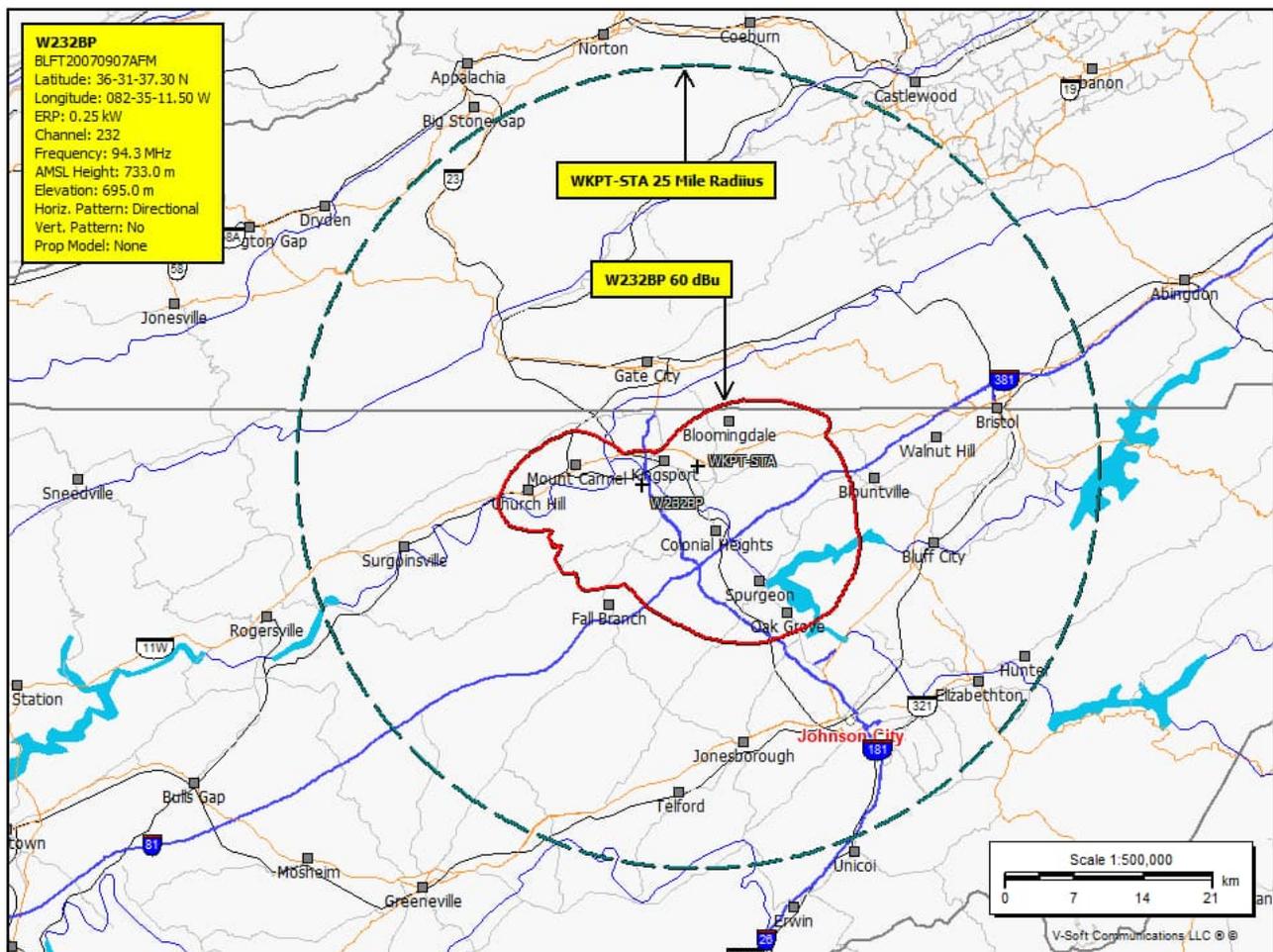


**WKPT**  
**Kingsport, TN**  
**1400 kHz**  
**#27495**

**APPLICATION FOR ENGINEERING STA**

**Purpose:**

The existing WKPT tower has been determined unsafe for climbing and requires replacement. This STA is requested for temporary operation to sustain WKPT's service while the tower is dismantled and replaced with a 140 foot guyed tower. An FCC form 301 for the modified WKPT facility will also be filed shortly and a modified STA will be filed for the new tower upon completion. The existing WKPT translator's, W232BP, 60 dBu is entirely contained within a 25 mile radius of the proposed WKPT-STA.



