

ENGINEERING STATEMENT
IN SUPPORT OF
AMENDMENT TO PENDING APPLICATION FOR DISPLACEMENT
OF
DIGITAL LPTV STATION
WRJK-LD
ARLINGTON HEIGHTS, IL

Background

Chicago 22, LLC is the licensee of low power television translator station WRJK-LD (BLTT-19991020AAO, Facility ID. 68061) near Arlington Heights, IL. The station currently operates on Ch. 11 (under STA, LMS File No. 0000086734) and has a Construction Permit to displace to Ch. 11 (LMS File No. 0000054928). In February 2019, Chicago 22, LLC filed an application to displace to Ch. 36 instead of Ch. 11.

Inadvertently, the predicted protected service contour of the proposed Ch. 36 displacement facility specified in the pending application did not overlap the protected service contour of the licensed analog facility. Therefore, Chicago 22 is amending the pending application to update the ERP of the facility, along with the antenna transmit location, radiation center height, manufacturer and model number and azimuth pattern. The combination of these changes will allow for overlap between the protected service contours of the proposed digital displacement facility on Ch. 36 and the analog facility.

Displacement Parameters

Chicago 22, LLC is proposing the following parameters for the WRJK-LD digital operation on Ch. 36:

Coordinates:	41° 53' 56.1" N (NAD83) 87° 37' 23.2" W
ERP:	5.1 kW
RCAMSL:	572.4m
RCAGL:	391.7m
Antenna:	Jampro JUED-4-3 (12)-4(16)
Mask:	Full-Service

Figure 1, attached hereto, shows the overlap between the protected service contours of the proposed digital displacement facility on Ch. 36 and the analog facility.

Interference

An interference study was conducted of the proposed facility parameters using the FCC TVStudy software (Version 2.2.5) with the grid cell size **terrain profile increment set to a higher resolution of 0.5 km and 0.1 km respectively**, rather than the default parameters (1 km and 1 km). The results of the study (copy attached hereto) show that potential interference from the proposed facility is not predicted to exceed 0.49% to any full-service DTV or Class A stations or 1.99% to any low power stations as required by the Commission's Rules.

Environmental/RFR

This report addresses only the conditions specified in 47CFR1.1307 that deal with Radio Frequency Radiation. Any other non-RFR conditions that might require the preparation of an EA are beyond the scope of this report; since the structure is existing and registered, such conditions should not be an issue requiring further consideration.

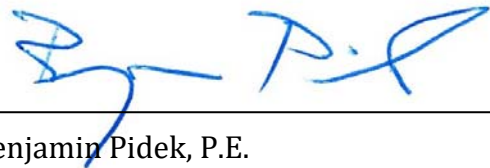
The location of the proposed facility, the John Hancock Center building, is a multi-user site and it is assumed to currently be “in compliance” with FCC guidelines for human exposure to RFR (as defined in OET-65). The worst case ground level RFR contributed to the site by this proposal is calculated to be 0.004290 mW/cm^2 at 2m AGL, assuming a worst-case 100% relative field at downward elevation angles. The calculated RFR is much less than 5% of the maximum permissible exposure (MPE) for public areas (0.403333 mW/cm^2) at Ch. 36 (602-608 MHz). Per Section 1.1307(b) of the FCC Rules, the proposed operation would be categorically excluded from taking corrective action in areas with levels above the MPE limit where the contribution to the RFR from the proposed facility is less than 5%.

There are areas of Hancock building that may exceed exposure limits (rooftop, antenna support structures, etc.); however, these areas are strictly controlled by the building owner. Chicago 22, LLC, like all tenants with broadcast facilities on Hancock building, will cooperate with the building owner in its RF safety plans/procedures for protecting workers who need access to areas where high levels of RFR may be present. These areas have been properly identified and access to them is restricted.

Chicago 22, LLC, agrees to comply with the Commission’s requirements regarding power adjustments or cessation of operation as may be necessary to ensure a compliant environment for worker access.

Certification

I hereby certify that the foregoing report or statement was prepared by me but may include work performed by others under my supervision or direction. The statements of fact contained therein are believed to be true and correct based on personal knowledge, information and belief unless otherwise stated; with respect to facts not known of my own personal knowledge, I believe them to be true and correct based on their origin from sources known to me to be generally reliable and accurate. I have prepared this document with due care and in accordance with applicable standards of professional practice.



