

JOB 113100
COMMUNITY OF LICENSE St. Louis, MO
APPLICANT International Institute of Metropolitan St. Louis

VER 1

CONSOLIDATED ENGINEERING EXHIBIT

FCC Form 318 - Section VI - LPFM Engineering, Tech Box

ENGINEERING STATEMENT
PROPOSED NEW LPFM STATION AT ST. LOUIS, MO
International Institute of Metropolitan St. Louis

SUMMARY:

The applicant seeks a new LPFM station. This proposal is fully spaced to all co-channel and first-adjacent stations. It is short-spaced to one or more second-adjacent stations. Contour protection is provided by the D/U method, in compliance with 73.807(e)(1). **See Exhibit 11.** A waiver of second-adjacent spacing is hereby requested.

PERTINENT SPECIFICATIONS NOT INCLUDED IN SECTION VI - TECH BOX:

HAAT:	66 meters
ERP:	21 watts
DATA SOURCE:	V-Soft FMCommander with HAAT Method 0(zero); FCC 30- Second Terrain
SUPPORT STRUCTURE:	Penthouse with pole on building

BROWN BROADCAST SERVICES
INCORPORATED

Michael D. Brown

3740 S.W. Comus St.

Portland, Oregon 97219-7418

503-245-6065

EXHIBIT 11 INTERFERENCE

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REFERENCE                                     CLASS = L1                                     DISPLAY DATES
38 35 31.0 N.                                Current Spacings to 2nd Adj.                DATA 11-08-13
90 14 39.0 W.                                Channel 275 - 102.9 MHz                    SEARCH 11-08-13
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Call	Channel	Location		Azi	Dist	FCC	Margin
KEZK-FM LIC	273C0	St. Louis	MO	254.5	7.34	84.0	-76.7
KLOU LIC	277C1	St. Louis	MO	253.6	7.34	73.0	-65.7
KLOU CP	277C1	St. Louis	MO	254.5	7.34	73.0	-65.7
KEZS-FM LIC	275C1	Cape Girardeau	MO	155.4	144.58	111.0	33.6

All separation margins include rounding

PROTECTED ZONES REPORT:

Protected zones report for NEW on channel 275L1 11-08-2013
 Lat. 38 35 31.0 Lng. 90 14 39.0, ERP= 0.021 kw, HAAT= 65.9M

 Facility is okay with respect to AM station towers.

Closest AM Facility is KSTL, ST. LOUIS, MO, L, ND1 at 66.3° at a distance of 6.9 km

Facility is okay with respect to FCC monitoring stations.

Closest FCC Monitoring Station is 574.8 km= Allegan, MI

Facility is okay toward West Virginia Quiet Zone. Distance to center = 937.8 km

Facility is okay toward Table Mountain. Distance to Center = 1303.7 km, Azimuth = 282.3 Degrees True

CONTOUR PROTECTION TO 2ND-ADJACENT STATIONS:

Contour protection to 2nd-adjacent stations KEZK-FM, KLOU (Lic.) and KLOU (CP) is provided using the ratio method. The F(50/50) contour of KEZK-FM is 105.3dBu at the proposed site. The F(50/50) contour of KLOU (Lic.) is 104.9dBu at the proposed site, while the contour of KLOU (CP) is 105.0dBu. Using the appropriate U/D ratio of 40dB vs. KLOU (Lic.), the corresponding “worst-case” interfering contour of the proposed station is 144.9dBu. At the full 21 watts ERP, this contour would extend to a distance of 1.83 meters from the antenna. However, the field strength of the proposed antenna system falls quickly at depression angles below the horizon.

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The proposed 1-bay, SWR FMEC/1 antenna would be mounted on a 3 meter pole on a 3 meter elevator penthouse on the roof of a 36 meter building, at 41m AGL. Using elevation pattern data provided by SWR, the distance to the 144.9dBu contour at various depression angles is tabulated in **Exhibit 11a**.

The center of radiation would be 5 meters above the uppermost populated area, the building's roof. On the roof, the worst-case 2nd adjacent interfering contour extends no closer than 4.0 meters above the uppermost populated area.

Therefore, there are no populated areas within the interference zone.

