
KIXL	0970	0.750	23.4
*KMBZ-PRO	0980	0.747	22.7
KDSJ	0980	0.711	21.1
KNIH	0970	0.701	20.3
KBUL	0970	0.646	18.3
WSBT	0960	0.595	16.6
KHVN	0970	0.585	16.1

Protected Station: KSGM, 980 kHz - CHESTER, IL, US [37-47-16 N, 089-54-21 W]  
Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
*KMBZ	0980	8.947	100.0
WYFN	0980	6.554	73.3
-----	50%	-----	
ZYH-707-A	0980	4.561	41.1
KQUE	0980	3.330	27.8
WTEM	0980	3.164	25.4
-----	25%	-----	
WGTK	0970	2.896	22.5
WCUB	0980	2.658	20.2
WITY	0980	2.460	18.3

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
*KMBZ-PRO	0980	6.952	100.0
WYFN	0980	6.554	94.3
-----	50%	-----	
ZYH-707-A	0980	4.561	47.7
KQUE	0980	3.330	31.5
WTEM	0980	3.164	28.5
WGTK	0970	2.896	25.1
-----	25%	-----	
WCUB	0980	2.658	22.3
WITY	0980	2.460	20.2
WTOT	0980	1.888	15.2

Protected Station: KDSJ, 980 kHz - DEADWOOD, SD, US [44-22-57 N, 103-39-44 W]  
Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
*KMBZ	0980	8.676	100.0
CJME/	0980	5.764	66.4
-----	50%	-----	
KSVC	0980	3.637	34.9
KSPZ	0980	3.559	32.3
-----	25%	-----	
ZYH-707-A	0980	2.736	23.6
KFWB	0980	2.647	22.2
CKNW/A	0980	2.570	21.1
CBW/A	0990	2.424	19.4
KGLN	0980	2.348	18.5
KQUE	0980	1.939	15.0

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
*KMBZ-PRO	0980	7.355	100.0
CJME/	0980	5.764	78.4
-----	50%	-----	
KSVC	0980	3.637	38.9
KSPZ	0980	3.559	35.5
ZYH-707-A	0980	2.736	25.7
-----	25%	-----	
KFWB	0980	2.647	24.1
CKNW/A	0980	2.570	22.7
CBW/A	0990	2.424	20.9
KGLN	0980	2.348	19.8
KQUE	0980	1.939	16.1



Protected Station: CJME/ , 980 kHz - REGINA, SK, CA [50-21-13 N, 104-37-18 W]  
Standard: Canadian (Figure 4) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
*KMBZ	0980	5.540	100.0
-----	50%	-----	
WONE	0980	2.681	48.4
WCUB	0980	2.661	43.2
CKNW/A	0980	2.536	37.8
KTCR	0980	2.382	33.2
CKRU/A	0980	2.272	30.1
KDSJ	0980	2.253	28.6
KSPZ	0980	2.103	25.6
-----	25%	-----	
KSVC	0980	2.010	23.7
NEW SHERWOOD	0980	1.755	20.2
WITY	0980	1.658	18.7
CHRF/A	0980	1.506	16.7
CFPL/	0980	1.491	16.3
KFWB	0980	1.394	15.0

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
*KMBZ-PRO	0980	5.200	100.0
WONE	0980	2.681	51.6
-----	50%	-----	
WCUB	0980	2.661	45.5
CKNW/A	0980	2.536	39.5
KTCR	0980	2.382	34.5
CKRU/A	0980	2.272	31.1
KDSJ	0980	2.253	29.4
KSPZ	0980	2.103	26.4
-----	25%	-----	
KSVC	0980	2.010	24.4
NEW SHERWOOD	0980	1.755	20.7
WITY	0980	1.658	19.1
CHRF/A	0980	1.506	17.1
CFPL/	0980	1.491	16.6
KFWB	0980	1.394	15.4
KKMS	0980	1.384	15.1

Protected Station: KCFO, 970 kHz - TULSA, OK, US [36-11-46 N, 096-02-22 W]  
Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
WGTK	0970	8.938	100.0
WMAY	0970	6.362	71.2
-----	50%	-----	
XEJ/A	0970	5.129	46.8
KSYL	0970	5.061	41.8
KHVN	0970	4.393	33.5
WDAY	0970	3.786	27.4
-----	25%	-----	
KIXL	0970	3.450	24.0
*KMBZ	0980	3.248	22.0
KQAQ	0970	2.626	17.4
WFLA	0970	2.469	16.1

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
WGTK	0970	8.938	100.0
WMAY	0970	6.362	71.2
-----	50%	-----	
XEJ/A	0970	5.129	46.8
KSYL	0970	5.061	41.8
KHVN	0970	4.393	33.5
WDAY	0970	3.786	27.4
-----	25%	-----	
KIXL	0970	3.450	24.0
*KMBZ-PRO	0980	3.332	22.6
KQAQ	0970	2.626	17.4
WFLA	0970	2.469	16.1

Protected Station: WTEM, 980 kHz - WASHINGTON, DC, US [38-57-43 N, 076-58-24 W]

Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
ZYH-707-A	0980	5.436	100.0
WBGG	0970	4.123	75.8
-----	50%	-----	-----
WILK	0980	1.928	28.3
WOFX	0980	1.814	25.6
-----	25%	-----	-----
*KMBZ	0980	1.629	22.3
HJNL-A	0980	1.589	21.2
CKRU/A	0980	1.441	18.8
WHSR	0980	1.380	17.7
WNTF	0990	1.345	17.0
HOR 57-A	0980	1.327	16.5
WRNE	0980	1.257	15.4

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
ZYH-707-A	0980	5.436	100.0
WBGG	0970	4.123	75.8
-----	50%	-----	-----
WILK	0980	1.928	28.3
WOFX	0980	1.814	25.6
-----	25%	-----	-----
HJNL-A	0980	1.589	21.7
*KMBZ-PRO	0980	1.540	20.6
CKRU/A	0980	1.441	18.8
WHSR	0980	1.380	17.7
WNTF	0990	1.345	17.0
HOR 57-A	0980	1.327	16.6
WRNE	0980	1.257	15.5

Protected Station: WYFN, 980 kHz - NASHVILLE, TN, US [36-12-25 N, 086-40-25 W]

Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
WTEM	0980	5.740	100.0
*KMBZ	0980	5.584	97.3
ZYH-707-A	0980	5.143	64.2
-----	50%	-----	-----
WITY	0980	4.412	46.4
WGTK	0970	3.975	37.9
KSGM	0980	3.878	34.6
KQUE	0980	3.297	27.8
WTOT	0980	3.165	25.7
-----	25%	-----	-----
WAAV	0980	3.050	24.0
WILK	0980	2.871	21.9
WCUB	0980	2.478	18.5
WONE	0980	2.208	16.2
WRNE	0980	2.172	15.7

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
WTEM	0980	5.740	100.0
ZYH-707-A	0980	5.143	89.6
WITY	0980	4.412	57.2
-----	50%	-----	-----
WGTK	0970	3.975	44.8
KSGM	0980	3.878	39.9
*KMBZ-PRO	0980	3.477	33.2
KQUE	0980	3.297	29.9
WTOT	0980	3.165	27.5
WAAV	0980	3.050	25.5
-----	25%	-----	-----
WILK	0980	2.871	23.3
WCUB	0980	2.478	19.6
WONE	0980	2.208	17.1
WRNE	0980	2.172	16.6

Protected Station: XENR/A, 980 kHz - NUEVA ROSITA, CI, MX [27-56-41 N, 101-14-04 W]

Standard: Mexican [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
-----			
*KMBZ	0980	7.897	100.0
XEFF/A	0980	7.204	91.2
XEOT/A	0980	6.349	59.4
-----	50%	-----	
KQUE	0980	6.096	49.0
XEDCH/A	0980	5.287	38.2
WYFN	0980	5.216	35.2
XEXT/A	0980	4.980	31.7
XETU1/A	0980	4.973	30.2
-----	25%	-----	
XEFF1/A	0980	3.324	19.3
WRNE	0980	3.097	17.7

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
-----			
XEFF/A	0980	7.204	100.0
*KMBZ-PRO	0980	6.470	89.8
XEOT/A	0980	6.349	65.6
KQUE	0980	6.096	52.7
-----	50%	-----	
XEDCH/A	0980	5.287	40.4
WYFN	0980	5.216	37.0
XEXT/A	0980	4.980	33.1
XETU1/A	0980	4.973	31.4
-----	25%	-----	
XEFF1/A	0980	3.324	20.0
WRNE	0980	3.097	18.3

Protected Station: XENVA2/A, 980 kHz - OJINAGA, CH, MX [29-33-18 N, 104-24-07 W]

Standard: Mexican [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
-----			
*KMBZ	0980	7.949	100.0
XEDCH/A	0980	6.654	83.7
XEFF/A	0980	5.677	54.8
-----	50%	-----	
XEOT/A	0980	5.516	46.7
XENR/A	0980	5.479	42.0
KFWB	0980	5.013	35.4
KQUE	0980	4.706	31.4
XEXT/A	0980	4.420	28.1
-----	25%	-----	
WYFN	0980	3.521	21.6
XETU1/A	0980	3.149	18.8
XEKE/A	0980	3.105	18.3
KSVC	0980	2.937	17.0
KMIN	0980	2.687	15.3

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
-----			
XEDCH/A	0980	6.654	100.0
*KMBZ-PRO	0980	5.972	89.8
XEFF/A	0980	5.677	63.5
XEOT/A	0980	5.516	52.1
-----	50%	-----	
XENR/A	0980	5.479	45.9
KFWB	0980	5.013	38.2
KQUE	0980	4.706	33.5
XEXT/A	0980	4.420	29.8
-----	25%	-----	
WYFN	0980	3.521	22.8
XETU1/A	0980	3.149	19.8
XEKE/A	0980	3.105	19.2
KSVC	0980	2.937	17.8
KMIN	0980	2.687	16.1
XEFF1/A	0980	2.579	15.2

Protected Station: XEDCH/A, 980 kHz - CD.DELICIAS, CH, MX [28-12-59 N, 105-29-26 W]

Standard: Mexican [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
XEFF/A	0980	6.070	100.0
XEOT/A	0980	5.934	97.8
*KMBZ	0980	5.617	66.2
XEXT/A	0980	5.344	52.5
-----	50%	-----	
KFWB	0980	5.237	45.6
XENR/A	0980	5.173	41.0
KQUE	0980	4.518	33.1
-----	25%	-----	
XEKE/A	0980	3.566	24.8
XETU1/A	0980	3.295	22.2
XENVA2/A	0980	2.965	19.5
XEFF1/A	0980	2.758	17.8
WYFN	0980	2.727	17.4
KSVC	0980	2.670	16.7

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
XEFF/A	0980	6.070	100.0
XEOT/A	0980	5.934	97.8
XEXT/A	0980	5.344	63.0
KFWB	0980	5.237	52.2
-----	50%	-----	
XENR/A	0980	5.173	45.7
KQUE	0980	4.518	36.3
*KMBZ-PRO	0980	4.202	31.7
XEKE/A	0980	3.566	25.7
-----	25%	-----	
XETU1/A	0980	3.295	23.0
XENVA2/A	0980	2.965	20.2
XEFF1/A	0980	2.758	18.4
WYFN	0980	2.727	17.9
KSVC	0980	2.670	17.2
KMIN	0980	2.362	15.0

Protected Station: KGLN, 980 kHz - GLENWOOD SPRINGS, CO, US [39-33-10 N, 107-19-48 W]

Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
*KMBZ	0980	8.436	100.0
KSVC	0980	7.919	93.9
-----	50%	-----	
KFWB	0980	5.655	48.9
KSPZ	0980	5.055	39.3
CKNW/A	0980	3.463	25.0
-----	25%	-----	
KMIN	0980	3.245	22.8
ZYH-707-A	0980	3.031	20.7
KQUE	0980	2.985	20.0
CJME/	0980	2.902	19.0

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
KSVC	0980	7.919	100.0
KFWB	0980	5.655	71.4
*KMBZ-PRO	0980	5.086	52.3
-----	50%	-----	
KSPZ	0980	5.055	46.0
CKNW/A	0980	3.463	28.6
KMIN	0980	3.245	25.8
-----	25%	-----	
ZYH-707-A	0980	3.031	23.3
KQUE	0980	2.985	22.4
CJME/	0980	2.902	21.2