Benjamin Pidek, P.E.
December 23, 2021

Attached:

TVStudy Interference Check Report

Antenna Azimuth and Elevation Pattern Plots and Tabulations

Figure 1 – Map of Overlap in Service Contours Between Proposed Facility and Licensed Facility

**TVStudy TV Interference Check Report for
WRJK-LD Proposed Facility on Ch. 36**

Study created: 2021.12.23 14:23:14

Study build station data: LMS TV 2021-12-21

Proposal: WRJK-LP D36- LD APP ARLINGTON HEIGHTS, IL
File number: WRJK_Ch36_Han-5kW_572m
Facility ID: 68061
Station data: User record
Record ID: 45
Country: U.S.

Build options:
Protect pre-transition records not on baseline channel

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	WGB0-DT	D35	DT	LIC	JOLIET, IL	BLANK0000124507	0.0 km
No	WTVP	D35	DT	LIC	PEORIA, IL	BLANK0000110583	215.4
No	W35DY-D	D35-	LD	LIC	STERLING-DIXON, IL	BLANK0000121374	147.9
No	WPBY-LD	D35	LD	LIC	LAFAYETTE, IN	BLANK0000058858	178.5
No	WBND-LD	D35	LD	LIC	SOUTH BEND, IN	BLANK0000086891	123.3
No	WOLP-CD	D35	DC	LIC	GRAND RAPIDS, MI	BLANK0000141794	194.6
No	W36EX-D	D36	DC	LIC	ALTON, IL	BLANK0000132189	392.1
No	WMEC	D36	DT	LIC	MACOMB, IL	BLANK0000113434	309.0
Yes	WQRF-TV	D36	DT	LIC	ROCKFORD, IL	BLANK0000107925	134.8
No	DW08DP	D36	LD	APP	SPRINGFIELD, IL	BDISDTA20060630AHG	283.6
No	WCCU	D36	DT	LIC	URBANA, IL	BLANK0000099910	204.8
No	WODP-LD	D36	LD	LIC	FORT WAYNE, IN	BLANK0000087022	224.6
No	WBXI-CD	D36	DC	LIC	INDIANAPOLIS, IN	BLANK0000088433	252.6
Yes	WHME-TV	D36	DT	LIC	SOUTH BEND, IN	BLANK0000087036	125.9
No	WAVE	D36	DT	LIC	LOUISVILLE, KY	BLANK0000089043	420.9
No	W36FA-D	D36	LD	LIC	HESPERIA, MI	BLANK0000067768	224.6
No	WUHO-LD	N36+	TX	LIC	KALAMAZOO, MI	BLTTL20060103ABT	167.8
No	WAQP	D36	DT	LIC	SAGINAW, MI	BLANK0000096188	327.1
No	W36FH-D	D36	LD	CP	TRAVERSE CITY, MI	BLANK0000162679	352.3
No	KAAL	D36	DT	LIC	AUSTIN, MN	BLCDT20091110AAF	444.5
No	WRGT-TV	D36	DT	LIC	DAYTON, OH	BLANK0000113865	372.4
No	WMNT-CD	D36	DC	LIC	TOLEDO, OH	BLANK0000067041	340.3
No	WACY-TV	D36	DT	LIC	APPLETON, WI	BLANK0000074905	274.9
No	W36FN-D	D36	LD	CP	BARABOO, WI	BLANK0000151595	317.1
Yes	WMKE-CD	D36	DC	LIC	MILWAUKEE, WI	BLANK0000116313	135.1
No	W21EF-D	N36-	TX	LIC	WAUPACA, WI	BLTT20060824AAL	299.0
No	W36EI-D	D36	LD	CP	WAUSAU, WI	BNPDTL20100507ACQ	378.2

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied:

Channel: D36-
Mask: Full Service
Latitude: 41 53 56.10 N (NAD83)
Longitude: 87 37 23.20 W
Height AMSL: 572.4 m
HAAT: 0.0 m
Peak ERP: 5.10 kW
Antenna: JAM JUED 4-3-12-4-16 0.0 deg
Elev Pattn: Generic

