

ENGINEERING STATEMENT
RE APPLICATION FOR
LICENSE OF OUTSTANDING CONSTRUCTION PERMIT
(FCC FILE NO. BPD TV-20110826AAT) FOR
CLASS A DIGITAL TV STATION
K04QP-D, CASAS ADOBES, ARIZONA
CHANNEL 4 2.0 KW ERP 937 METERS RC/AMSL

DECEMBER 2014

COHEN, DIPPELL AND EVERIST, P.C.
CONSULTING ENGINEERS
RADIO AND TELEVISION
WASHINGTON, D.C.

COHEN, DIPPELL AND EVERIST, P. C.

City of Washington)
) ss
District of Columbia)

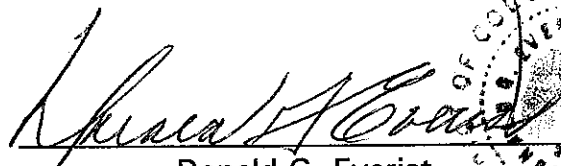
Donald G. Everist, being duly sworn upon his oath, deposes and states that:

He is a graduate electrical engineer, a Registered Professional Engineer in the District of Columbia, and is President, Secretary and Treasurer of Cohen, Dippell and Everist, P.C., Consulting Engineers, Radio - Television, with offices at 1420 N Street, N.W., Suite One, Washington, D.C. 20005;

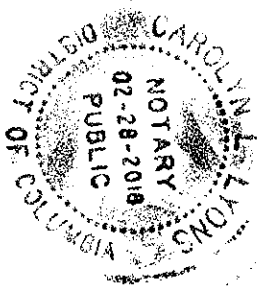
That his qualifications are a matter of record in the Federal Communications Commission;

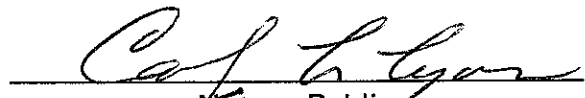
That the attached engineering report was prepared by him or under his supervision and direction and

That the facts stated herein are true of his own knowledge, except such facts as are stated to be on information and belief, and as to such facts he believes them to be true.


Donald G. Everist
District of Columbia
Professional Engineer
Registration No. 5714

Subscribed and sworn to before me this 29th day of December, 2014.




Notary Public

My Commission Expires: 2/28/2018

Introduction

This engineering statement has been prepared on behalf of KVOA Communications Inc. ("KVOA"), licensee of television translator station K04QP-D DC, Casas Adobes, Arizona. This statement supports the request to license the increase in ERP of K04QP-D DC's authorized Channel 4 digital operation (FCC File No. BPDTV-20110826AAT). KVOA hereby requests to license digital Class A facilities on channel 4 with a maximum effective radiated power ("ERP") of 2.0 kW at a radiation center above mean sea level ("RCAMSL") of 937 meters as authorized by the outstanding construction permit.

Transmitter Site

The geographic coordinates of the existing site are as follow:

North Latitude: 32° 12' 53"

West Longitude: 111° 00' 20"

NAD-27

Elevation Data

Elevation of site above mean sea level	930 meters (3051.2 feet)
Center of radiation of antenna above ground level	7 meters (23.0 feet)
Center of radiation of antenna above mean sea level	937 meters (3074.1 feet)
Overall tower height above ground level	8 meters (26.2 feet)

The existing structure is less than 200 feet and does not require registration.

