Comprehensive engineering statement. – November 7, 2019

In this application for permission to construct, WKTJ-FM proposes to correct its coordinates and increase its radiated power. Apparently, the station's transmitter site was misidentified when the proposed owners of the FM station applied for the initial construction permit. The error was an accidental, caused by the inaccuracy inherent in the use of the 1:250,000 topographic map that was the only available map scale at the time. Now, after noticing the discrepancy, the applicant wishes to correct the coordinates by approximately 3 seconds, to the following NAD 83 coordinates:

N. Lat. 44-38-18.53

W. Lng. 70-11-49.25

Base elevation: 361 m

The elevation and geographic coordinates were taken from Google Earth which is known for its accuracy and by the use of the Farmington, Maine, USGS 7.5 minute Quad map.

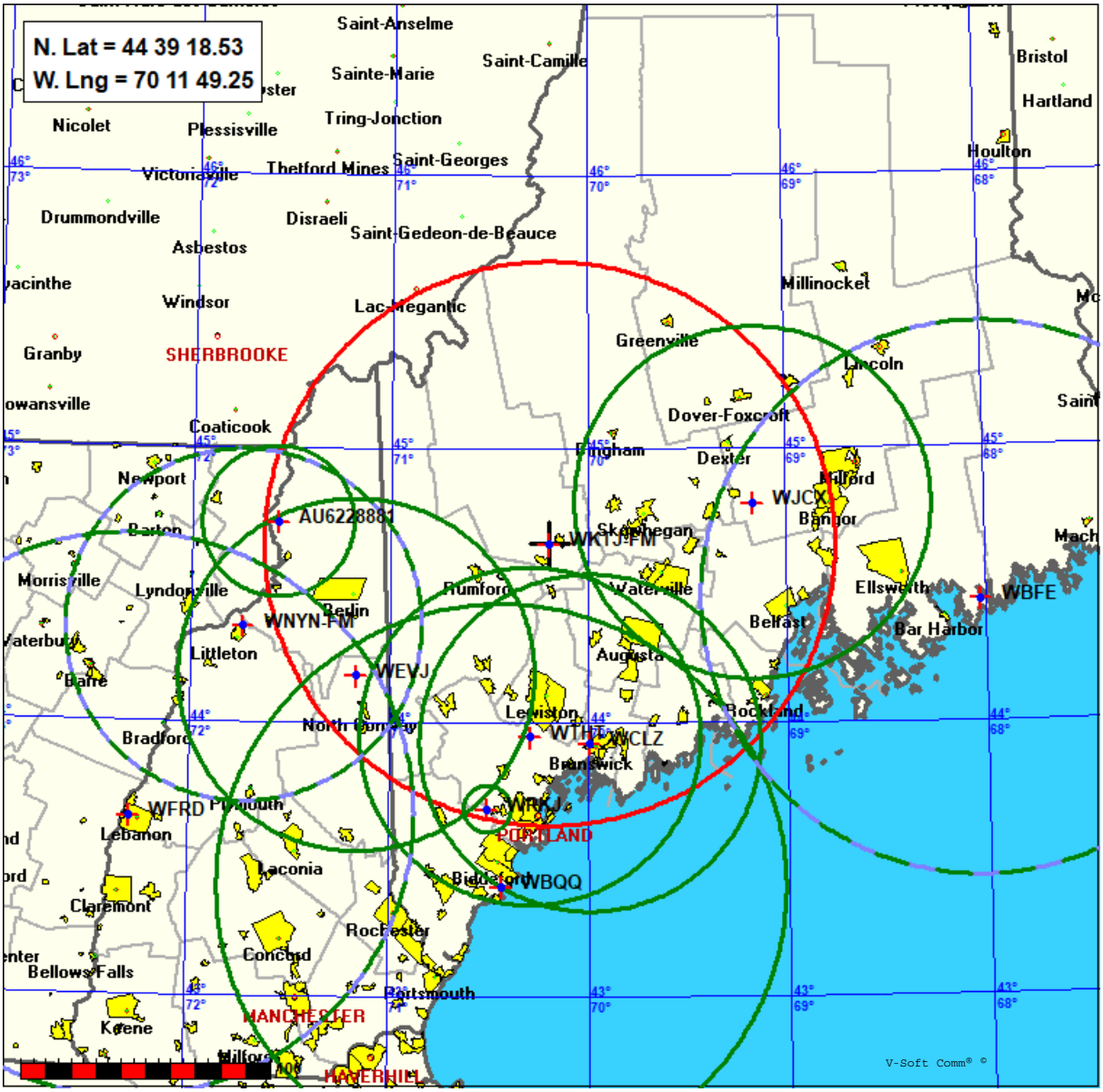
The applicant had been transmitting as a former class A, 3 kW equivalent, station and now wishes to increase the effective radiated power to the equivalent 6 kW for a maximum class A. No changes are proposed to be made to the applicant's omni-directional antenna system, nor to its licensed antenna height above ground. An allocation study has been completed at the station's actual coordinates that shows that all section 73.509 minimum separations are met for a full-class A facility. Based on the LMS, FM data used in this application, there appears to be no relationships with cross border, Canadian, stations. The referenced 73.509 study appears in this engineering statement.

