



ENGINEERING STUDY
FCC 349 –LONG FORM APPLICATION
NEW Translator for WJDA (AM), Quincy, MA
BNPFT-20180131AFK

TECHNICAL STATEMENT

This technical statement and attached exhibits were prepared on behalf of Universal Stations, LLC, licensee of AM radio station WJDA, 1300 kHz, Class D AM, Quincy, MA. Facility ID #61159. This application seeks to allocate and license a new FM translator for use as a fill-in service for the above referenced station. This application is being filed pursuant to the major change window Auction 100: AM Revitalization/ FM Translators (DA FCC-17-67). The application (BNPFT-20180131AFK) was released on the Singleton list subject to the May 9th, 2018 filing deadline.

Facilities Proposed

Location (NAD83)	41° 15' 35.4" N Latitude, 70° 58' 34.2" W Longitude
Location (NAD27)	41° 15' 35.0" N Latitude, 70° 58' 36" W Longitude
Channel	261D (100.1MHz)
Tower Overall AGL Height-	64m
Tower ASR	1251280
Proposed Antenna	SWR FMEC-8DA-HW
Antenna AGL Height-	62m
Site AMSL Height-	2m
ERP	210Watts-DIRECTIONAL- EXHIBIT A

COMPLIANCE WITH 74.1204(a) [contour overlap]

The proposed translator on channel 261D will be fully compliant with 74.1204(a). A table showing the allocation is attached as Exhibit B and a map depicting the closest pertinent facilities is attached as Exhibit C.

COMPLIANCE WITH 74.1204(d)

The proposed translator will be located within the 60dBu contour of WCRB (FM), 258B and WZLX (FM). The applicant requests a waiver of this section since there will be no actual interference to either WCRB or WZLX at ground level.

As demonstrated in Exhibit D1 and D2, the interfering contour from the proposed 261D translator will be more than 2mAGL. Based upon the preceding, it is believed that the proposed translator on 261D is in compliance with 74.1204(d) and that no actual interference will occur at ground level.

COMPLIANCE WITH 74.1201(g) [AM fill-in]

Exhibit E demonstrates that the proposed translator will be entirely contained within the 2mV/m contour from the licensed WJDA facility.

The proposed facility is not within 320km of the common border between the US and Canada.

ENVIRONMENTAL EXHIBIT

The proposed translator facility will utilize a directional antenna located on an existing tower, ASR 1251280 attached as Figure F. The NADCON conversion from NAD83 to NAD27 is attached as Figure G. The attachment of the proposed translator antenna will not alter the existing proposed tower structure for purposes of the Nationwide Programmatic Agreement and the NHPA Section 106.

The RF density near the tower was calculated using a worst-case type 1 “ring and stub” antenna setting at 250 watts vertical + horizontal, using the proposed Scala antenna.

Using the FCC program “FM Model for Windows”, it was calculated that the proposed antenna contributes approximately $0.04\mu\text{W}/\text{cm}^2$ or 0.02 % of the total allowable $200\mu\text{W}/\text{cm}^2$. The maximum was found to be 33 meters from the base of the tower. The FCC calculator output is shown as Exhibit H. There are no tall buildings within 100m of the proposed tower.

The proposed translator will be mounted on the tower for WJDA (AM). There are no other non-excluded facilities on the tower. Because the maximum contribution of the proposed translator for the uncontrolled environment is less than the $10\mu\text{W}/\text{cm}^2$ (5.0%) limit as set forth by §1.1307(b)(3), the facility will be in compliance with FCC guidelines.

Based upon the preceding evaluation, the proposed antenna will not cause the RF density at the tower site to exceed public exposure limits and is excluded from further Environmental Assessment under 47CFR 1.1306 and 1.1307.

The proposed new FM translator along with other users at the site will maintain an occupational safety policy and agrees to reduce power or cease operation during periods of maintenance to avoid potentially harmful exposure of personnel to non-ionizing RF radiation.