Protected Station: KSPZ, 980 kHz - AMMON, ID, US [43-31-23 N, 112-00-36 W]  
Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
CKNW/A	0980	7.600	100.0
KDSJ	0980	7.006	92.2
KFWB	0980	5.199	50.3
-----	50%	-----	-----
KSVC	0980	5.164	44.6
CJME/	0980	4.351	34.3
*KMBZ	0980	4.151	31.0
KTCR	0980	4.072	29.0
-----	25%	-----	-----
KGLN	0980	2.563	17.5
KBUL	0970	2.395	16.2
ZYH-707-A	0980	2.390	15.9

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
CKNW/A	0980	7.600	100.0
KDSJ	0980	7.006	92.2
KFWB	0980	5.199	50.3
-----	50%	-----	-----
KSVC	0980	5.164	44.6
CJME/	0980	4.351	34.3
KTCR	0980	4.072	30.4
-----	25%	-----	-----
*KMBZ-PRO	0980	2.856	20.4
KGLN	0980	2.563	17.9
KBUL	0970	2.395	16.5
ZYH-707-A	0980	2.390	16.2

Protected Station: KFWB, 980 kHz - LOS ANGELES, CA, US [34-04-11 N, 118-11-35 W]

Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
ZYH-707-A	0980	2.857	100.0
*KMBZ	0980	2.796	97.9
XECL/A	0990	2.526	63.2
KHTY	0970	2.470	52.2
-----	50%	-----	-----
KTCR	0980	1.483	27.8
KMIN	0980	1.390	25.1
-----	25%	-----	-----
CKNW/A	0980	1.341	23.5
XEDCH/A	0980	1.265	21.6
CJME/	0980	1.234	20.6
KSVC	0980	1.229	20.1
KNWZ	0970	1.181	18.9
XEKE/A	0980	1.161	18.3
XEXT/A	0980	1.122	17.4
KDSJ	0980	1.064	16.2
KDBV	0980	1.051	15.8
KGLN	0980	1.050	15.6
XEFF/A	0980	1.041	15.3

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
ZYH-707-A	0980	2.857	100.0
XECL/A	0990	2.526	88.4
KHTY	0970	2.470	64.8
-----	50%	-----	-----
*KMBZ-PRO	0980	1.602	35.3
KTCR	0980	1.483	30.8
KMIN	0980	1.390	27.6
CKNW/A	0980	1.341	25.7
-----	25%	-----	-----
XEDCH/A	0980	1.265	23.4
CJME/	0980	1.234	22.3
KSVC	0980	1.229	21.6
KNWZ	0970	1.181	20.3
XEKE/A	0980	1.161	19.6
XEXT/A	0980	1.122	18.6
KDSJ	0980	1.064	17.3
KDBV	0980	1.051	16.9
KGLN	0980	1.050	16.6
XEFF/A	0980	1.041	16.2

Protected Station: CFPL/ , 980 kHz - LONDON, ON, CA [42-53-29 N, 081-12-02 W]  
Standard: Canadian (Figure 4) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
WTEM	0980	14.323	100.0
WOFX	0980	7.720	53.9
-----	50%	-----	
CHRF/A	0980	7.543	46.4
WITY	0980	5.475	30.5
WILK	0980	5.338	28.5
WONE	0980	5.254	26.9
-----	25%	-----	
*KMBZ	0980	3.815	18.9
CKRU/A	0980	3.616	17.6
KSGM	0980	3.563	17.1
WCUB	0980	3.372	15.9
WYFN	0980	3.371	15.7

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
WTEM	0980	14.323	100.0
WOFX	0980	7.720	53.9
-----	50%	-----	
CHRF/A	0980	7.543	46.4
WITY	0980	5.475	30.5
WILK	0980	5.338	28.5
WONE	0980	5.254	26.9
-----	25%	-----	
CKRU/A	0980	3.616	17.9
KSGM	0980	3.563	17.4
WCUB	0980	3.372	16.2
WYFN	0980	3.371	16.0
*KMBZ-PRO	0980	3.258	15.3
WAAV	0980	3.249	15.0

Protected Station: KSVC, 980 kHz - RICHFIELD, UT, US [38-45-40 N, 112-04-35 W]

Standard: FCC Rules (1992 Skywave Propagation Model) [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
KFWB	0980	10.544	100.0
KSPZ	0980	9.428	89.4
-----	50%	-----	
*KMBZ	0980	4.899	34.6
KGLN	0980	4.002	26.7
-----	25%	-----	
CKNW/A	0980	3.488	22.5
KMIN	0980	2.872	18.1
ZYH-707-A	0980	2.819	17.5
KDSJ	0980	2.643	16.1

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
KFWB	0980	10.544	100.0
KSPZ	0980	9.428	89.4
-----	50%	-----	
KGLN	0980	4.002	28.3
-----	25%	-----	
CKNW/A	0980	3.488	23.7
*KMBZ-PRO	0980	2.905	19.2
KMIN	0980	2.872	18.7
ZYH-707-A	0980	2.819	18.0
KDSJ	0980	2.643	16.6

Protected Station: XEOT/A, 980 kHz - SAN PEDRO DE LAS COL, CI, MX [25-45-24 N, 102-59-01 W]  
Standard: Mexican [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
XEFF/A	0980	7.833	100.0
XEXT/A	0980	6.775	86.5
XENR/A	0980	5.796	56.0
-----	50%	-----	
KQUE	0980	5.690	47.9
XEDCH/A	0980	5.534	42.1
XETU1/A	0980	5.374	37.6
*KMBZ	0980	4.473	29.3
-----	25%	-----	
XEFF1/A	0980	3.729	23.5
WYFN	0980	3.140	19.2
XEQS/A	0980	3.049	18.3
XELC/A	0980	2.956	17.5
XEKE/A	0980	2.852	16.6
XEMAC/A	0980	2.701	15.5

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
XEFF/A	0980	7.833	100.0
XEXT/A	0980	6.775	86.5
XENR/A	0980	5.796	56.0
-----	50%	-----	
KQUE	0980	5.690	47.9
XEDCH/A	0980	5.534	42.1
XETU1/A	0980	5.374	37.6
-----	25%	-----	
XEFF1/A	0980	3.729	24.4
*KMBZ-PRO	0980	3.593	22.9
WYFN	0980	3.140	19.5
XEQS/A	0980	3.049	18.6
XELC/A	0980	2.956	17.7
XEKE/A	0980	2.852	16.8
XEMAC/A	0980	2.701	15.7