The Globe terrain 30 arc-second terrain elevation database has been used throughout this application, where applicable. A study of the 70 dBu signal of the proposed facility shows that the city of license, Farmington, Maine, will be 100 percent covered by the principal city, 70 dBu signal contour. A map and table of HAATs and distances to contour is included in the attachments.

This application for construction permit also includes an environmental exhibit reporting that there has been no controversy concerning the existing 48.8 meter tower, built before 1973, the year the FM station went on the air. The study also shows that the station will produce a power density, at head height, of less than the maximum for an uncontrolled area and that the public and workers will be protected from emissions in excess of the Commission's maximum.

CH 257 A, A, 99.3 MHz

Current Spacings to 3rd Adj.
Map of section 73.207 table of minimum distances
Katahdin Communications, Inc.



Data Date:11-06-19 Job Date:11-06-19

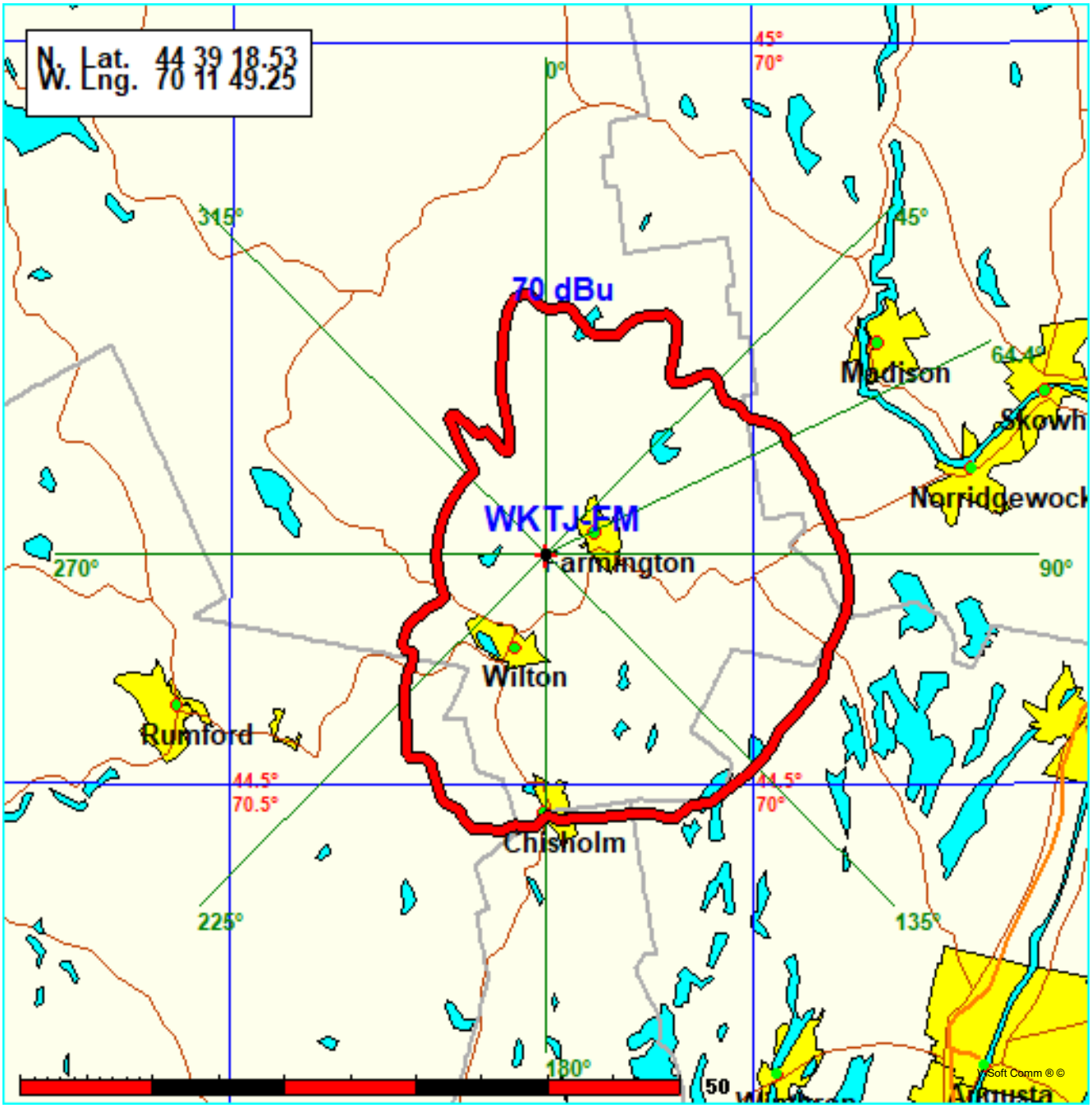
Call	CH#	Type	Location		Azi	D-KM	FCC	Margin
WKTJ-FM	257A	LIC	Farmington	ME	30.6	0.13	114.5	-114.4
WTHT	260B	LIC	Auburn	ME	185.8	78.52	68.5	10.0
WJCX	258A	LIC	Pittsfield	ME	78.2	83.17	71.5	11.7
WCLZ	255B	LIC	North Yarmouth	ME	168.7	82.41	68.5	13.9
WEVJ	258A	LIC	Jackson	NH	235.7	93.95	71.5	22.5
WBQQ	257A	LIC	Kennebunk	ME	187.9	140.28	114.5	25.8
WNYN-FM	256A	LIC-Z	Whitefield	NH	255.2	126.99	71.5	55.5
WBFE	256B	LIC-N	Bar Harbor	ME	97.0	174.39	112.5	61.9
AU6228881	254A	VAC	Stratford	NH	275.0	109.08	30.5	78.6
WFRD	257A	LIC-N	Hanover	NH	237.1	201.36	114.5	86.9
WRKJ	203A	LIC-D	Westbrook	ME	193.1	110.49	9.5	101.0

All separation margins include rounding
(Reference station has protected zone issue): Canada

Map of the 70 dBu Coverage at Proposed ERP
Katahdin Communications, Inc.