Equipment Data

Transmitter:	Type-approved, Simple Mask
Transmission Line:	Andrew, Type LDF5-50B, 7/8", 50 Ω foam dielectric or equivalent; 12.2 meters (40 feet) with 97.5% efficiency (0.278 dB loss/100 ft)
Antenna:	Kathrein Scala, TVO-4 with maximum gain of 3.0 dB. See Exhibit E-1 for elevation pattern data and plot

Power Data

Transmitter:	1.03 kW	0.11 dBk
Transmission Line Efficiency/Loss:	97.5%	-0.11 dB
Input Into Antenna:	1.0 kW	0.0 dBk
Antenna Gain:	2.00	3.00 dB
ERP:	2.0 kW	3.01 dBk

The delay in the construction was due to factors as described by the letter dated November 14, 2013 to the Federal Communications Commission and subsequently filed special temporary authority (FCC File No. BSTA-20131121AJD). Some of the details are provided as follows:

- K04QP-D DC purchased an Axcera 1 kW (transmitter output power), Model LHV2RD DTV Channel 4 transmitter. It was installed with the existing antenna in June 2013 in accordance with the outstanding construction permit.
- K04QP-D DC is located on Tumamoc Hill and the transmitter building and site are leased from the University of Arizona
- The Axcera transmitter was energized into the line to the transmit antenna. The transmitter while delivering 100% power into the dummy load would not achieve 100% into the antenna before transmitter failure.
- Since the initial start (November 14, 2013), the KVOA engineering staff has continued efforts to resolve the transmitter failure problem
- The transmitter manufacturer was contacted to ascertain what corrective action could be made to have the Axcera transmitter to operate at its rated power
- The transmitter manufacturer while providing possible solutions did not resolve the transmitter failure problem
- The KVOA engineering staff determined there is no other space in which to relocate the transmitter
- The KVOA engineering staff indicates that the lease agreement prohibits any site improvements such as a new building or tower/pole

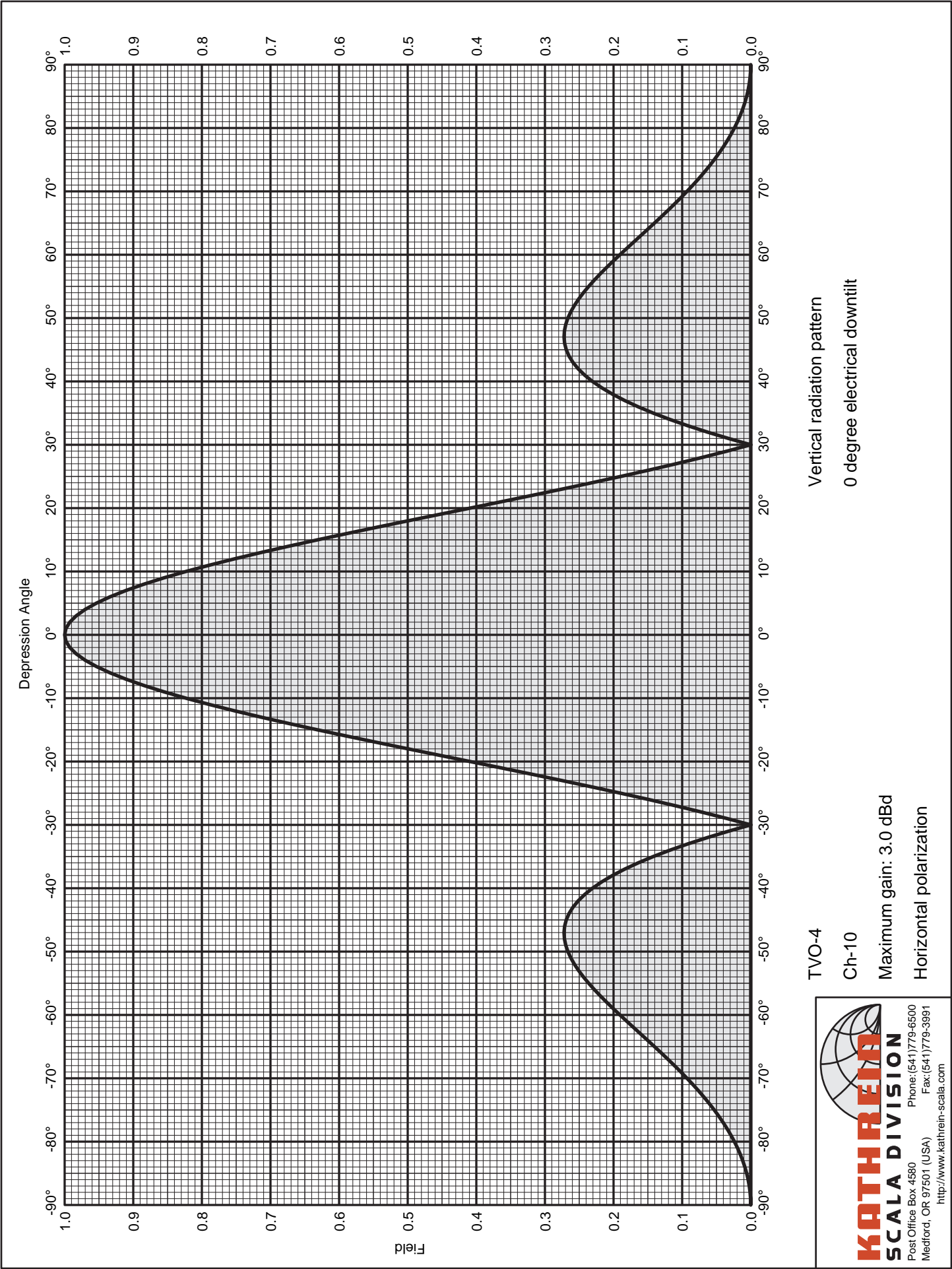
- The KVOA engineering staff installed shielding fabric inside the existing building and was able to raise the maximum transmitter to achieve 100% power.