Respectfully Submitted

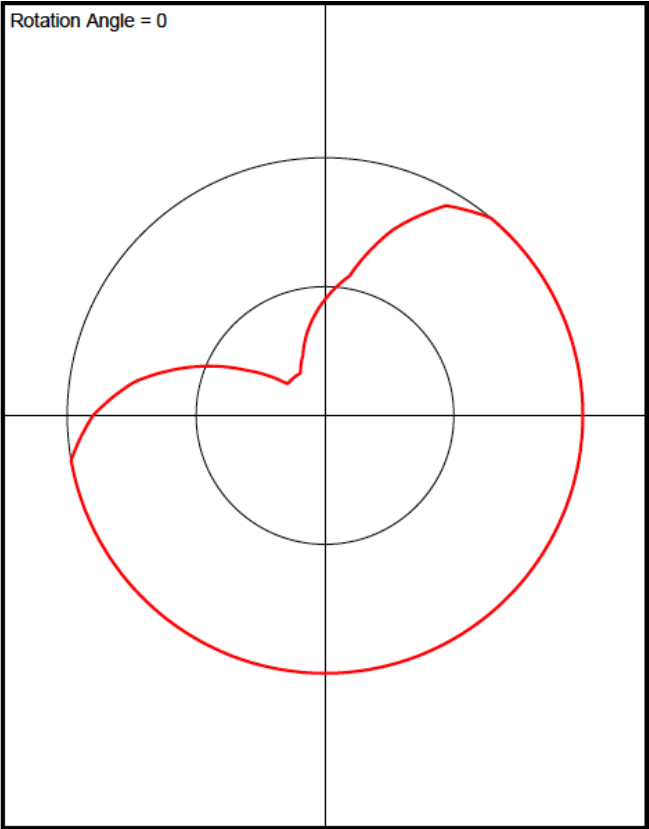
A handwritten signature in black ink, appearing to read "Bert Goldman", with a long horizontal flourish extending to the right.

Bert Goldman
Technical Consultant

EXHIBIT A- ANTENNA PATTERN

PROP 261D PATTERN
Pre-Rotation Antenna Pattern....

Azimuth (deg)	Relative Field
0.0	0.45
5.0	0.5
10.0	0.55
15.0	0.6575
20.0	0.765
25.0	0.8525
30.0	0.94
35.0	0.97
40.0	1.0
45.0	1.0
50.0	1.0
55.0	1.0
60.0	1.0
65.0	1.0
70.0	1.0
75.0	1.0
80.0	1.0
85.0	1.0
90.0	1.0
95.0	1.0
100.0	1.0
105.0	1.0
110.0	1.0
115.0	1.0
120.0	1.0
125.0	1.0
130.0	1.0
135.0	1.0
140.0	1.0
145.0	1.0
150.0	1.0
155.0	1.0
160.0	1.0
165.0	1.0
170.0	1.0
175.0	1.0
180.0	1.0
185.0	1.0
190.0	1.0
195.0	1.0
200.0	1.0
205.0	1.0
210.0	1.0
215.0	1.0
220.0	1.0
225.0	1.0
230.0	1.0
235.0	1.0
240.0	1.0
245.0	1.0
250.0	1.0
255.0	1.0
260.0	1.0
265.0	0.95
270.0	0.9
275.0	0.825
280.0	0.75
285.0	0.65
290.0	0.55
295.0	0.45
300.0	0.35
305.0	0.27
310.0	0.19
315.0	0.19



320.0	0.19
325.0	0.19
330.0	0.19
335.0	0.22
340.0	0.25
345.0	0.3
350.0	0.35
355.0	0.4

EXHIBIT B- ALLOCATION STUDY

ComStudy 2.2 search of channel 261 (100.1 MHz Class D) at 42-15-35.0 N, 70-58-36.0 W.

