Engineering Exhibit for Minor Change
W284CQ; BLFT-20160322ACP
Facility ID No. 31140

This exhibit is for minor modification of translator permit for W284CQ Facility ID No. 31140, BLFT-20160322ACP. It specifies a change in location, antenna elevation, and antenna model only.

Antenna Location

The proposed antenna is to be mounted on an existing tower identified by registration number 1018169 at 105 meters above ground, having a horizontal plane azimuth gain pattern as given in **Figure 0** below. Below as **Figure 1** is an overlap and spacing study from which it can be determined that this proposal is within the protected contour of **Third** adjacent channel station WPRS-FM and **Second** adjacent channel station WAVA-FM.

73.1204 Compliance

We will demonstrate that a lack of population and/or other factors allow this proposal to be compliant with 74.1204. The process commonly called "Living Way", allows for the use of D/U Analysis, also known as "signal strength ratio methodology" to be utilized to demonstrate compliance. In this instant case the facility to be protected is on a second or third adjacent channel and is to be afforded protection from signals 40 dB stronger than the protected facility presents near the proposed translator antenna location.

Concerning WPRS-FM; In **Figure 2** a map showing the predicted 66.2 dBu signal contour of the protected facility at the proposed translator antenna location is given. This proposal can only cause predicted interference to the protected facility by having a signal exceeding 106.2 dBu (66.2 + 40) in a habitable/populated area. Utilizing the line of sight equation shown in **Figure 3** which considers the vertical elevation pattern of the proposed antenna, it has been determined that a 106.2 dBu signal developed by 99 watts, as proposed, emitted by the proposed antenna mounted 105 meters above ground, will not reach habitable areas or ground level. With examination of the image in **Figure 4** it can be determined that no habitable space extends above this height within the confines of this contour. Thus the provisions of the rules section concerning prohibited overlap will not apply as it has been demonstrated that no actual interference will occur due to a lack of population and other factors as applied in this instant proposal.

Concerning WAVA-FM; In Figure 2 a map showing the proposed facility is located on the same support tower as WAVA-FM. The WAVA-FM signal will at all locations exceed by more than 40 db that of the proposed.

Thus the provisions of the rules section concerning prohibited overlap will not apply as it has been demonstrated that no actual interference will occur due to a lack of population and other factors as applied in this instant proposal.

Fill-in and Minor Change Status

This proposal is to serve as a fill-in translator for station WWDC(FM), Facility ID 8682, Washington, DC. The map of **Figure 5** demonstrates that the proposed 60 dBu contour is contained within that of the WWDC(FM) facility. It can also be seen that the proposed and licensed facilities have the required service contour overlap.

RF Fields Statement

The proposed facilities were evaluated in terms of potential radio frequency field exposure at ground level in accordance with OET Bulletin No. 65, "Evaluating Compliance With FCC-Specified Guidelines for Human Exposure to Radio frequency Radiation."

The proposed antenna system is an **ERI 100A-2F-DA-HW** , a two (2) element, half-wave spaced antenna, mounted 105 meters above ground. As this element type is not modeled in any current RF Fields calculation computer program, for purposes of this analysis the FM Model RF Fields program has been set to calculate values for an array of "worst case" type of antenna element(s) "Ring Stub", operated with an effective radiated power of 0.099 Kilowatts in the Horizontal and Vertical plane. At 2 meters above the surface, at 162.4 meters from the base of the tower, this proposal will contribute worst case, 0.07 microwatts per square centimeter, or 0.01 percent of the allowable ANSI limit for controlled exposure, and 0.05 percent of the allowable limit for uncontrolled exposure. This figure is less than 5.0% of the applicable FCC exposure limit at all locations extending out from the base of the tower. Section 1.1307(b)(3) excludes applications when the calculated level is predicted to be less than 5.0% of the applicable exposure limit. It is therefore believed that this proposal is in compliance with OET Bulletin Number 65 as required by the Federal Communications Commission.