The RF system as built has been stable.

Cohen, Dippell and Everist, P.C.

EXHIBIT E-1

KATHREIN-SCALA
TVO-4 ANTENNA



KATHREIN
SCALA DIVISION

Post Office Box 4580
Medford, OR 97501 (USA)
Phone: (541) 779-6500
Fax: (541) 779-3991
<http://www.kathrein-scala.com>



TVO-4

Ch-10

Maximum gain: 3.0 dBd

Horizontal polarization

Vertical radiation pattern

0 degree electrical downtilt

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
-90	0.010	-40.00	-37.00	0.00	-45	0.269	-11.41	-8.41	0.14
-89	0.010	-40.00	-37.00	0.00	-44	0.265	-11.54	-8.54	0.14
-88	0.010	-40.00	-37.00	0.00	-43	0.259	-11.73	-8.73	0.13
-87	0.010	-40.00	-37.00	0.00	-42	0.252	-11.98	-8.98	0.13
-86	0.010	-40.00	-37.00	0.00	-41	0.242	-12.32	-9.32	0.12
-85	0.010	-40.00	-37.00	0.00	-40	0.231	-12.74	-9.74	0.11
-84	0.010	-40.00	-37.00	0.00	-39	0.217	-13.26	-10.26	0.09
-83	0.012	-38.60	-35.60	0.00	-38	0.202	-13.90	-10.90	0.08
-82	0.015	-36.29	-33.29	0.00	-37	0.184	-14.70	-11.70	0.07
-81	0.019	-34.26	-31.26	0.00	-36	0.164	-15.69	-12.69	0.05
-80	0.024	-32.44	-29.44	0.00	-35	0.142	-16.94	-13.94	0.04
-79	0.029	-30.80	-27.80	0.00	-34	0.118	-18.56	-15.56	0.03
-78	0.034	-29.30	-26.30	0.00	-33	0.092	-20.76	-17.76	0.02
-77	0.040	-27.92	-24.92	0.00	-32	0.063	-23.99	-20.99	0.01
-76	0.046	-26.65	-23.65	0.00	-31	0.033	-29.74	-26.74	0.00
-75	0.053	-25.48	-22.48	0.01	-30	0.010	-40.00	-37.00	0.00
-74	0.060	-24.38	-21.38	0.01	-29	0.035	-29.23	-26.23	0.00
-73	0.068	-23.35	-20.35	0.01	-28	0.071	-22.99	-19.99	0.01
-72	0.076	-22.39	-19.39	0.01	-27	0.109	-19.25	-16.25	0.02
-71	0.084	-21.49	-18.49	0.01	-26	0.149	-16.56	-13.56	0.04
-70	0.093	-20.64	-17.64	0.02	-25	0.190	-14.44	-11.44	0.07
-69	0.102	-19.83	-16.83	0.02	-24	0.232	-12.69	-9.69	0.11
-68	0.111	-19.08	-16.08	0.02	-23	0.275	-11.21	-8.21	0.15
-67	0.121	-18.36	-15.36	0.03	-22	0.319	-9.92	-6.92	0.20
-66	0.130	-17.69	-14.69	0.03	-21	0.364	-8.78	-5.78	0.26
-65	0.140	-17.05	-14.05	0.04	-20	0.409	-7.76	-4.76	0.33
-64	0.150	-16.45	-13.45	0.05	-19	0.454	-6.85	-3.85	0.41
-63	0.161	-15.89	-12.89	0.05	-18	0.499	-6.03	-3.03	0.50
-62	0.171	-15.36	-12.36	0.06	-17	0.544	-5.29	-2.29	0.59
-61	0.181	-14.86	-11.86	0.07	-16	0.588	-4.61	-1.61	0.69
-60	0.191	-14.39	-11.39	0.07	-15	0.631	-4.00	-1.00	0.80
-59	0.200	-13.96	-10.96	0.08	-14	0.673	-3.44	-0.44	0.90
-58	0.210	-13.55	-10.55	0.09	-13	0.714	-2.93	0.07	1.02
-57	0.219	-13.18	-10.18	0.10	-12	0.752	-2.47	0.53	1.13
-56	0.228	-12.84	-9.84	0.10	-11	0.789	-2.06	0.94	1.24
-55	0.236	-12.53	-9.53	0.11	-10	0.823	-1.69	1.31	1.35
-54	0.244	-12.26	-9.26	0.12	-9	0.855	-1.36	1.64	1.46
-53	0.251	-12.01	-9.01	0.13	-8	0.884	-1.07	1.93	1.56
-52	0.257	-11.80	-8.80	0.13	-7	0.911	-0.81	2.19	1.65
-51	0.262	-11.62	-8.62	0.14	-6	0.934	-0.59	2.41	1.74
-50	0.267	-11.48	-8.48	0.14	-5	0.954	-0.41	2.59	1.81
-49	0.270	-11.38	-8.38	0.15	-4	0.970	-0.26	2.74	1.88
-48	0.272	-11.32	-8.32	0.15	-3	0.983	-0.15	2.85	1.93
-47	0.272	-11.30	-8.30	0.15	-2	0.993	-0.07	2.93	1.97
-46	0.271	-11.33	-8.33	0.15	-1	0.998	-0.02	2.98	1.99
					0	1.000	0.00	3.00	2.00