CALL	CITY	ST CHN CL	DIST	SEP	BRNG	CLEARANCE
WZLX	BOSTON	MA 264 B	13.09	0.00	318.1	-34.82 dB EXHIBIT D1
NEW	QUINCY	MA 261 D	0.00	0.00	90.0	-20.21 dB SHORT-FORM
WCRB	LOWELL	MA 258 B	48.05	0.00	335.8	-8.98 dB EXHIBIT D2
W262CV	BOSTON	MA 262 D	14.58	0.00	321.9	0.92 dB EXHIBIT C
WBRS	WALTHAM	MA 261 D	26.17	0.00	297.9	1.21 dB EXHIBIT C
WQRC	BARNSTABLE	MA 260 B	82.15	0.00	140.4	1.89 dB EXHIBIT C
WHEB	PORTSMOUTH	NH 262 B	89.78	0.00	10.9	2.57 dB EXHIBIT C
WWFX	SOUTHBRIDGE	MA 261 A	74.73	0.00	267.3	5.49 dB EXHIBIT C
W236CW	WOONSOCKET	RI 260 D	49.17	0.00	233.7	11.37 dB
WCDV-LP	LYNN	MA 207 LP100	23.21	7.00	6.7	16.2
WHHB	HOLLISTON	MA 260 D	38.89	0.00	262.2	16.92 dB
WWFX	SOUTHBRIDGE	MA 261 A	87.23	0.00	253.9	17.22 dB
WKKB	MIDDLETOWN	RI 262 A	75.74	0.00	193.5	19.56 dB
WCSE-LP	LEDYARD	CT 261 LP100	129.73	24.00	221.9	23.98 dB
WCRB	LOWELL	MA 258 B	48.17	0.00	335.7	23.89 dB
W261DD	SPRINGFIELD	MA 261 D	137.70	0.00	263.1	23.69 dB
W253AF	NASHUA	NH 260 D	69.08	0.00	323.7	24.62 dB
WQRC	BARNSTABLE	MA 260 B	82.15	0.00	140.4	24.13 dB
WQEB-LP	WINCHESTER	MA 260 LP100	33.30	13.00	322.6	24.24 dB
W253AF	NASHUA	NH 260 D	69.08	0.00	323.7	24.62 dB
W260AS	LAWRENCE	MA 260 D	57.92	0.00	350.0	26.75 dB
W261BU	TALCOTTVILLE	CT 261 D	153.46	0.00	249.3	27.76 dB
WHEB	PORTSMOUTH	NH 262 B	89.57	0.00	10.8	29.23 dB
WKKB	MIDDLETOWN	RI 262 A	81.27	0.00	198.4	29.96 dB
WRCH	NEW BRITAIN	CT 263 B	165.75	0.00	248.7	30.68 dB