EXHIBIT 11a

SECOND-ADJACENT INTERFERENCE PROTECTION TO POPULATED AREAS

NEW LPFM	<CALL LETTERS OR FILE NUMBER
St. Louis, MO	<PROPOSED COMMUNITY OF LICENSE
144.90	<INTERFERING CONTOUR OF PROPOSAL - dBu
17.5792	<V/m
KLOU (Lic.), St. Louis	<2nd-ADJ STN REQUIRING INTERFERENCE PROT. (worst case)
21	<PROP. ERP (W)
SWR FMEC/1	<ANTENNA MODEL

max ERP (W)	depression angle below horizon (dg)	relative field	ERP (W)	angular distance to contour (m)	vertical distance (below antenna) (m)	horiz distance to contour (m)	vertical distance below antenna required to clear nearest populated level (m)	clearance of interfering contour above nearest populated level (m)
21	0	1	21.00	1.83	0.0	1.8	5	5.0
21	5	0.997	20.87	1.82	0.2	1.8	5	4.8
21	10	0.986	20.42	1.80	0.3	1.8	5	4.7
21	15	0.969	19.72	1.77	0.5	1.7	5	4.5
21	20	0.946	18.79	1.73	0.6	1.6	5	4.4
21	25	0.916	17.62	1.67	0.7	1.5	5	4.3
21	30	0.879	16.23	1.61	0.8	1.4	5	4.2
21	35	0.837	14.71	1.53	0.9	1.3	5	4.1
21	40	0.789	13.07	1.44	0.9	1.1	5	4.1
21	45	0.736	11.38	1.34	1.0	1.0	5	4.0
21	50	0.679	9.68	1.24	1.0	0.8	5	4.0
21	55	0.616	7.97	1.13	0.9	0.6	5	4.1
21	60	0.55	6.35	1.01	0.9	0.5	5	4.1
21	65	0.48	4.84	0.88	0.8	0.4	5	4.2
21	70	0.408	3.50	0.75	0.7	0.3	5	4.3
21	75	0.333	2.33	0.61	0.6	0.2	5	4.4
21	80	0.256	1.38	0.47	0.5	0.1	5	4.5
21	85	0.178	0.67	0.33	0.3	0.0	5	4.7
21	90	0	0.00		0.0	0.0	5	5.0

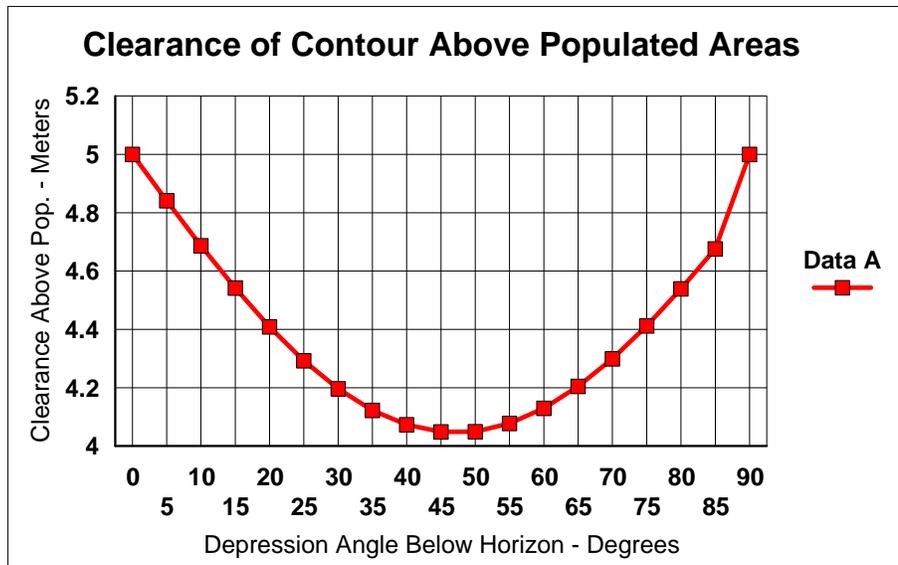


EXHIBIT 14

ENVIRONMENTAL PROTECTION ACT / NIER ANALYSIS

The applicant proposes mounting an SWR FMEC/1 single-bay antenna to a 3 meter pole on a 3 meter elevator penthouse on the roof of a 36 meter building. The antenna system would be 5 meters above the highest populated area - the roof of the building.

The SWR FMEC antenna is a functional equivalent of the Jampro Double-V “Penetrator” antenna. RF exposures were calculated using FM Model for Windows, Version 2.10, using the “Jampro Double-V (EPA) setting. FM Model predicts a peak exposure of $42.8\mu\text{W}/\text{cm}^2$ at 3.2 meters from the tower base, for persons on the roof of the building. This represents 21.4 % of the Maximum Permissible Exposure (MPE) of $200\mu\text{W}/\text{cm}^2$ for uncontrolled environments.

If any work on the antenna system becomes necessary, the transmitter power will be reduced or operation will cease, as necessary, so as to not exceed the RF exposure limits. RF warning signs will be posted at the 6 meter elevator penthouse/pole structure.