TVO-4

Ch-10

Maximum gain: 3.0 dBd

Horizontal polarization

Vertical radiation pattern

0 degree electrical downtilt

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	3.00	2.00	45	0.269	-11.41	-8.41	0.14
1	0.998	-0.02	2.98	1.99	46	0.271	-11.33	-8.33	0.15
2	0.993	-0.07	2.93	1.97	47	0.272	-11.30	-8.30	0.15
3	0.983	-0.15	2.85	1.93	48	0.272	-11.32	-8.32	0.15
4	0.970	-0.26	2.74	1.88	49	0.270	-11.38	-8.38	0.15
5	0.954	-0.41	2.59	1.81	50	0.267	-11.48	-8.48	0.14
6	0.934	-0.59	2.41	1.74	51	0.262	-11.62	-8.62	0.14
7	0.911	-0.81	2.19	1.65	52	0.257	-11.80	-8.80	0.13
8	0.884	-1.07	1.93	1.56	53	0.251	-12.01	-9.01	0.13
9	0.855	-1.36	1.64	1.46	54	0.244	-12.26	-9.26	0.12
10	0.823	-1.69	1.31	1.35	55	0.236	-12.53	-9.53	0.11
11	0.789	-2.06	0.94	1.24	56	0.228	-12.84	-9.84	0.10
12	0.752	-2.47	0.53	1.13	57	0.219	-13.18	-10.18	0.10
13	0.714	-2.93	0.07	1.02	58	0.210	-13.55	-10.55	0.09
14	0.673	-3.44	-0.44	0.90	59	0.200	-13.96	-10.96	0.08
15	0.631	-4.00	-1.00	0.80	60	0.191	-14.39	-11.39	0.07
16	0.588	-4.61	-1.61	0.69	61	0.181	-14.86	-11.86	0.07
17	0.544	-5.29	-2.29	0.59	62	0.171	-15.36	-12.36	0.06
18	0.499	-6.03	-3.03	0.50	63	0.161	-15.89	-12.89	0.05
19	0.454	-6.85	-3.85	0.41	64	0.150	-16.45	-13.45	0.05
20	0.409	-7.76	-4.76	0.33	65	0.140	-17.05	-14.05	0.04
21	0.364	-8.78	-5.78	0.26	66	0.130	-17.69	-14.69	0.03
22	0.319	-9.92	-6.92	0.20	67	0.121	-18.36	-15.36	0.03
23	0.275	-11.21	-8.21	0.15	68	0.111	-19.08	-16.08	0.02
24	0.232	-12.69	-9.69	0.11	69	0.102	-19.83	-16.83	0.02
25	0.190	-14.44	-11.44	0.07	70	0.093	-20.64	-17.64	0.02
26	0.149	-16.56	-13.56	0.04	71	0.084	-21.49	-18.49	0.01
27	0.109	-19.25	-16.25	0.02	72	0.076	-22.39	-19.39	0.01
28	0.071	-22.98	-19.98	0.01	73	0.068	-23.35	-20.35	0.01
29	0.035	-29.23	-26.23	0.00	74	0.060	-24.38	-21.38	0.01
30	0.010	-40.00	-37.00	0.00	75	0.053	-25.48	-22.48	0.01
31	0.033	-29.75	-26.75	0.00	76	0.046	-26.65	-23.65	0.00
32	0.063	-23.99	-20.99	0.01	77	0.040	-27.92	-24.92	0.00
33	0.092	-20.76	-17.76	0.02	78	0.034	-29.30	-26.30	0.00
34	0.118	-18.56	-15.56	0.03	79	0.029	-30.80	-27.80	0.00
35	0.142	-16.94	-13.94	0.04	80	0.024	-32.44	-29.44	0.00
36	0.164	-15.69	-12.69	0.05	81	0.019	-34.26	-31.26	0.00
37	0.184	-14.70	-11.70	0.07	82	0.015	-36.29	-33.29	0.00
38	0.202	-13.90	-10.90	0.08	83	0.012	-38.60	-35.60	0.00
39	0.217	-13.26	-10.26	0.09	84	0.010	-40.00	-37.00	0.00
40	0.231	-12.74	-9.74	0.11	85	0.010	-40.00	-37.00	0.00
41	0.242	-12.32	-9.32	0.12	86	0.010	-40.00	-37.00	0.00
42	0.252	-11.98	-8.98	0.13	87	0.010	-40.00	-37.00	0.00
43	0.259	-11.73	-8.73	0.13	88	0.010	-40.00	-37.00	0.00
44	0.265	-11.54	-8.54	0.14	89	0.010	-40.00	-37.00	0.00
					90	0.010	-40.00	-37.00	0.00

SECTION III - Engineering

TECHNICAL SPECIFICATIONS

Ensure that the specifications below are accurate. All items must be completed. The response "on file" is not acceptable.

