

WKNE Auxiliary Transmitter Site RFR Measurements for PTA

Summary of Results

In the afternoon of March 5th 2018 I surveyed the RF field around the WKNE Auxiliary site tower to test for compliance with uncontrolled access RF levels. The highest peak hot spot recorded was 11.95 V/m which equals 37.9 uW/cm² well below permitted exposure limit of 200 uW/cm².

Equipment and Procedure

Anritsu 2721B Battery Powered Spectrum analyzer SN: 1007150

A.H. Systems FCC-2 tunable Dipole Measurement antenna 65-180 MHz Balun #2 SN: 313A

.74m Thinnest 50 ohm test cable with 100% shielding.

Conversion formula from V/m to mW/cm² taken from OET Bulletin 65

$S = E^2 / 3770$ E = electric field strength V/m, S = power density in mW/cm²

Analyzer was set to 1 MHz span, 3 kHz RBW centered on 103.7 MHz, peak hold, V/m field strength mode with antenna factor file for the above A.H. Systems FCC-2 antenna. Actual reference level was set to 19.4 V/m. (Firmware bug when in field strength mode did not properly annotate the report file.) Dipole elements were extended to 28 inches each as suggested on the manufacturer's chart for 103.7 MHz. Antenna was rotated to sample H & V polarization. Analyzer sweep time was around 1 millisecond, providing a continuous update of peak level as the test antenna was moved about site for the survey on foot in the snow.

To enhance measurement accuracy, the WKNE auxiliary transmitter was unmodulated, thus providing a CW carrier. Just above the bottom most line you will see the modulation spread from WKNE main which remained on the air during this test to avoid program interruption. Being 1.1 miles away the RF field contribution from WKNE Main was negligible. The other emitters at the site were 950 MHz and 6 GHz STL's, low power and highly directional, their contribution was negligible at ground level.

Measurement lines were walked in the field near the three guywire runs but farther than 22 cm to prevent undesirable coupling to the measurement antenna. Additional lines were walked as shown in exhibit 1 where ground conditions permitted. No hot spots were detected at guy anchor spreader plates, points 1, 3, 5. RF field reading was less than 1.9 V/m at the access road and toward the barns. The only other nearby structures were #8 & #9 which are transmitter building and generator building respectively.

The peak hot spot was near the locked fence around the base of the tower #7 at approximately the 60 degree line #2. Other lesser hot spots were found approximately 1/3 the distance from the tower to the guy anchors.