CDBS AS OF 4/19/2018

EXHIBIT C Pertinent Protection Contours, 74.1204(a) Compliance

Proposed WJDA Translator, 100.1MHz, 210 watts, from Top of WJDA Twr

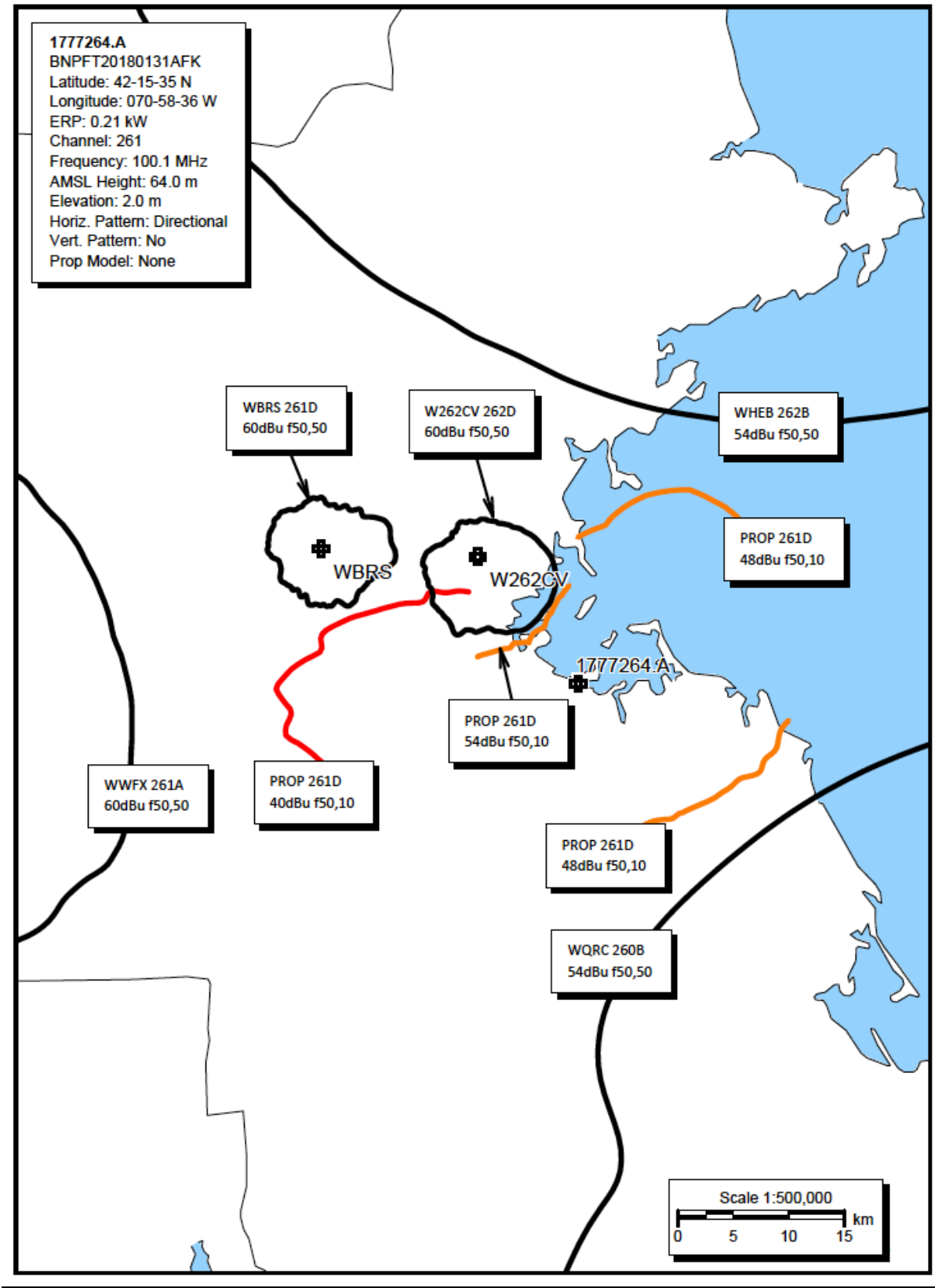


EXHIBIT D1 INTERFERENCE ANALYSIS TO WCRB (258B)

1777264 Quincy , MA, Showing Protection to WCRB
74.1204(d) Study - Using FCC 30 SEC Terrain Database
Translator or LPFM Maximum Licensed ERP = 0.21
Translator or LPFM Antenna Height AG = 62 Meters
1777264 Antenna Model = LPX8H

Protected Station's Contour = 62.40232 dBu
Translator's or LPFM's full Interference contour 102.40232

Review Azimuth = 0 Degrees True (Based upon ND antenna)
Relative Field on the horizon at Review Azimuth = 1.000
Translator/LPFM ERP on the horizon at Review Azimuth = 0.21 kW
Distance between stations = 48.1 km
Protected Station= WCRB, 27 kW, 238 M Meters COR AMSL

Depression Angle From Horizon(Deg)	Vertical Relative Field	Horizontal Relative Field	ERP (kw)	Dist to IX Contour Along Dep. Angle(m)	Dist to IX Contour From Tower Base(m)	Height IX Above Ground (m)
00.00	1.0	1.0	0.2100	770.8922	770.8922	062.000
05.00	0.813	1.0	0.1388	626.7354	624.3505	007.376
10.00	0.379	1.0	0.0302	292.1681	287.7295	011.266
15.00	0.03	1.0	0.0002	023.1268	022.3387	056.014
20.00	0.211	1.0	0.0093	162.6582	152.8488	006.368
25.00	0.157	1.0	0.0052	121.0301	109.6905	010.850
30.00	0.004	1.0	0.0000	003.0836	002.6704	060.458
35.00	0.105	1.0	0.0023	080.9437	066.3052	015.573
40.00	0.116	1.0	0.0028	089.4235	068.5024	004.520
45.00	0.057	1.0	0.0007	043.9409	031.0709	030.929
50.00	0.015	1.0	0.0000	011.5634	007.4328	053.142
55.00	0.06	1.0	0.0008	046.2535	026.5299	024.111
60.00	0.071	1.0	0.0011	054.7333	027.3667	014.600
65.00	0.059	1.0	0.0007	045.4826	019.2218	020.779
70.00	0.038	1.0	0.0003	029.2939	010.0191	034.473
75.00	0.02	1.0	0.0001	015.4178	003.9904	047.108
80.00	0.008	1.0	0.0000	006.1671	001.0709	055.927
85.00	0.002	1.0	0.0000	001.5418	000.1344	060.464
90.00	0.001	1.0	0.0000	000.7709	000.0000	061.229