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## **Technical data and exhibits for requested STA:**

WKPT

1400 kHz

Facility #27495

0.25 kW - Unlimited

Efficiency - 305.84 mV/m/km/kW worst case assuming 90° tower and 90° 120 radial ground system.

**Site: N 36-32-35.8 W 82-31-26.7 (NAD 83)**

Antenna type:

Isotron model 225 (details attached) with coil loading to increase electrical efficiency to the equivalent of a 90° tower.

The following exhibits are provided:

- E1 Vertical sketch
- E2 STA 0.5 mV/m Day contour is contained within the WKPT 0.5 mV/m Day
- E3 Tower Air
- E4 Isotron antenna details

**Antenna efficiency assumed to be equivalent to 90 degree tower:**

**FIGURE 8** calculates the Inverse Distance Field for AM broadcast stations with frequencies between 530 and 1700 kHz. This calculator is a computer version of Figure 8 of Section 73.190 of the FCC Rules.

The Inverse Distance Fields calculated here are in **mV/m at 1 kilometer.**

[Ground system correction factors](#) may be incorporated into the following results.

**Input Parameters**

Frequency:	1400 kHz
Number of Ground Radials:	120
Correction for number of radials:	0.0000 mV/m @ 1 kilometer
Average Length of Ground Radials:	54.000 meters 177.165 feet 90.783 degrees 0.2522 wavelengths
Correction factor for length:	0.0000 mV/m @ 1 kilometer
One Wavelength at 1400 kHz is:	214.138 meters 702.551 feet
Tower Height:	53.600 meters 175.853 feet 90.11 degrees 0.2503 wavelengths

**Predicted Field Strength from Figure 8, Section 73.190**

**(Metric units)**

	Theoretical Field	Corrected Field	
At 1.00 kW:	305.844	305.844	mV/m @ 1 KM
At 0.250 kW:	152.922	152.922	mV/m @ 1 KM