Further, the applicant will see that signs are posted in the vicinity of the tower, warning of potential radio frequency hazards at the site. The site itself is restricted from public access. The applicant will cooperate with other users of the tower to reduce power of the facility, or discontinue operation, as necessary to limit human exposure to levels less than specified by the Federal Communications Commission should anyone be required to climb the tower for maintenance or inspection.

Figure 0. Antenna Pattern

W284CQ 08-23-2018 RMS(V)= .88

Azi	Field	dBk	kW
000	0.276	-21.225	0.008
010	0.319	-19.968	0.010
020	0.427	-17.435	0.018
030	0.573	-14.881	0.033
040	0.795	-12.036	0.063
050	1.000	-10.044	0.099
060	1.000	-10.044	0.099
070	1.000	-10.044	0.099
080	1.000	-10.044	0.099
090	1.000	-10.044	0.099
100	1.000	-10.044	0.099
110	1.000	-10.044	0.099
120	1.000	-10.044	0.099
130	1.000	-10.044	0.099
140	1.000	-10.044	0.099
150	1.000	-10.044	0.099
160	1.000	-10.044	0.099
170	1.000	-10.044	0.099
180	1.000	-10.044	0.099
190	1.000	-10.044	0.099
200	1.000	-10.044	0.099
210	1.000	-10.044	0.099
220	1.000	-10.044	0.099
230	1.000	-10.044	0.099
240	1.000	-10.044	0.099
250	1.000	-10.044	0.099
260	1.000	-10.044	0.099
270	1.000	-10.044	0.099
280	1.000	-10.044	0.099
290	1.000	-10.044	0.099
300	0.824	-11.725	0.067
310	0.656	-13.706	0.043
320	0.478	-16.455	0.023
330	0.334	-19.569	0.011
340	0.286	-20.916	0.008
350	0.270	-21.416	0.007

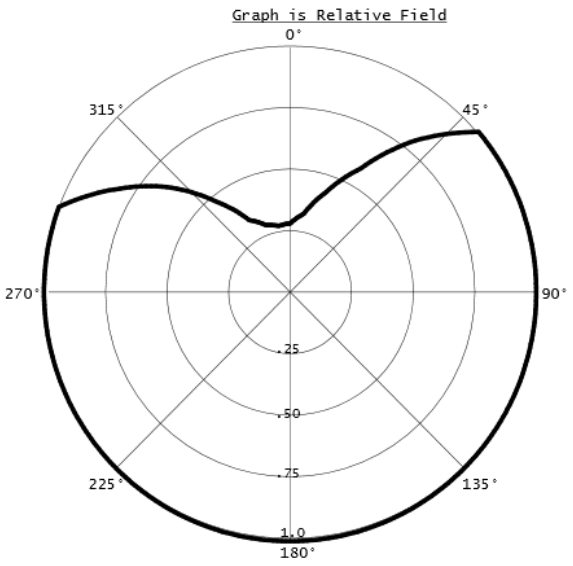

Figure 1. Overlap and Spacing Study

W284CQ at 1018169 105m AGL 99w ERP DA-Ant
Amfm Radio Licenses, L.l.c., As Debtor In Possession

REFERENCE CH# 284D - 104.7 MHz, Pwr= 0.099 kW DA, HAAT= 150.0 M, COR= 217.8 M DISPLAY DATES
38 53 29.6 N. Average Protected F(50-50)= 12.54 km DATA 08-24-18
77 07 55.1 W. Standard Directional SEARCH 08-24-18