Protected Station: XETU1/A, 980 kHz - TAMPICO, TA, MX [22-14-17 N, 097-51-52 W]  
Standard: Mexican [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
XEFF/A	0980	7.934	100.0
XEXT/A	0980	5.455	68.8
-----	50%	-----	
XEOT/A	0980	4.613	47.9
KQUE	0980	4.544	42.6
XENR/A	0980	3.902	33.6
HRZC 2-A	0980	3.865	31.6
XEFF1/A	0980	3.755	29.2
WYFN	0980	3.373	25.2
-----	25%	-----	
XELC/A	0980	3.303	23.9
WRNE	0980	3.296	23.2
XEQG/A	0980	3.154	21.7
XE/A	0980	3.063	20.6
XEMAC/A	0980	2.699	17.7
XEDCH/A	0980	2.653	17.2
*KMBZ	0980	2.600	16.6
XEQS/A	0980	2.532	15.9

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
XEFF/A	0980	7.934	100.0
XEXT/A	0980	5.455	68.8
-----	50%	-----	
XEOT/A	0980	4.613	47.9
KQUE	0980	4.544	42.6
XENR/A	0980	3.902	33.6
HRZC 2-A	0980	3.865	31.6
XEFF1/A	0980	3.755	29.2
WYFN	0980	3.373	25.2
-----	25%	-----	
XELC/A	0980	3.303	23.9
WRNE	0980	3.296	23.2
XEQG/A	0980	3.154	21.7
XE/A	0980	3.063	20.6
XEMAC/A	0980	2.699	17.7
XEDCH/A	0980	2.653	17.2
XEQS/A	0980	2.532	16.2
*KMBZ-PRO	0980	2.439	15.4

Protected Station: XEFF1/A, 980 kHz - MATEHUALA, SL, MX [23-38-41 N, 100-38-26 W]

Standard: Mexican [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
XETU1/A	0980	7.340	100.0
XEXT/A	0980	6.839	93.2
KQUE	0980	6.513	64.9
XEOT/A	0980	6.150	51.4
-----	50%	-----	
XENR/A	0980	4.879	36.3
XEDCH/A	0980	4.081	28.5
-----	25%	-----	
XELC/A	0980	3.575	24.0
*KMBZ	0980	3.232	21.1
WYFN	0980	3.206	20.5
XEQS/A	0980	3.181	19.9
XEMAC/A	0980	3.099	19.0
XEQG/A	0980	3.066	18.5
WRNE	0980	2.530	15.0

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
XETU1/A	0980	7.340	100.0
XEXT/A	0980	6.839	93.2
KQUE	0980	6.513	64.9
XEOT/A	0980	6.150	51.4
-----	50%	-----	
XENR/A	0980	4.879	36.3
XEDCH/A	0980	4.081	28.5
-----	25%	-----	
XELC/A	0980	3.575	24.0
WYFN	0980	3.206	21.0
XEQS/A	0980	3.181	20.3
XEMAC/A	0980	3.099	19.4
XEQG/A	0980	3.066	18.9
*KMBZ-PRO	0980	2.864	17.3
WRNE	0980	2.530	15.1

Protected Station: XEFF/A, 980 kHz - EJIDO SAN JOSE DE IP, SL, MX [23-31-53 N, 100-37-23 W]

Standard: Mexican [ 10% ]

Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
XETU1/A	0980	7.398	100.0
XEXT/A	0980	6.868	92.8
KQUE	0980	6.406	63.5
XEOT/A	0980	6.075	50.8
-----	50%	-----	
XENR/A	0980	4.824	36.0
XEDCH/A	0980	4.027	28.3
-----	25%	-----	
XELC/A	0980	3.617	24.4
XEQS/A	0980	3.184	20.9
*KMBZ	0980	3.166	20.3
WYFN	0980	3.161	19.9
XEMAC/A	0980	3.126	19.3
XEQG/A	0980	3.105	18.8

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
XETU1/A	0980	7.398	100.0
XEXT/A	0980	6.868	92.8
KQUE	0980	6.406	63.5
XEOT/A	0980	6.075	50.8
-----	50%	-----	
XENR/A	0980	4.824	36.0
XEDCH/A	0980	4.027	28.3
-----	25%	-----	
XELC/A	0980	3.617	24.4
XEQS/A	0980	3.184	20.9
WYFN	0980	3.161	20.3
XEMAC/A	0980	3.126	19.7
XEQG/A	0980	3.105	19.2
*KMBZ-PRO	0980	2.808	17.0



Protected Station: XEKE/A, 980 kHz - NAVOJOA, SO, MX [27-04-29 N, 109-28-06 W]

Standard: Mexican [ 10% ]