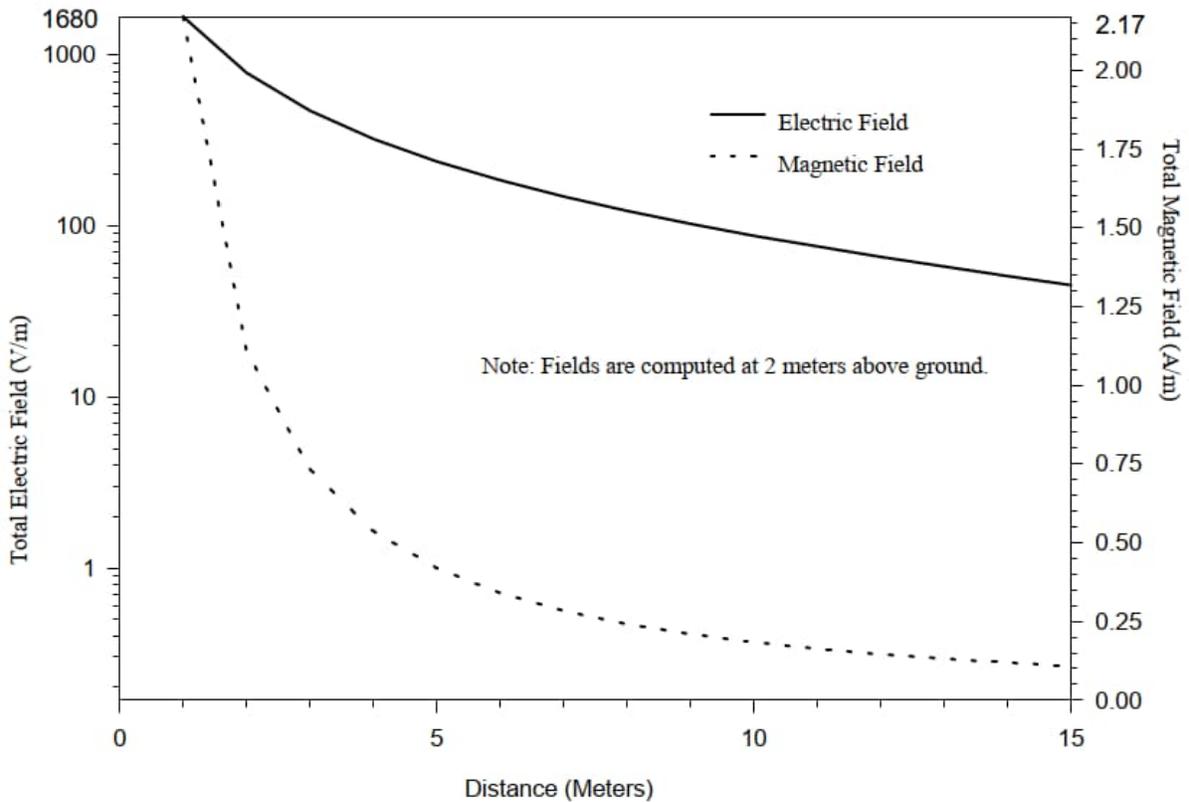
**RF determination:**

The 0.25 kW facility’s RF exposure has been calculated with the assumption that the Isotron antenna will be mounted at 4 meters above ground. Using a worst case assumption of a  $0.1\lambda$  tower, the electrical and magnetic field are well below the general population limits at 2 meters above ground.

**V/m at 1.5 meters =  $1680 \times 0.25 \text{ kW}^2 / 614 \text{ V/m maximum} = 105 \text{ V/m}$  or 17%**

**A/m at 1.5 meters =  $2.17 \times 0.25 \text{ kW}^2 / 1.63 = 0.14 \text{ A/m}$  or 8.5%.**

**The proposed STA complies with Commission RF radiation limits for general public exposure.**



**Figure 1. MININEC AM Model for 1 kW, 0.10 Wavelength Tower**

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### (B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz

\*Plane-wave equivalent power density

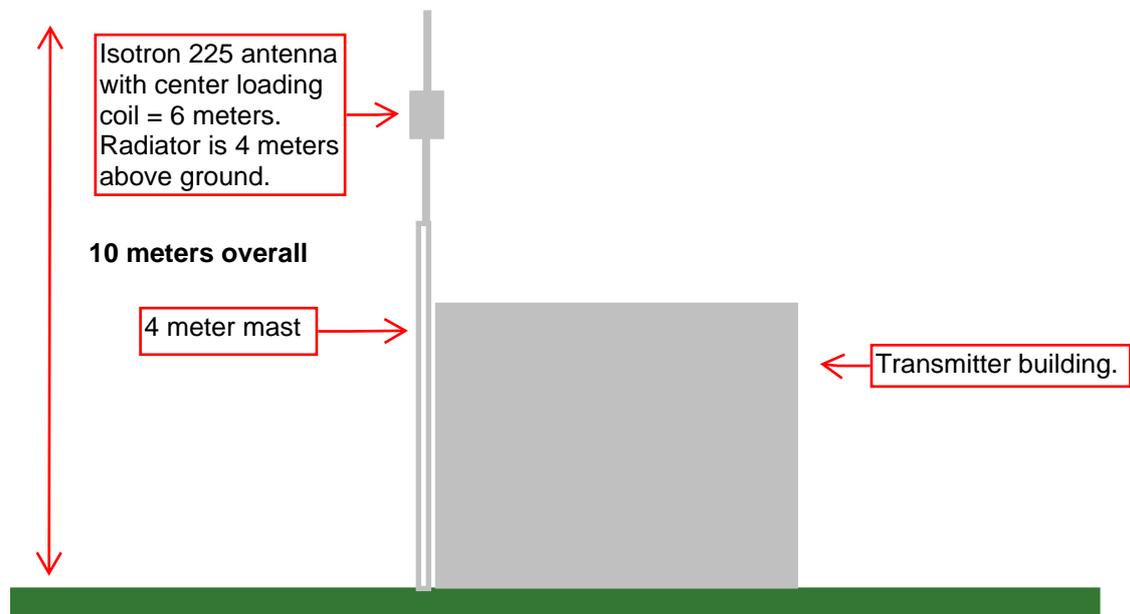
If any additional technical information is required please contact the undersigned.