CH CITY	CALL STATE	TYPE ANT	AZI <--	DIST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
286B Arlington	WAVA-FM VA	LIC _CX	0.0 192.1	0.00 BLH20070426ACO	38 53 30.0 77 07 55.0	33.000 184	5.9 250	64.9 Salem Communications Holdi	-12.3*<	-65.3*<
284D Washington	W284CQ DC	LIC DC_	28.2 208.2	13.66 BLFT20160322ACP	38 59 59.6 77 03 26.1	0.099	303	---Reference--- Amfm Radio Licenses, L.l.c		
281B Waldorf	WPRS-FM MD	LIC _CX	140.5 320.6	39.27 BMLH20070809ABE	38 37 07.4 76 50 39.0	20.000 244	5.7 295	65.3 Radio One Licenses, Llc	19.2	-27.4*<
284B Hagerstown	WAYZ MD	LIC _CN	340.0 159.8	95.29 BLH19900814KF	39 41 47.0 77 30 47.0	8.300 420	115.6 720	60.3 Hjv Limited Partnership	-26.9*<	3.7
284L1 Annapolis	WYZT-LP MD	LIC ___	80.4 260.8	59.38 BLL20170216AAW	38 58 44.1 76 27 16.3	0.057 36	40	Maryland Hall For The Crea	29.4	7.3
283D Sterling	W283DG VA	CP _C_	298.6 118.4	29.32 BNPFT20180418AHK	39 01 03.0 77 25 48.0	0.190	9.5 123	6.6 Washington Dc Fcc License	9.6	8.3
282B Baltimore	WZFT MD	LIC ZCX	39.9 220.2	64.60 BLH20090123AAG	39 20 10.0 76 38 59.0	13.000 294	2.2 378	43.1 Citicasters Licenses, Inc.	51.6	20.4
284C1 Crewe Transmitter located in Zone 2.	WPZZ VA	LIC DCN	200.9 20.4	204.41 BLH19920211KA	37 10 15.0 77 57 16.0	100.000 299	171.7 399	72.8 Radio One Licenses, Llc	20.5	90.5
283A Falmouth	WGRX VA	LIC ZC_	207.7 27.4	77.26 BLH20010522AAM	38 16 31.0 77 32 34.0	2.700 150	44.1 219	29.2 Telemedia Broadcasting, In	21.3	30.6
284B Ocean City-salisbur	WQHQ MD	LIC _CN	108.7 289.9	169.35 BLH19800505AB	38 23 15.0 75 17 30.0	33.000 186	132.1 189	64.3 Capstar Tx, Llc, As Debtor	23.2	43.3
284D Havre De Grace	W284BE MD	LIC DC_	49.5 230.2	116.04 BLFT20151013AEM	39 33 52.0 76 06 07.0	0.250	55.0 207	17.4 Hope Christian Church Of M	48.4	56.5
285A Strasburg	WZFC VA	LIC _CX	277.6 96.8	112.79 BLH20060124AFU	39 01 06.0 78 25 35.0	4.100 66	53.8 409	36.2 Centennial Licensing Ii, L	48.7	62.3
285D White Marsh	W285EJ MD	LIC _C_	40.1 220.5	76.71 BLFT20090330AJF	39 25 04.0 76 33 23.0	0.010 120	8.6 212	6.1 Hope Christian Church Of M	57.3	55.2
287D Cambridge	W287DN MD	CP _C_	110.2 290.9	97.28 BNPFT20180504AAC	38 35 03.0 76 04 54.0	0.250	1.1 90	12.2 Wboc, Inc.	82.1	84.4
282D Hagerstown	W282CR MD	CP _C_	329.6 149.2	100.29 BNPFT20180315AAD	39 40 04.0 77 43 33.0	0.250	1.1 233	10.4 Hagerstown Broadcasting Co	92.1	89.6
285A White Stone	WIGO-FM VA	LIC _CX	153.3 333.8	145.03 BLH20070820ACF	37 43 25.0 76 23 28.8	4.100 122	40.8 127	26.6 Two Rivers Communications,	90.4	97.5
281B Harrisburg	WNNK-FM PA	LIC _CX	5.5 185.6	159.16 BMLH20050804ADH	40 18 59.0 76 57 04.0	22.500 221	6.0 379	67.1 Cumulus Licensing Llc	146.5	91.7