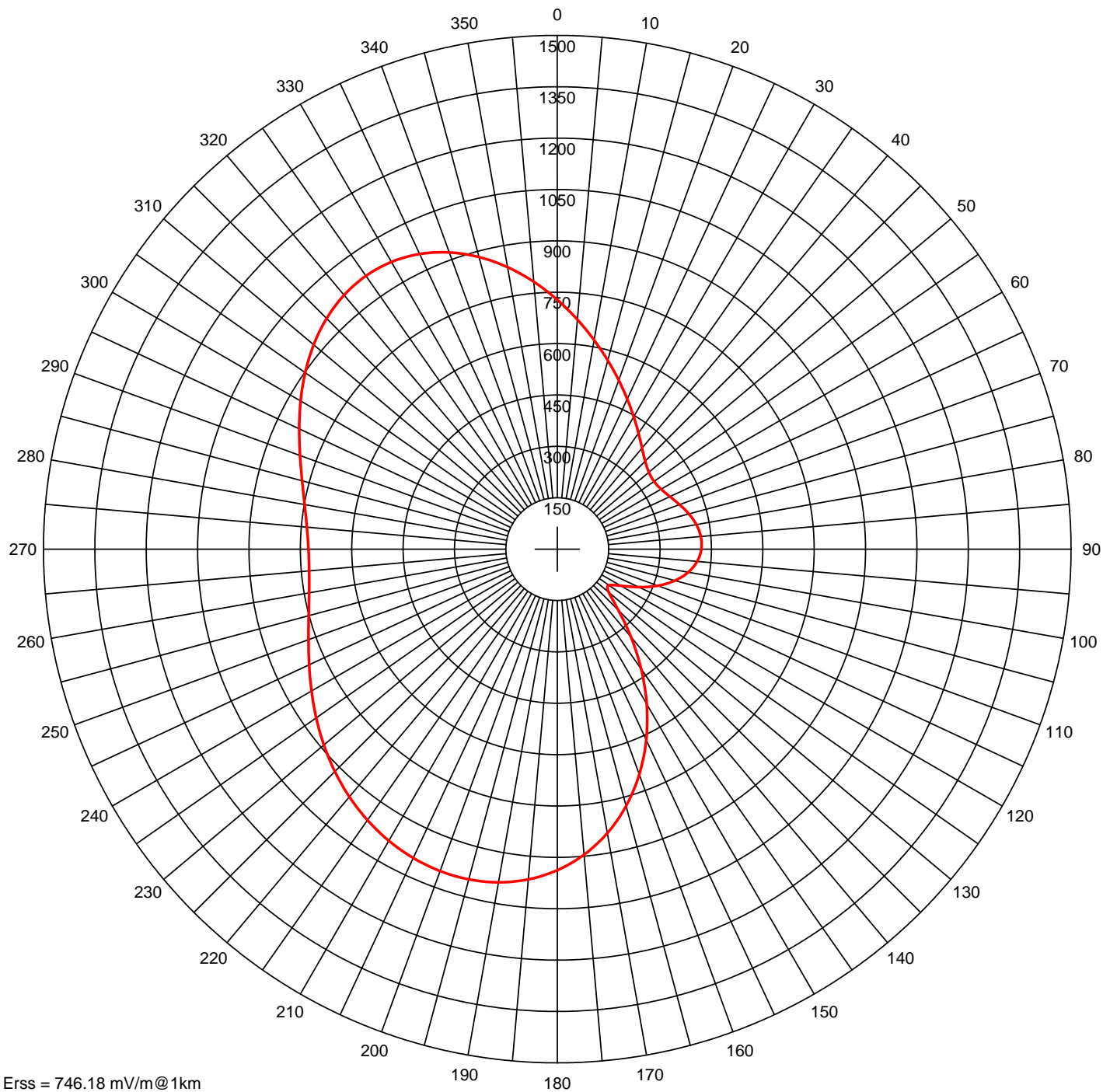
Current:

Call	Freq (kHz)	Limit (mV/m)	(%)
KFWB	0980	7.826	100.0
XEDCH/A	0980	5.320	68.0
XEXT/A	0980	5.151	54.4
-----	50%	-----	
XEOT/A	0980	4.560	42.3
XEFF/A	0980	4.326	37.0
XENR/A	0980	3.451	27.7
-----	25%	-----	
*KMBZ	0980	2.916	22.5
KSVC	0980	2.732	20.6
KQUE	0980	2.347	17.3
XETU1/A	0980	2.080	15.1

Proposed:

Call	Freq (kHz)	Limit (mV/m)	(%)
KFWB	0980	7.826	100.0
XEDCH/A	0980	5.320	68.0
XEXT/A	0980	5.151	54.4
-----	50%	-----	
XEOT/A	0980	4.560	42.3
XEFF/A	0980	4.326	37.0
XENR/A	0980	3.451	27.7
-----	25%	-----	
KSVC	0980	2.732	21.1
KQUE	0980	2.347	17.7
*KMBZ-PRO	0980	2.085	15.5
XETU1/A	0980	2.080	15.3

# AM Directional Pattern



Erss = 746.18 mV/m@1km  
 Theo RMS: 678.298 mV/m@1km  
 Std RMS: 712.6 mV/m@1km  
 Q: 22.361 mV/m@1km

Standard Horizontal Plane Pattern

— Pattern (mV/m @ 1km)  
 — Pattern X10

#	Field Ratio	Phase (deg)	Spacing (deg)	Orient (deg)	Height (deg)	Ref Switch	TL Switch	A (deg)	B (deg)	C (deg)	D (deg)
1	1.000	0.0	0.0	0.0	116.1	0	0	0.0	0.0	0.0	0.0
2	0.530	61.0	175.1	73.4	116.1	0	0	0.0	0.0	0.0	0.0
3	0.275	45.0	174.1	118.0	116.1	0	0	0.0	0.0	0.0	0.0

Call: KMBZ  
 Freq: 980 kHz  
 KANSAS CITY, MO, US  
 Hours: N  
 Lat: 39-02-25 N  
 Lng: 094-30-30 W  
 Power: 5.0 kW  
 Theo RMS: 678.30 mV/m@1km  
 @ 5.0 kW

# Tabulation of Directional Antenna Pattern KMBZ-AM Kansas City, MO

Call: KMBZ  
 Freq: 980 kHz  
 KANSAS CITY, MO, US  
 Hours: N  
 Lat: 39-02-25 N  
 Lng: 094-30-30 W  
 Power: 5.0 kW  
 Theo RMS: 678.30 mV/m @ 1km @ 5.0 kW

#	Field Ratio	Phase (deg)	Spacing (deg)	Orient (deg)	Height (deg)	Ref Swch	TL Swch	A (deg)	B (deg)	C (deg)	D (deg)
1	1.000	0.0	0.0	0.0	116.1	0	0	0.0	0.0	0.0	0.0
2	0.530	61.0	175.1	73.4	116.1	0	0	0.0	0.0	0.0	0.0
3	0.275	45.0	174.1	118.0	116.1	0	0	0.0	0.0	0.0	0.0

## Standard Horizontal Plane Pattern

Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)
0.0	728.15	120.0	214.04	240.0	828.43
5.0	672.86	125.0	184.16	245.0	799.18
10.0	619.71	130.0	196.34	250.0	772.96
15.0	570.13	135.0	252.64	255.0	751.34
20.0	524.76	140.0	334.54	260.0	735.72
25.0	483.61	145.0	427.24	265.0	727.18
30.0	446.47	150.0	522.32	270.0	726.43
35.0	413.38	155.0	614.51	275.0	733.73
40.0	385.08	160.0	700.12	280.0	748.87
45.0	363.06	165.0	776.53	285.0	771.08
50.0	349.20	170.0	842.04	290.0	799.11
55.0	344.88	175.0	895.78	295.0	831.19
60.0	350.07	180.0	937.61	300.0	865.11
65.0	362.88	185.0	968.00	305.0	898.39
70.0	380.02	190.0	987.83	310.0	928.36
75.0	397.72	195.0	998.19	315.0	952.43
80.0	412.32	200.0	1000.22	320.0	968.25
85.0	420.75	205.0	994.96	325.0	973.92
90.0	420.58	210.0	983.34	330.0	968.23
95.0	410.11	215.0	966.15	335.0	950.74
100.0	388.40	220.0	944.18	340.0	921.88
105.0	355.39	225.0	918.29	345.0	882.93
110.0	312.31	230.0	889.51	350.0	835.91
115.0	262.54	235.0	859.07	355.0	783.39