EXHIBIT D2 INTERFERENCE ANALYSIS TO WZLX (264B)

1777264 Quincy , MA, Showing Protection to WZLX
74.1204(d) Study - Using FCC 30 SEC Terrain Database
Translator or LPFM Maximum Licensed ERP = 0.21
Translator or LPFM Antenna Height AG = 62 Meters
1777264 Antenna Model = LPX8H

Protected Station's Contour = 87.40027 dBu
Translator's or LPFM's full Interference contour 127.40027

Review Azimuth = 0 Degrees True (Based upon ND Antenna)
Relative Field on the horizon at Review Azimuth = 1.000
Translator/LPFM ERP on the horizon at Review Azimuth = 0.21 kW
Distance between stations = 13.1 km
Protected Station= WZLX, 21.5 kW, 258 M Meters COR AMSL

Depression Angle From Horizon(Deg)	Vertical Relative Field	Horizontal Relative Field	ERP (kw)	Dist to IX Contour Along Dep. Angle(m)	Dist to IX Contour From Tower Base(m)	Height IX Above Ground (m)
00.00	1.0	1.0	0.2100	043.3607	043.3607	062.000
05.00	0.813	1.0	0.1388	035.2522	035.1181	058.928
10.00	0.379	1.0	0.0302	016.4337	016.1840	059.146
15.00	0.03	1.0	0.0002	001.3008	001.2565	061.663
20.00	0.211	1.0	0.0093	009.1491	008.5973	058.871
25.00	0.157	1.0	0.0052	006.8076	006.1698	059.123
30.00	0.004	1.0	0.0000	000.1734	000.1502	061.913
35.00	0.105	1.0	0.0023	004.5529	003.7295	059.389
40.00	0.116	1.0	0.0028	005.0298	003.8531	058.767
45.00	0.057	1.0	0.0007	002.4716	001.7477	060.252
50.00	0.015	1.0	0.0000	000.6504	000.4181	061.502
55.00	0.06	1.0	0.0008	002.6016	001.4922	059.869
60.00	0.071	1.0	0.0011	003.0786	001.5393	059.334
65.00	0.059	1.0	0.0007	002.5583	001.0812	059.681
70.00	0.038	1.0	0.0003	001.6477	000.5635	060.452
75.00	0.02	1.0	0.0001	000.8672	000.2245	061.162
80.00	0.008	1.0	0.0000	000.3469	000.0602	061.658
85.00	0.002	1.0	0.0000	000.0867	000.0076	061.914
90.00	0.001	1.0	0.0000	000.0434	000.0000	061.957