Elec Tilt: 1.00

50.9 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.011 kW	397.0 m	19.7 km
45.0	0.042	397.3	26.5
90.0	0.151	396.9	33.5
135.0	0.009	397.3	18.9
180.0	2.03	390.8	49.0
225.0	3.98	390.7	52.8
270.0	0.062	386.3	28.2
315.0	0.125	390.0	32.2

Database HAAT does not agree with computed HAAT

Database HAAT: 0 m Computed HAAT: 393 m

Distance to Canadian border: 370.0 km

Distance to Mexican border: 1827.9 km

Conditions at FCC monitoring station: Allegan MI

Bearing: 59.6 degrees Distance: 158.1 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:

Bearing: 268.4 degrees Distance: 1486.0 km

Study cell size: 0.50 km

Profile point spacing: 0.10 km

Maximum new IX to full-service and Class A: 0.50%

Maximum new IX to LPTV: 2.00%

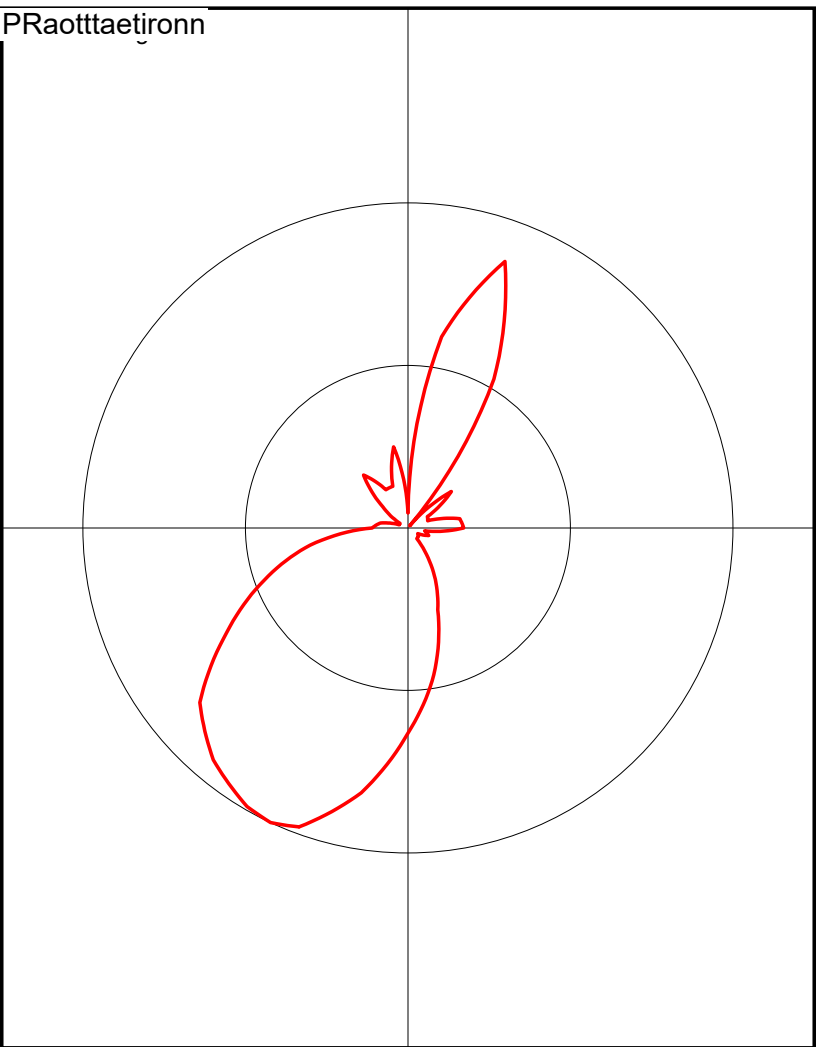
---- Below is IX received by proposal WRJK_Ch36_Han-5kW_572m ----

Proposal receives 46.91% interference from scenario 1

No IX check failures found.

Post-Rotation Antenna Pattern....