Standard Pattern Calculated at 5.0 Degrees Elevation					
Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)
0.0	725.02	120.0	208.84	240.0	826.71
5.0	670.14	125.0	180.99	245.0	797.96
10.0	617.26	130.0	195.28	250.0	772.18
15.0	567.78	135.0	252.44	255.0	750.94
20.0	522.36	140.0	334.10	260.0	735.59
25.0	481.03	145.0	426.07	265.0	727.20
30.0	443.60	150.0	520.25	270.0	726.46
35.0	410.16	155.0	611.53	275.0	733.62
40.0	381.43	160.0	696.30	280.0	748.47
45.0	358.91	165.0	772.01	285.0	770.27
50.0	344.47	170.0	836.98	290.0	797.76
55.0	339.52	175.0	890.36	295.0	829.21
60.0	344.05	180.0	931.99	300.0	862.46
65.0	356.22	185.0	962.33	305.0	895.05
70.0	372.78	190.0	982.22	310.0	924.37
75.0	389.97	195.0	992.75	315.0	947.86
80.0	404.17	200.0	995.02	320.0	963.23
85.0	412.31	205.0	990.07	325.0	968.62
90.0	411.99	210.0	978.78	330.0	962.83
95.0	401.53	215.0	961.98	335.0	945.42
100.0	379.99	220.0	940.44	340.0	916.81
105.0	347.36	225.0	915.02	345.0	878.26
110.0	304.88	230.0	886.74	350.0	831.75
115.0	255.99	235.0	856.83	355.0	779.76

Standard Pattern Calculated at 10.0 Degrees Elevation					
Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)
0.0	715.67	120.0	194.03	240.0	821.35
5.0	662.02	125.0	172.39	245.0	794.06
10.0	609.97	130.0	192.74	250.0	769.60
15.0	560.87	135.0	252.12	255.0	749.44
20.0	515.36	140.0	332.92	260.0	734.88
25.0	473.56	145.0	422.67	265.0	726.91
30.0	435.37	150.0	514.16	270.0	726.19
35.0	400.94	155.0	602.73	275.0	732.95
40.0	371.01	160.0	685.03	280.0	746.98
45.0	347.04	165.0	758.66	285.0	767.55
50.0	330.91	170.0	822.04	290.0	793.48
55.0	324.06	175.0	874.31	295.0	823.11
60.0	326.61	180.0	915.33	300.0	854.39
65.0	336.86	185.0	945.49	305.0	884.98
70.0	351.67	190.0	965.58	310.0	912.40
75.0	367.34	195.0	976.57	315.0	934.25
80.0	380.33	200.0	979.53	320.0	948.32
85.0	387.62	205.0	975.43	325.0	952.88
90.0	386.86	210.0	965.15	330.0	946.79
95.0	376.42	215.0	949.48	335.0	929.62
100.0	355.43	220.0	929.19	340.0	901.76
105.0	323.92	225.0	905.14	345.0	864.39
110.0	283.24	230.0	878.32	350.0	819.33
115.0	237.04	235.0	849.94	355.0	768.91

Standard Pattern Calculated at 15.0 Degrees Elevation					
Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)
0.0	700.19	120.0	172.15	240.0	811.80
5.0	648.58	125.0	161.14	245.0	786.81
10.0	598.00	130.0	190.50	250.0	764.41
15.0	549.68	135.0	252.41	255.0	745.96
20.0	504.28	140.0	331.33	260.0	732.62
25.0	461.98	145.0	417.30	265.0	725.31
30.0	422.82	150.0	504.38	270.0	724.61
35.0	387.02	155.0	588.56	275.0	730.74
40.0	355.33	160.0	666.86	280.0	743.47
45.0	329.15	165.0	737.12	285.0	762.13
50.0	310.31	170.0	797.86	290.0	785.63
55.0	300.34	175.0	848.31	295.0	812.41
60.0	299.59	180.0	888.26	300.0	840.61
65.0	306.61	185.0	918.05	305.0	868.08
70.0	318.49	190.0	938.34	310.0	892.55
75.0	331.66	195.0	950.01	315.0	911.83
80.0	342.66	200.0	954.01	320.0	923.90
85.0	348.56	205.0	951.24	325.0	927.19
90.0	347.10	210.0	942.52	330.0	920.63
95.0	336.73	215.0	928.63	335.0	903.86
100.0	316.66	220.0	910.33	340.0	877.20
105.0	287.04	225.0	888.45	345.0	841.68
110.0	249.39	230.0	863.96	350.0	798.94
115.0	207.85	235.0	837.98	355.0	751.02

Standard Pattern Calculated at 20.0 Degrees Elevation					
Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)
0.0	678.77	120.0	147.85	240.0	797.26
5.0	629.98	125.0	151.66	245.0	775.21
10.0	581.57	130.0	190.83	250.0	755.44
15.0	534.64	135.0	254.13	255.0	739.15
20.0	489.82	140.0	329.69	260.0	727.37
25.0	447.37	145.0	410.29	265.0	720.89
30.0	407.44	150.0	491.38	270.0	720.22
35.0	370.31	155.0	569.65	275.0	725.53
40.0	336.69	160.0	642.59	280.0	736.60
45.0	307.88	165.0	708.30	285.0	752.82
50.0	285.58	170.0	765.46	290.0	773.21
55.0	271.43	175.0	813.34	295.0	796.39
60.0	266.07	180.0	851.73	300.0	820.69
65.0	268.52	185.0	880.86	305.0	844.21
70.0	276.25	190.0	901.26	310.0	864.96
75.0	285.91	195.0	913.68	315.0	881.00
80.0	294.17	200.0	918.92	320.0	890.57
85.0	298.20	205.0	917.80	325.0	892.27
90.0	295.82	210.0	911.07	330.0	885.18
95.0	285.59	215.0	899.48	335.0	868.95
100.0	266.85	220.0	883.75	340.0	843.85
105.0	239.93	225.0	864.69	345.0	810.74
110.0	206.72	230.0	843.20	350.0	771.00
115.0	172.22	235.0	820.34	355.0	726.38