Coverage Study - GLOBE 30 Sec
11-06-2019

WKTJ-FM CH257 A , 4.1 kW, 124 m HAAT, 361 m COR AMSL
Service Contour = 70 dBu. Population = 23,849



N. Lat. = 44 39 18.5   W. Lng. = 70 11 49.2
HAAT and Distance to Contour, Proposed WKTJ-FM
FCC, FM 2-10 Mi, 51 pts Method - GLOBE 30 SEC

Distances to 70 dBu contour on 36 radials

Azi.	AV EL	HAAT	ERP kW	dBk	Field	70-F5
000	207.1	153.9	4.1000	6.13	1.000	18.46
010	222.5	138.5	4.1000	6.13	1.000	17.42
020	208.7	152.3	4.1000	6.13	1.000	18.35
030	185.7	175.3	4.1000	6.13	1.000	19.72
040	224.7	136.3	4.1000	6.13	1.000	17.26
050	216.2	144.8	4.1000	6.13	1.000	17.85
060	188.2	172.8	4.1000	6.13	1.000	19.58
070	172.0	189.0	4.1000	6.13	1.000	20.40
080	157.0	204.0	4.1000	6.13	1.000	21.12
090	131.9	229.1	4.1000	6.13	1.000	22.32
100	118.7	242.3	4.1000	6.13	1.000	22.93
110	128.5	232.5	4.1000	6.13	1.000	22.48
120	131.9	229.1	4.1000	6.13	1.000	22.32
130	136.3	224.7	4.1000	6.13	1.000	22.11
140	136.5	224.5	4.1000	6.13	1.000	22.11
150	146.3	214.7	4.1000	6.13	1.000	21.64
160	168.8	192.2	4.1000	6.13	1.000	20.55
170	181.2	179.8	4.1000	6.13	1.000	19.95
180	187.0	174.0	4.1000	6.13	1.000	19.65
190	162.5	198.5	4.1000	6.13	1.000	20.86
200	179.9	181.1	4.1000	6.13	1.000	20.02
210	216.6	144.4	4.1000	6.13	1.000	17.83
220	235.9	125.1	4.1000	6.13	1.000	16.46
230	269.4	91.6	4.1000	6.13	1.000	13.90
240	283.6	77.4	4.1000	6.13	1.000	12.82
250	348.2	12.8	4.1000	6.13	1.000	8.05
260	361.8	-0.8	4.1000	6.13	1.000	8.05
270	366.4	-5.4	4.1000	6.13	1.000	8.05
280	386.1	-25.1	4.1000	6.13	1.000	8.05
290	434.5	-73.5	4.1000	6.13	1.000	8.05
300	447.9	-86.9	4.1000	6.13	1.000	8.05
310	428.0	-67.0	4.1000	6.13	1.000	8.05
320	319.7	41.3	4.1000	6.13	1.000	9.47
330	306.3	54.7	4.1000	6.13	1.000	10.98
340	326.4	34.6	4.1000	6.13	1.000	8.64
350	216.3	144.7	4.1000	6.13	1.000	17.85