Azimuth (deg)	Relative Field
0.0	0.0463
10.0	0.5969
20.0	0.8722
30.0	0.5289
40.0	0.0085
50.0	0.1745
60.0	0.0693
70.0	0.0645
80.0	0.162
90.0	0.1716
100.0	0.0523
110.0	0.0682
120.0	0.0348
130.0	0.0418
140.0	0.0425
150.0	0.1572
160.0	0.2682
170.0	0.4589
180.0	0.6312
190.0	0.8272
200.0	0.9788
205.0	1.0
210.0	0.9895
220.0	0.9311
230.0	0.8353
240.0	0.6433
250.0	0.4706
260.0	0.3053
270.0	0.1102
280.0	0.0859
290.0	0.0283
300.0	0.028
310.0	0.1006
320.0	0.2123
330.0	0.1357
340.0	0.1361
350.0	0.2533



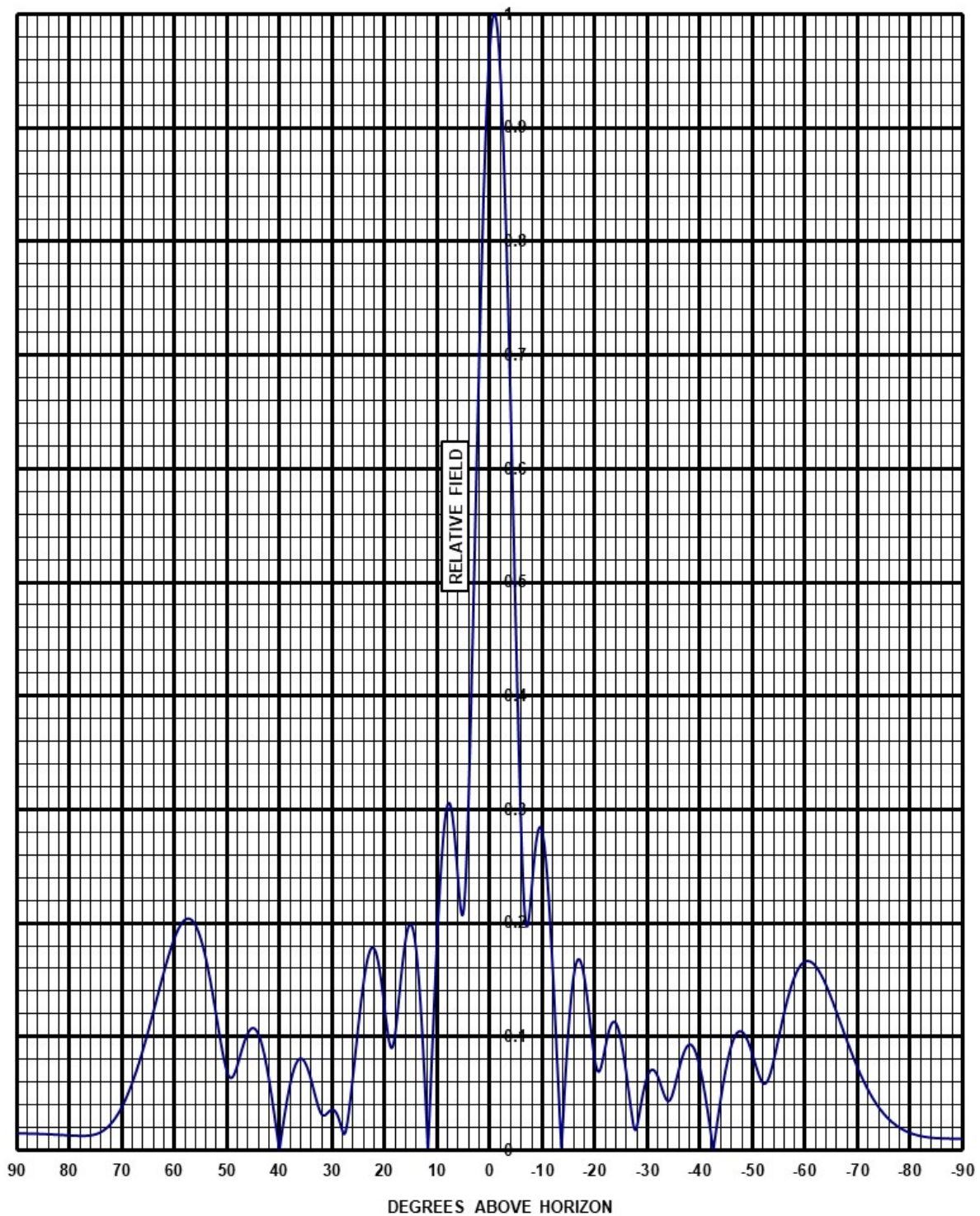


Azimuth Pattern Tabulation

Angle	Field	Angle	Field
0	0.046	180	0.631
5	0.312	185	0.725
10	0.597	190	0.827
15	0.808	195	0.919
20	0.872	200	0.979
25	0.765	205	1.000
30	0.529	210	0.990
35	0.243	215	0.963
40	0.009	220	0.931
45	0.145	225	0.893
50	0.175	230	0.835
55	0.129	235	0.748
60	0.069	240	0.643
65	0.051	245	0.547
70	0.065	250	0.471
75	0.108	255	0.397
80	0.162	260	0.305
85	0.189	265	0.198
90	0.172	270	0.110
95	0.117	275	0.085
100	0.052	280	0.086
105	0.046	285	0.065
110	0.068	290	0.028
115	0.062	295	0.020
120	0.035	300	0.028
125	0.029	305	0.043
130	0.042	310	0.101
135	0.033	315	0.170
140	0.043	320	0.212
145	0.100	325	0.204
150	0.157	330	0.136
155	0.206	335	0.047
160	0.268	340	0.136
165	0.359	345	0.233
170	0.459	350	0.253
175	0.548	355	0.166

Customer: Chicago 22, LLC
Channels: 36
Site: WRJK-LP

Model: JUED-4-3 (12)-(16)
Description: UHF Panel Antenna
Notes: Elliptically Polarized



Site: WRJK-LP
Channel: 36
Bays: 4

Model: JUHD-4-3(12)-4 (16)
Description: UHF Panel Antenna
-1° Beam Tilt, 20% Null Fill



Elevation Pattern Tabulation