EXHIBIT E- 74.1201(g) Compliance

WJDA PROPOSED TRANSLATOR 261D, 210 WATTS 72.1201(g) COMPLIANCE

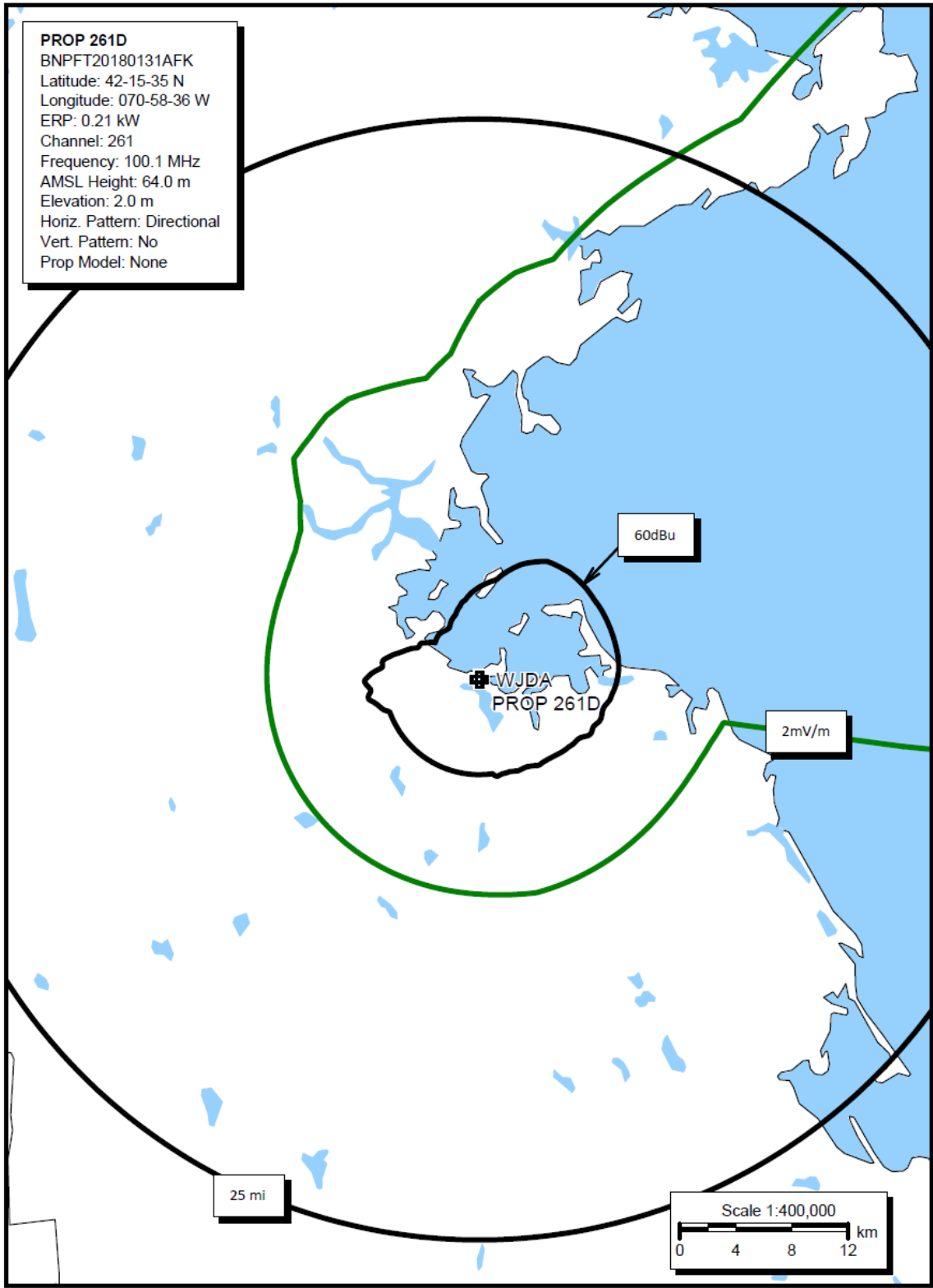


EXHIBIT F- ASR 1251280

Registration 1251280

 [Map Registration](#)

Registration Detail

Reg Number	1251280	Status	Constructed
File Number	A1073027	Constructed	12/08/2005
EMI	No	Dismantled	
NEPA	No		

Antenna Structure

Structure Type TOWER - Free standing or Guyed Structure used for Commu

Location (in NAD83 Coordinates)

Lat/Long	42-15-35.4 N 070-58-34.2 W	Address	Sea Street at Palmer Street, Quincy, Massachusetts
City, State	Quincy , MA		
Zip		County	NORFOLK
Center of AM Array		Position of Tower in Array	

Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
1.8	64.0
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
65.8	64.0

Painting and Lighting Specifications

None

FAA Notification

FAA Study	83-ANE-038-OE	FAA Issue Date	02/04/1983
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Owner & Contact Information

FRN	0023451453	Owner Entity Type	Limited Liability Company
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Owner

Vertical Bridge Towers, LLC
Attention To: FCC Contact
750 Park of Commerce Drive Ste. 200
Boca Raton , FL 33487

P: (561)406-4015
F:
E: fcc-faa@verticalbridge.com

Contact

Hickey , Richard
Attention To: FCC Contact
750 Park of Commerce Drive Ste. 200
Boca Raton , FL 33487

P: (561)406-4015
F:
E: fcc-faa@verticalbridge.com

Last Action Status

Status	Constructed	Received	05/02/2017
Purpose	Admin Update	Entered	05/02/2017
Mode	Interactive		