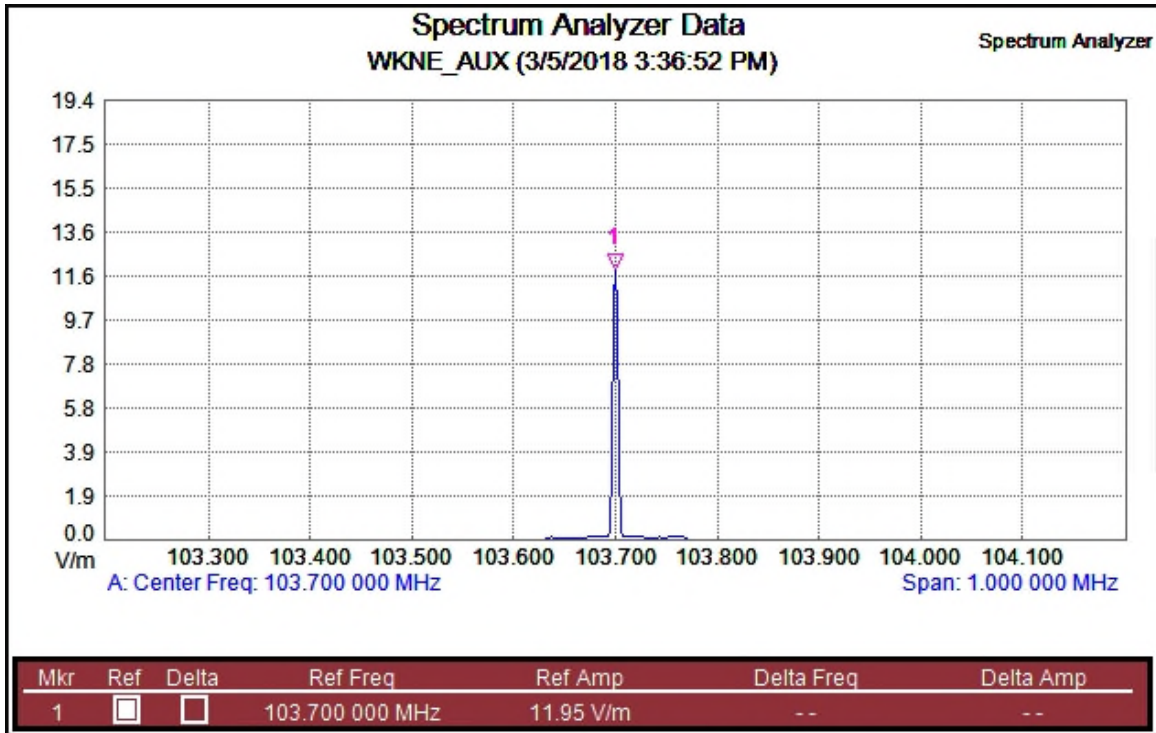


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WKNE RFR Measurements

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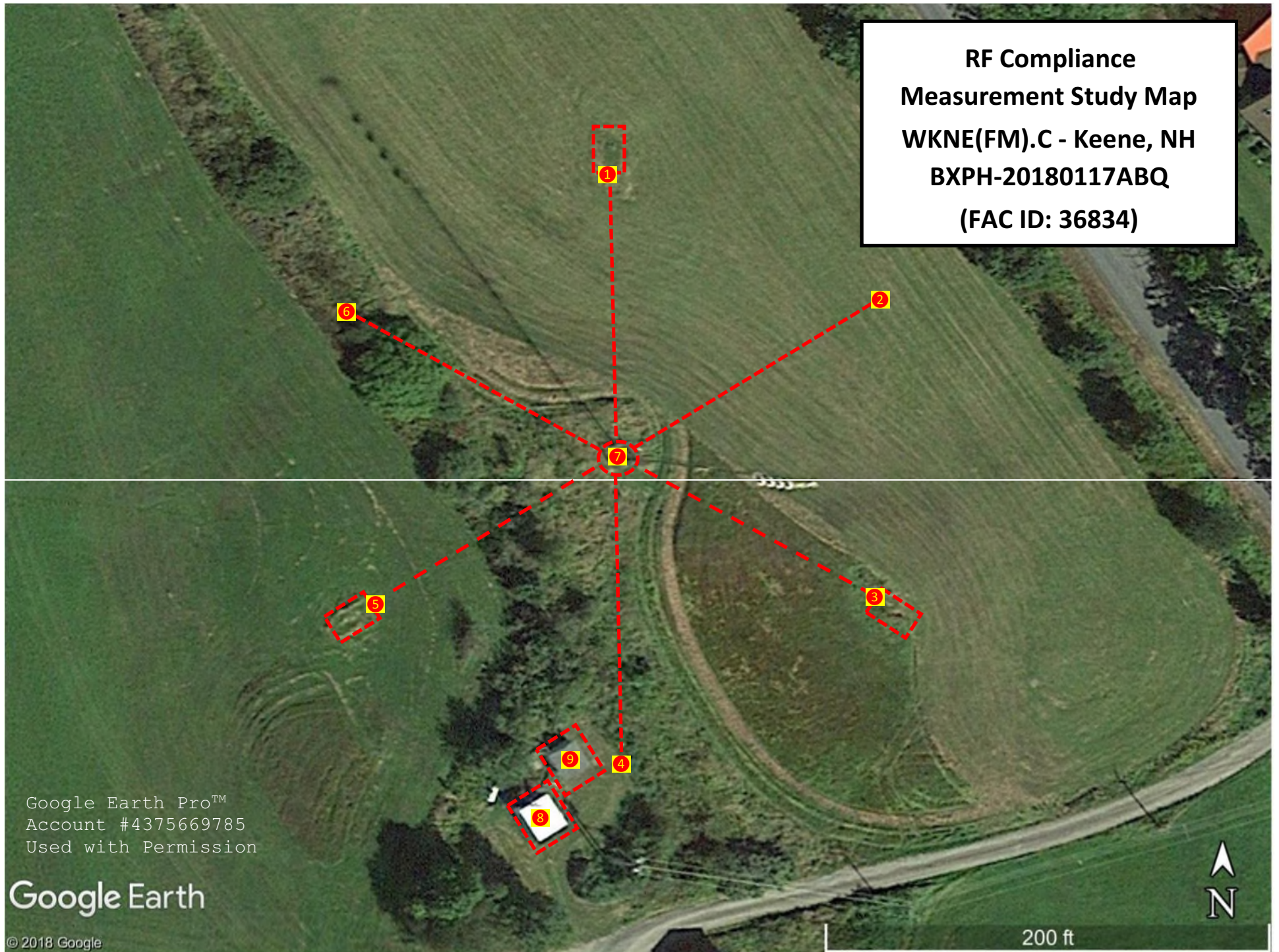
Prepared for: **Saga Communications of New England**



Measurement Summary			
Trace A data		Detection	Peak
Trace Mode	Max Hold	Center Frequency	103.700 000 MHz
Preamp	OFF	Start Frequency	103.200 000 MHz
Min Sweep Time	0.001 S	Stop Frequency	104.200 000 MHz
Reference Level Offset	0 dB	Frequency Span	1.000 000 MHz
Input Attenuation	50.0 dB	Reference Level	7.068 V/m
RBW	3.0 kHz	Scale	10.0 V/m/div
VBW	1.0 kHz	Field Strength	ON

Device Summary			
Serial Number	1007150	Model	MS2721B
Base Ver.	V4.32	Options	20
App Ver.	V5.73	Date	3/5/2018 4:16:52 PM

**RF Compliance
Measurement Study Map
WKNE(FM).C - Keene, NH
BXPB-20180117ABQ
(FAC ID: 36834)**



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200 ft

WKNE Auxiliary Site Photos

Prepared for: **Saga Communications of New England**