RELATIVE FIELD VS ELEVATION ANGLE

<u>ELEVATION ANGLE</u>	<u>RELATIVE FIELD</u>	<u>ELEVATION ANGLE</u>	<u>RELATIVE FIELD</u>	<u>ELEVATION ANGLE</u>	<u>RELATIVE FIELD</u>
10	0.179	-26	0.070	-61	0.166
9	0.261	-27	0.035	-62	0.163
8	0.303	-28	0.020	-63	0.156
7	0.294	-29	0.044	-64	0.146
6	0.241	-30	0.064	-65	0.135
5	0.208	-31	0.071	-66	0.123
4	0.302	-32	0.066	-67	0.110
3	0.484	-33	0.053	-68	0.098
2	0.682	-34	0.043	-69	0.085
1	0.851	-35	0.051	-70	0.074
0	0.963	-36	0.070	-71	0.064
-1	1.000	-37	0.086	-72	0.054
-2	0.956	-38	0.093	-73	0.046
-3	0.838	-39	0.089	-74	0.039
-4	0.666	-40	0.075	-75	0.033
-5	0.470	-41	0.051	-76	0.028
-6	0.291	-42	0.021	-77	0.024
-7	0.199	-43	0.012	-78	0.020
-8	0.227	-44	0.044	-79	0.018
-9	0.274	-45	0.071	-80	0.016
-10	0.282	-46	0.091	-81	0.014
-11	0.242	-47	0.102	-82	0.013
-12	0.166	-48	0.105	-83	0.012
-13	0.071	-49	0.098	-84	0.011
-14	0.024	-50	0.086	-85	0.011
-15	0.102	-51	0.071	-86	0.011
-16	0.152	-52	0.060	-87	0.011
-17	0.168	-53	0.062	-88	0.010
-18	0.154	-54	0.077	-89	0.010
-19	0.120	-55	0.098	-90	0.010
-20	0.082	-56	0.119		
-21	0.070	-57	0.137		
-22	0.089	-58	0.152		
-23	0.109	-59	0.161		
-24	0.113	-60	0.166		
-25	0.099				

Site: WRJK-LP
Channel: 36
Bays: 4

Model: JUHD-4-3(12)-4 (16)
Description: UHF Panel Antenna
-1° Beam Tilt, 20% Null Fill

This map illustrates the Chicago River and its surrounding regions. A red outline highlights the area around the Chicago River, and a black outline highlights the area around the city of Chicago. The map includes labels for various cities and towns, as well as the names of the rivers and lakes.