EXHIBIT G- NADCON OUTPUT

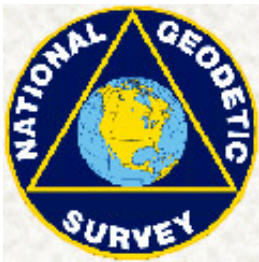
Output from NADCON for station

North American Datum Conversion
NAD 83 to NAD 27
NADCON Program Version 2.11

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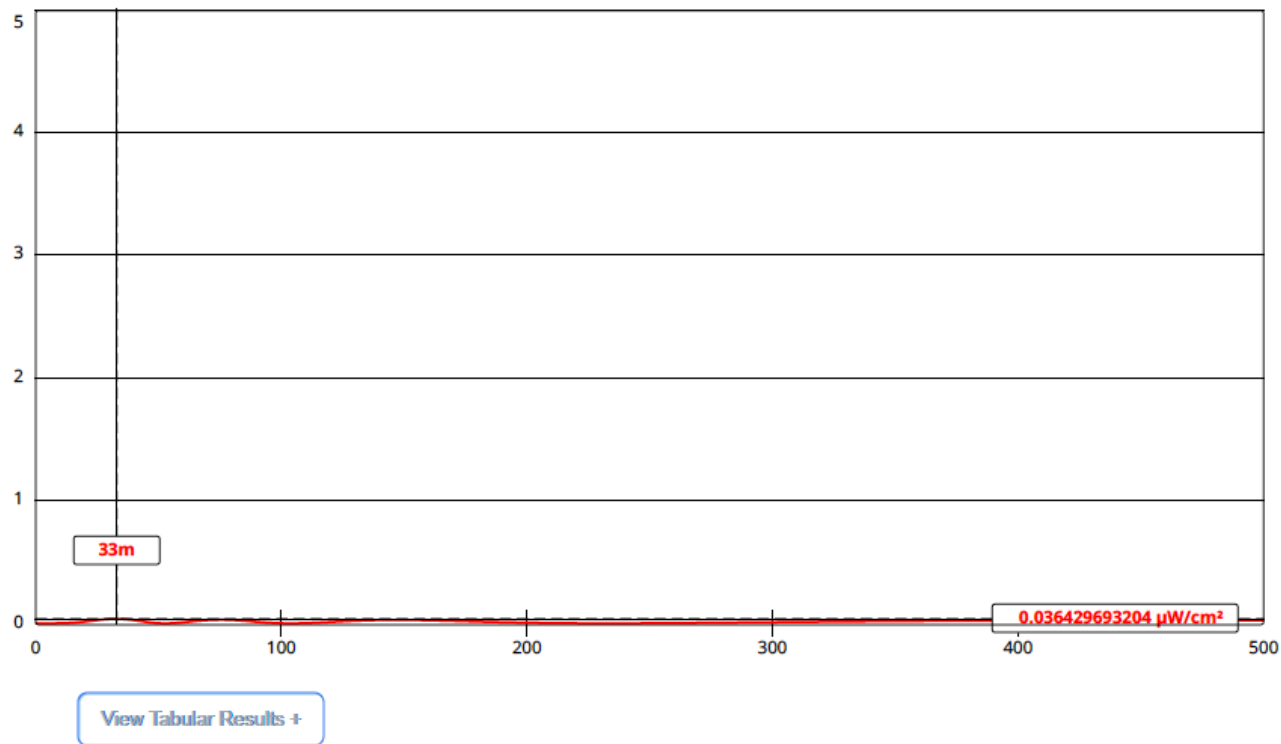
Transformation #: 1 Region: Conus

	Latitude	Longitude
NAD 27 datum values:	42 15 35.04195	70 58 36.02833
NAD 83 datum values:	42 15 35.40000	70 58 34.20000
NAD 27 - NAD 83 shift values:	-0.35805	1.82833 (secs.)
	-11.048	41.906 (meters)
Magnitude of total shift:		43.338 (meters)



[NGS HOME PAGE](#)

EXHIBIT H- FM MODEL OUTPUT



Channel Selection	Channel 261 (100.1 MHz) ▾		
Antenna Type +	EPA Type 1: Ring-and-Stub or "Other" ▾		
Height (m)	62	Distance (m)	500
ERP-H (W)	210	ERP-V (W)	210
Num of Elements	8	Element Spacing (λ)	0.5
Num of Points	500	Apply	