Standard Pattern Calculated at 25.0 Degrees Elevation					
Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)
0.0	651.66	120.0	128.39	240.0	776.74
5.0	606.43	125.0	148.88	245.0	758.05
10.0	560.95	130.0	195.44	250.0	741.28
15.0	516.17	135.0	257.74	255.0	727.45
20.0	472.69	140.0	328.13	260.0	717.42
25.0	430.83	145.0	401.87	265.0	711.87
30.0	390.79	150.0	475.60	270.0	711.22
35.0	352.88	155.0	546.73	275.0	715.58
40.0	317.74	160.0	613.17	280.0	724.77
45.0	286.45	165.0	673.32	285.0	738.24
50.0	260.51	170.0	726.04	290.0	755.11
55.0	241.51	175.0	770.66	295.0	774.23
60.0	230.45	180.0	806.95	300.0	794.14
65.0	227.02	185.0	835.04	305.0	813.24
70.0	229.30	190.0	855.32	310.0	829.84
75.0	234.37	195.0	868.39	315.0	842.27
80.0	239.09	200.0	874.92	320.0	849.07
85.0	240.75	205.0	875.60	325.0	849.05
90.0	237.27	210.0	871.12	330.0	841.42
95.0	227.32	215.0	862.15	335.0	825.87
100.0	210.42	220.0	849.38	340.0	802.61
105.0	187.24	225.0	833.57	345.0	772.33
110.0	160.39	230.0	815.55	350.0	736.12
115.0	136.44	235.0	796.27	355.0	695.38

Standard Pattern Calculated at 30.0 Degrees Elevation					
Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)
0.0	619.22	120.0	122.17	240.0	749.30
5.0	578.16	125.0	155.53	245.0	734.14
10.0	536.36	130.0	204.54	250.0	720.52
15.0	494.61	135.0	262.92	255.0	709.25
20.0	453.44	140.0	326.44	260.0	701.05
25.0	413.20	145.0	392.07	265.0	696.46
30.0	374.11	150.0	457.41	270.0	695.81
35.0	336.50	155.0	520.45	275.0	699.18
40.0	300.87	160.0	579.54	280.0	706.39
45.0	268.02	165.0	633.35	285.0	716.99
50.0	239.13	170.0	680.92	290.0	730.24
55.0	215.55	175.0	721.65	295.0	745.15
60.0	198.42	180.0	755.30	300.0	760.56
65.0	188.12	185.0	781.89	305.0	775.12
70.0	183.67	190.0	801.71	310.0	787.47
75.0	182.92	195.0	815.19	315.0	796.26
80.0	183.19	200.0	822.87	320.0	800.28
85.0	181.92	205.0	825.32	325.0	798.57
90.0	177.17	210.0	823.13	330.0	790.49
95.0	167.77	215.0	816.91	335.0	775.77
100.0	153.57	220.0	807.27	340.0	754.54
105.0	135.88	225.0	794.92	345.0	727.33
110.0	118.75	230.0	780.58	350.0	694.97
115.0	110.67	235.0	765.08	355.0	658.54

Standard Pattern Calculated at 35.0 Degrees Elevation					
Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)
0.0	581.88	120.0	132.25	240.0	714.18
5.0	545.47	125.0	170.11	245.0	702.50
10.0	508.02	130.0	216.55	250.0	691.95
15.0	470.14	135.0	268.60	255.0	683.18
20.0	432.30	140.0	323.94	260.0	676.76
25.0	394.84	145.0	380.62	265.0	673.09
30.0	358.02	150.0	436.92	270.0	672.43
35.0	322.12	155.0	491.32	275.0	674.84
40.0	287.52	160.0	542.53	280.0	680.14
45.0	254.78	165.0	589.48	285.0	687.96
50.0	224.68	170.0	631.38	290.0	697.70
55.0	198.16	175.0	667.70	295.0	708.59
60.0	176.17	180.0	698.19	300.0	719.68
65.0	159.38	185.0	722.81	305.0	729.94
70.0	147.72	190.0	741.74	310.0	738.28
75.0	140.19	195.0	755.28	315.0	743.64
80.0	135.01	200.0	763.82	320.0	745.11
85.0	130.21	205.0	767.83	325.0	741.91
90.0	124.17	210.0	767.78	330.0	733.54
95.0	116.10	215.0	764.21	335.0	719.79
100.0	106.52	220.0	757.66	340.0	700.72
105.0	98.02	225.0	748.71	345.0	676.71
110.0	95.95	230.0	738.02	350.0	648.36
115.0	106.63	235.0	726.27	355.0	616.46

Standard Pattern Calculated at 40.0 Degrees Elevation					
Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)
0.0	540.15	120.0	152.67	240.0	670.98
5.0	508.71	125.0	188.22	245.0	662.51
10.0	476.09	130.0	228.86	250.0	654.79
15.0	442.78	135.0	273.12	255.0	648.33
20.0	409.18	140.0	319.59	260.0	643.53
25.0	375.61	145.0	366.98	265.0	640.71
30.0	342.32	150.0	414.04	270.0	640.04
35.0	309.58	155.0	459.65	275.0	641.56
40.0	277.68	160.0	502.79	280.0	645.12
45.0	247.02	165.0	542.65	285.0	650.43
50.0	218.08	170.0	578.57	290.0	657.02
55.0	191.44	175.0	610.11	295.0	664.29
60.0	167.70	180.0	637.02	300.0	671.54
65.0	147.39	185.0	659.24	305.0	677.98
70.0	130.77	190.0	676.82	310.0	682.80
75.0	117.72	195.0	689.98	315.0	685.21
80.0	107.68	200.0	698.99	320.0	684.52
85.0	99.84	205.0	704.19	325.0	680.17
90.0	93.56	210.0	705.97	330.0	671.75
95.0	88.97	215.0	704.77	335.0	659.11
100.0	87.36	220.0	701.02	340.0	642.27
105.0	91.23	225.0	695.22	345.0	621.48
110.0	103.05	230.0	687.91	350.0	597.16
115.0	123.78	235.0	679.63	355.0	569.84