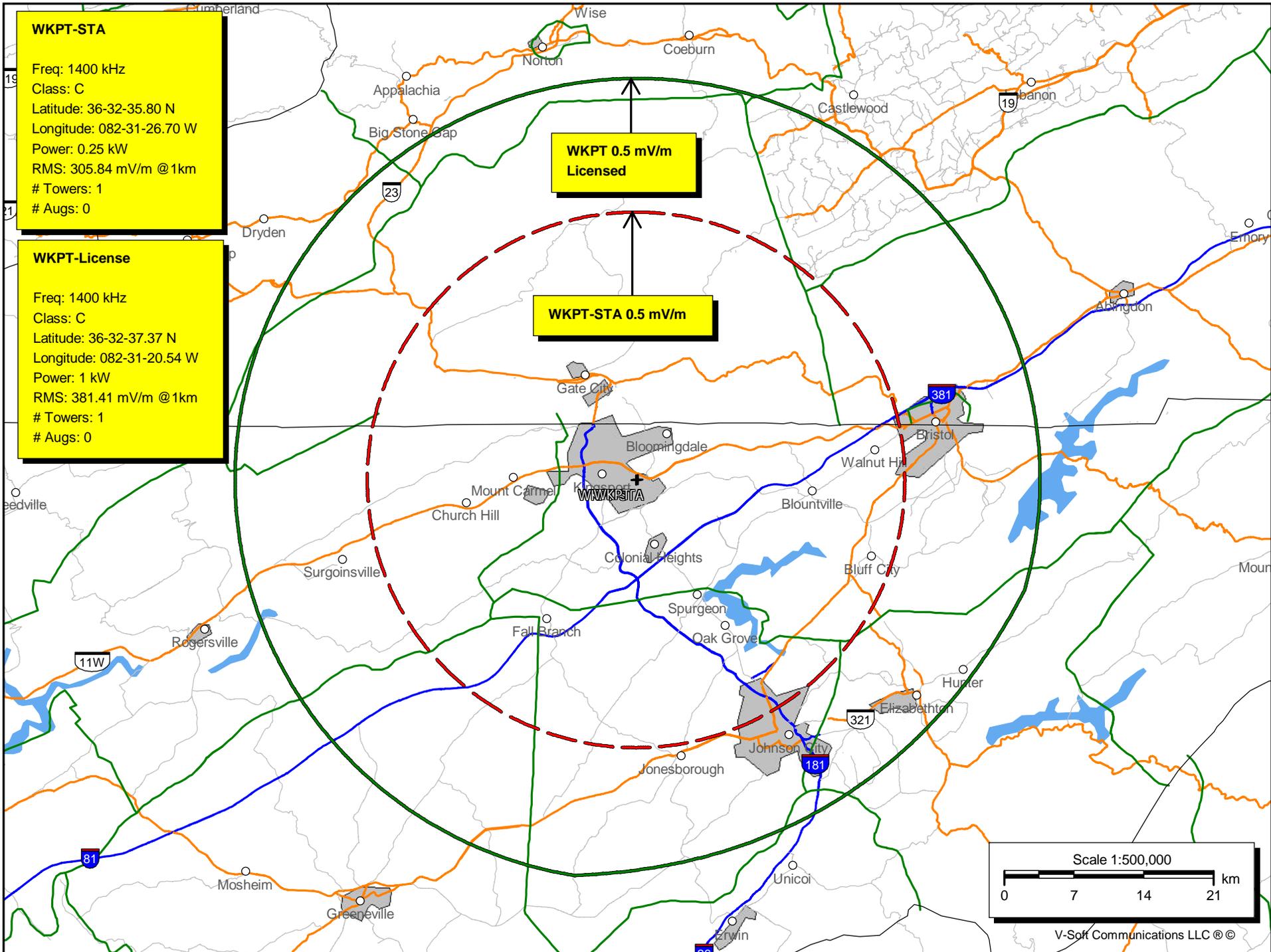
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## Vertical Sketch



WKPT 0.25 kW STA facility utilizing Isotron 225 antenna on a 3 meter mast at the edge of the transmitter building. Maximum (worst case) efficiency of 305.84 mV/m/km/kW is assumed.



# TOWAIR Determination Results

## \*\*\* NOTICE \*\*\*

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

### DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

#### Your Specifications

##### NAD83 Coordinates

Latitude	36-32-35.8 north
Longitude	082-31-26.7 west

##### Measurements (Meters)

Overall Structure Height (AGL)	10
Support Structure Height (AGL)	3
Site Elevation (AMSL)	378

##### Structure Type

MAST - Mast

CLOSE WINDOW

## ISOTRON 225 ANTENNA



### **Description**

The Isotron AM Antennas are the perfect AM broadcast antenna for all broadcast band AM transmitters from 300 to 1000 Watts! There are ten models available to cover the entire AM broadcast band. Order the model that covers the frequency you will be using. Antennas are factory tuned to your frequency but require minor assembly and adjustment by the customer. Requires NO GROUNDING SYSTEM so it's incredibly easy to install. Includes complete instructions for tuning and use. Antennas are built to order, Allow 1-2 weeks for delivery.

**SPECIFICATIONS:** Model 225 - Max Length 235" Approx Wt 11lbs

Wind Load (sq. feet): 1.69, Wind Rating: 85, Pattern: Omni, Connector: SO-239

The Isotron AM Antenna design is an electrical copy of a 1/2 wave dipole. Radiation patterns and formulas are not necessary for analyzing the tuning characteristics.