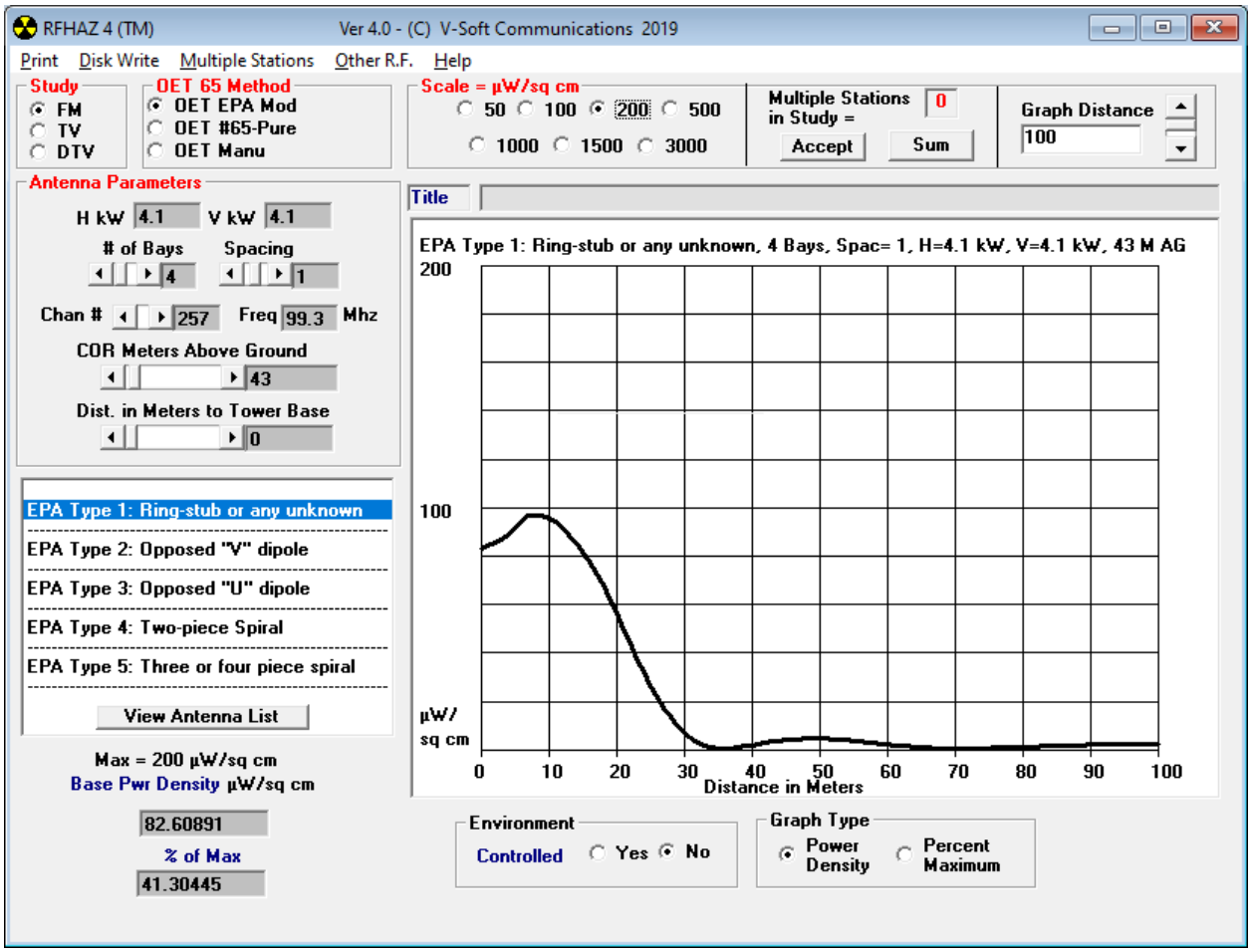
Ave El= 237.19 M HAAT= 123.81 M AMSL= 361.0

R.F. Emissions analysis: (November 10, 2019)

The existing 48.8 meter tower was built for an AM station that has since returned its license. Records as to the precise year the tower was built were not available. WKTJ-FM was licensed in 1973, so the tower has been in existence for at least 50 years and therefore is exempt from further environmental study. There has been no controversy, over the years, about its existence. The tower holds the 4-bay circularly polarized Gates FMC-4A antenna, the center of which is 45 meters above ground level. The proposed ERP is to transmit using a radiated power of 4.068 kW (rounds to 4.1 kW). Using the OET 65 formulas as augmented by the EPA studies, we can determine that the proposed antenna will produce a maximum of 96.4 microwatts per square centimeter, or 48.2 percent of the uncontrolled maximum of 200 microwatts per square centimeter at head height of two meters above the ground and at a distance of 8 meters from the tower base. The applicant's antenna is the only broadcast antenna on the tower that qualifies for consideration.

The applicant will reduce power or terminate transmission to protect workers on or near the proposed antenna.

The following shows graphic representation of the EPA type 1 antenna.



Consequently, the proposed facility will protect the public and workers from emissions in excess of the Commissions' maximum.