Standard Pattern Calculated at 45.0 Degrees Elevation					
Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)
0.0	494.61	120.0	175.05	240.0	619.73
5.0	468.25	125.0	205.14	245.0	614.06
10.0	440.74	130.0	238.62	250.0	608.81
15.0	412.47	135.0	274.61	255.0	604.34
20.0	383.76	140.0	312.19	260.0	600.95
25.0	354.90	145.0	350.46	265.0	598.87
30.0	326.14	150.0	388.52	270.0	598.20
35.0	297.72	155.0	425.54	275.0	598.97
40.0	269.92	160.0	460.77	280.0	601.06
45.0	243.02	165.0	493.58	285.0	604.24
50.0	217.37	170.0	523.46	290.0	608.18
55.0	193.35	175.0	550.04	295.0	612.43
60.0	171.36	180.0	573.09	300.0	616.50
65.0	151.79	185.0	592.53	305.0	619.80
70.0	134.94	190.0	608.35	310.0	621.77
75.0	121.06	195.0	620.68	315.0	621.84
80.0	110.27	200.0	629.69	320.0	619.52
85.0	102.70	205.0	635.63	325.0	614.42
90.0	98.61	210.0	638.80	330.0	606.24
95.0	98.48	215.0	639.51	335.0	594.85
100.0	103.01	220.0	638.13	340.0	580.27
105.0	112.84	225.0	635.04	345.0	562.64
110.0	128.29	230.0	630.65	350.0	542.24
115.0	149.20	235.0	625.40	355.0	519.42



Standard Pattern Calculated at 50.0 Degrees Elevation					
Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)
0.0	445.88	120.0	193.33	240.0	560.99
5.0	424.50	125.0	217.14	245.0	557.60
10.0	402.14	130.0	243.35	250.0	554.37
15.0	379.07	135.0	271.36	255.0	551.53
20.0	355.56	140.0	300.57	260.0	549.31
25.0	331.87	145.0	330.31	265.0	547.83
30.0	308.20	150.0	359.98	270.0	547.19
35.0	284.80	155.0	388.97	275.0	547.38
40.0	261.91	160.0	416.74	280.0	548.31
45.0	239.76	165.0	442.81	285.0	549.83
50.0	218.65	170.0	466.82	290.0	551.70
55.0	198.86	175.0	488.46	295.0	553.63
60.0	180.72	180.0	507.54	300.0	555.25
65.0	164.54	185.0	523.95	305.0	556.19
70.0	150.63	190.0	537.67	310.0	556.05
75.0	139.31	195.0	548.76	315.0	554.48
80.0	130.86	200.0	557.31	320.0	551.12
85.0	125.57	205.0	563.50	325.0	545.71
90.0	123.74	210.0	567.52	330.0	538.07
95.0	125.62	215.0	569.61	335.0	528.08
100.0	131.42	220.0	570.03	340.0	515.75
105.0	141.23	225.0	569.07	345.0	501.17
110.0	154.98	230.0	567.03	350.0	484.50
115.0	172.46	235.0	564.23	355.0	465.98

Standard Pattern Calculated at 55.0 Degrees Elevation					
Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)
0.0	394.58	120.0	203.89	240.0	495.79
5.0	377.91	125.0	221.71	245.0	494.13
10.0	360.48	130.0	241.23	250.0	492.43
15.0	342.50	135.0	262.05	255.0	490.85
20.0	324.15	140.0	283.74	260.0	489.51
25.0	305.65	145.0	305.89	265.0	488.53
30.0	287.19	150.0	328.05	270.0	487.93
35.0	268.97	155.0	349.83	275.0	487.72
40.0	251.19	160.0	370.83	280.0	487.84
45.0	234.06	165.0	390.73	285.0	488.18
50.0	217.81	170.0	409.25	290.0	488.60
55.0	202.68	175.0	426.16	295.0	488.89
60.0	188.91	180.0	441.32	300.0	488.83
65.0	176.76	185.0	454.61	305.0	488.19
70.0	166.47	190.0	466.01	310.0	486.71
75.0	158.29	195.0	475.52	315.0	484.17
80.0	152.45	200.0	483.20	320.0	480.35
85.0	149.15	205.0	489.15	325.0	475.08
90.0	148.56	210.0	493.49	330.0	468.25
95.0	150.81	215.0	496.37	335.0	459.78
100.0	155.94	220.0	497.99	340.0	449.67
105.0	163.95	225.0	498.53	345.0	437.98
110.0	174.74	230.0	498.20	350.0	424.79
115.0	188.14	235.0	497.22	355.0	410.27

Standard Pattern Calculated at 60.0 Degrees Elevation					
Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)	Azimuth (Deg)	Field (mV/m @1km)
0.0	341.28	120.0	204.77	240.0	425.58
5.0	328.91	125.0	217.35	245.0	425.10
10.0	316.00	130.0	231.10	250.0	424.46
15.0	302.70	135.0	245.77	255.0	423.75
20.0	289.17	140.0	261.06	260.0	423.06
25.0	275.55	145.0	276.72	265.0	422.44
30.0	261.99	150.0	292.46	270.0	421.92
35.0	248.65	155.0	308.01	275.0	421.49
40.0	235.69	160.0	323.11	280.0	421.12
45.0	223.28	165.0	337.56	285.0	420.74
50.0	211.59	170.0	351.16	290.0	420.27
55.0	200.79	175.0	363.74	295.0	419.58
60.0	191.06	180.0	375.20	300.0	418.55
65.0	182.57	185.0	385.44	305.0	417.04
70.0	175.50	190.0	394.43	310.0	414.91
75.0	170.01	195.0	402.16	315.0	412.02
80.0	166.23	200.0	408.64	320.0	408.25
85.0	164.30	205.0	413.92	325.0	403.51
90.0	164.29	210.0	418.08	330.0	397.72
95.0	166.27	215.0	421.21	335.0	390.85
100.0	170.24	220.0	423.42	340.0	382.90
105.0	176.18	225.0	424.83	345.0	373.89
110.0	184.00	230.0	425.57	350.0	363.89
115.0	193.59	235.0	425.78	355.0	352.98

## Statement of Engineer

This Engineering Report, relative to a change in facilities for KMBZ-AM has been prepared by the undersigned. All representations contained herein are true to the best of my knowledge. I am an experienced radio engineer whose qualifications are a matter of record with the Federal Communications Commission. I am an engineer in the firm of Hatfield and Dawson Consulting Engineers and am Registered as a Professional Engineer in the States of Washington and Oregon.

Signed this 7<sup>th</sup> day of July, 2014



Thomas S. Gorton, P.E.

Hatfield & Dawson Consulting Engineers