NOTE: In addition to the information called for in this section, an explanatory exhibit providing full particulars must be submitted for each question for which a "No" response is provided

TECH BOX

1. Channel: _____

2. Frequency Offset

☐

No offset

☐

Zero offset

☐

Plus offset

☐

Minus offset

3. Antenna Location Coordinates: (NAD 27)

_____ ° _____ ' _____ "

_____ ° _____ ' _____ "

☐ N

☐ S Latitude

☐ E

☐ W Longitude

4. Operating Constants:

Transmitter power output (after vestigial sideband filter, if used, and after multiplexer, if combined)		Multiplexer loss in dB, if separate	Input to transmission line
dBk kW		dB	dBk
Transmission line power loss	Antenna Input power	Maximum antenna power gain	Maximum effective radiated power
dB	dBk	dB	dBk kW

5. Antenna Data:

Manufacturer	Model
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6. Height of radiation center above mean sea level: _____ meters

CERTIFICATIONS

Part A: For LPTV licensees seeking to convert their licensed or authorized construction permit facilities to Class A status or to cover a displacement application for construction permit for Class A facilities.

1. **Interference.** The facility authorized in the license or construction permit or proposed in the construction permit application, complies with the following applicable interference protection rule sections.

Analog TV broadcast station protection. See 47 C.F.R. Section 73.6011.

☐ Yes ☐ No

See Explanation
in Exhibit No.

Digital TV station and DTV Table of Allotments protection. See 47 C.F.R. Section 73.6013.

☐ Yes ☐ No

See Explanation
in Exhibit No.

Low Power TV, TV translator, Class A, and Digital Class A station protection. See 47 C.F.R. Sections 73.6012 and 73.6014.

☐ Yes ☐ No

See Explanation
in Exhibit No.

Land mobile station protection. See 47 C.F.R. Section 73.6020.

☐ Yes ☐ No

See Explanation
in Exhibit No.

2. **Changed Circumstances.** Apart from changes already reported, no cause or circumstance has arisen since the grant of the underlying LPTV construction permit which would result in any statement or representation contained in the construction permit application to be now incorrect.

☐ Yes ☐ No

See Explanation
in Exhibit No.

Part B: For Class A licensees seeking a license to cover their authorized Class A construction permit facilities.

1. **Constructed Facility.** The facility was constructed as authorized in the underlying construction permit.

☐ Yes ☐ No

See Explanation
in Exhibit No.

2. **Special Operating Conditions.** The facility was constructed in compliance with all special operating conditions, terms, and obligations described in the construction permit.

☐ Yes ☐ No

See Explanation
in Exhibit No.

Exhibit No.
16

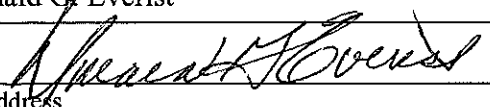
3. **Changed Circumstances.** Apart from changes already reported, no cause or circumstance has arisen since the grant of the underlying Class A construction permit which would result in any statement or representation contained in the construction permit application to be now incorrect.

☐ Yes ☐ No

See Explanation
in Exhibit No.

Part C: PREPARER'S CERTIFICATION

I certify that I have prepared Section III (Engineering Data) on behalf of the applicant, and that after such preparation, I have

Name Donald G. Everist		Relationship to Applicant (e.g., Consulting Engineer) Consulting Engineer	
Signature 		Date December 29, 2014	
Mailing Address Cohen, Dippell and Everist, P.C. 1420 N Street, NW Suite One			
City Washington		State or Country (if foreign address) DC	ZIP Code 20005
Telephone Number (include area code) 2028980111		E-Mail Address (if available) cdepc@comcast.net	

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001),
AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION PERMIT (U.S. CODE, TITLE 47, SECTION 312(a)(1)),
AND/OR FORFEITURE (U.S. CODE, TITLE 47, SECTION 503).