Terrain database is NGDC 30 SEC , R= 73.215 qualifying spacings or FCC minimum Spacings in KM, M= Margin in KM
Contour distances are on direct line to and from reference station. Reference zone= East Zone, Co to 3rd adjacer
All separation margins (if shown) include rounding.
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, _= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)
"*"affixed to 'IN' or 'OUT' values = site inside restricted contour.
< = Contour Overlap

Figure 2. Contour Map

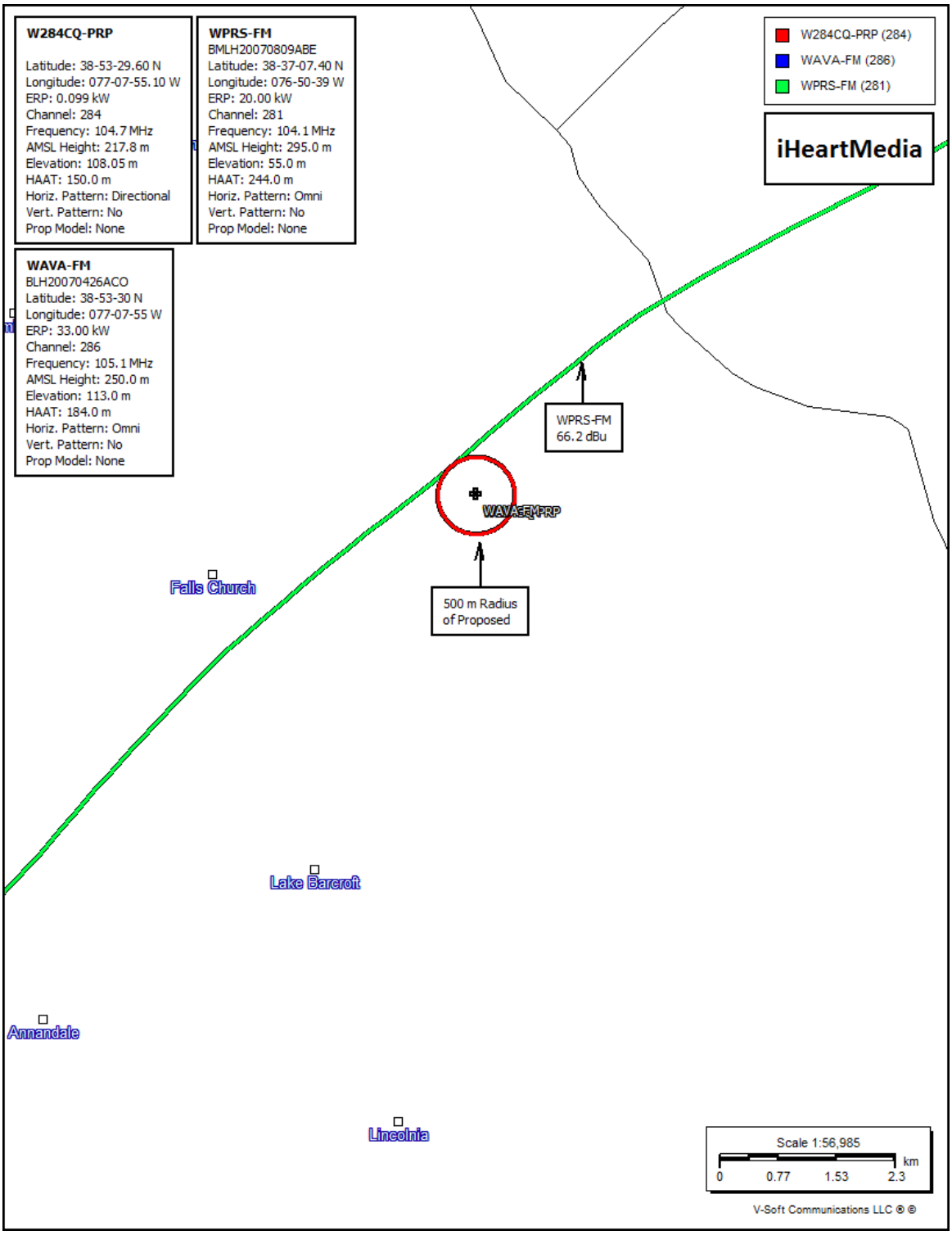

Figure 3. Signal Level at or Near Ground Level

Proposed Antenna:	ERI A 100-2HW 2-bay half w ave	
Proposed Power:	0.099	kW
Antenna Height AGL:	105	meters
Interference Contour:	106.2	dBu f(50:10)
Artificial Rcv Antenna Height:	2	meters
Distance (Free Space) Equation:	=(10^((106.92-[desired dBu]+[ERP in dBk])/20))*1000	
Field Strength (dBu) Equation	"=106.92-(20*(LOG10[DistMeters]/1000)))+[ERPin dBk]	

Fill in "yellow" cells

Depression Angle Below Horizon	Antenna Relative Field	ERP in kW	ERP in dBk	Distance from Ant. to Interf Contour	Distance from Ant. to Artificial Plane	Field Strength in dBu @ Artificial Plane	Distance from Ant. to Ground Level	Field Strength in dBu @ Ground Level
0°	1.000	0.099	-10.04	341.84 m	infinite	---	infinite	---
-5°	0.984	0.096	-10.18	336.37 m	1181.79 m	95.29 dBu	1204.74 m	95.12 dBu
-10°	0.938	0.087	-10.60	320.64 m	593.15 m	100.86 dBu	604.67 m	100.69 dBu
-15°	0.865	0.074	-11.30	295.69 m	397.96 m	103.62 dBu	405.69 m	103.45 dBu
-20°	0.772	0.059	-12.29	263.90 m	301.15 m	105.05 dBu	307.00 m	104.89 dBu
-25°	0.665	0.044	-13.59	227.32 m	243.72 m	105.60 dBu	248.45 m	105.43 dBu
-30°	0.553	0.030	-15.19	189.04 m	206.00 m	105.45 dBu	210.00 m	105.29 dBu
-35°	0.442	0.019	-17.14	151.09 m	179.58 m	104.70 dBu	183.06 m	104.53 dBu
-40°	0.339	0.011	-19.44	115.88 m	160.24 m	103.38 dBu	163.35 m	103.22 dBu
-45°	0.248	0.006	-22.15	84.78 m	145.66 m	101.50 dBu	148.49 m	101.33 dBu
-50°	0.172	0.003	-25.33	58.80 m	134.46 m	99.02 dBu	137.07 m	98.85 dBu
-55°	0.112	0.001	-29.06	38.29 m	125.74 m	95.87 dBu	128.18 m	95.70 dBu
-60°	0.068	0.000	-33.39	23.24 m	118.93 m	92.02 dBu	121.24 m	91.85 dBu
-65°	0.037	0.000	-38.68	12.65 m	113.65 m	87.13 dBu	115.85 m	86.96 dBu
-70°	0.018	0.000	-44.94	6.15 m	109.61 m	81.18 dBu	111.74 m	81.02 dBu
-75°	0.007	0.000	-53.14	2.39 m	106.63 m	73.22 dBu	108.70 m	73.05 dBu
-80°	0.002	0.000	-64.02	0.68 m	104.59 m	62.51 dBu	106.62 m	62.34 dBu
-85°	0.001	0.000	-70.04	0.34 m	103.39 m	56.59 dBu	105.40 m	56.42 dBu
-90°	0.001	0.000	-70.04	0.34 m	103.00 m	56.62 dBu	105.00 m	56.45 dBu

Figure 4. Image of Proposed Support Tower

Figure 5. Fill-in and Minor Change Contour Map