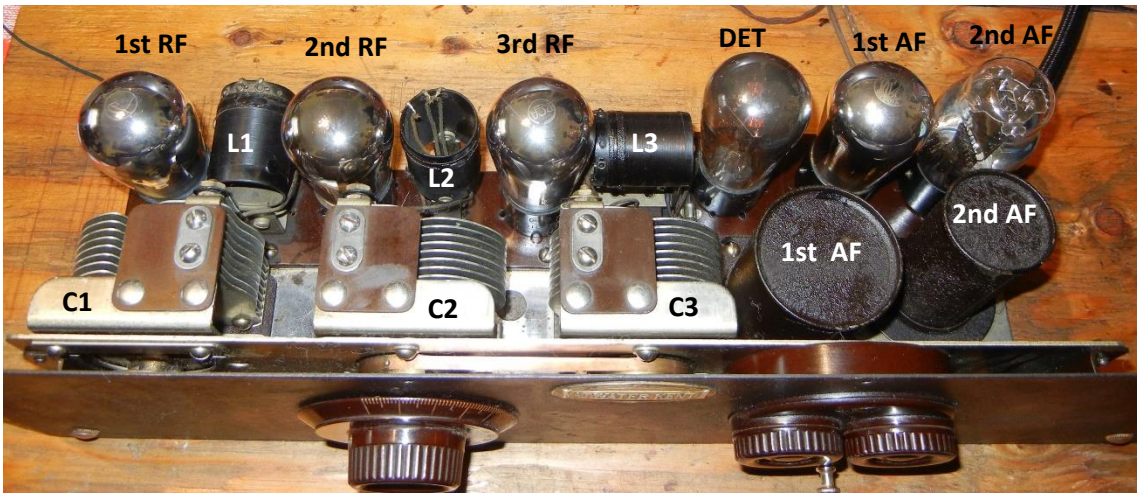
Atwater Kent late model 30 serial number 1660274

The radio was purchased from eBay with 199 CAD, including shipping. At the purchase, 5 over a total of 6 tubes installed in the radio were good.

Restoration:

1. The mahogany case has been sanded manually from 60 dpi up to 400 dpi. I used this method to avoid errors when using the machine for sand. Because the operation is too easy, a moment of distraction can ruin the box. After sanding, the red mahogany wood stain was applied in two layers and finally the case was varnished in several layers with clear oil-based lacquer.
2. Next operation was deep cleaning of all parts and some rust removed on the chassis (sand paper and autosol). Upper part of the chassis was painted with antirust oil-based to protect the metal and for aesthetics.
3. Grid resistors are measured at 370 Ω; usually in other older AK models 20 or 30 they have 500 Ω. All coil resistors were good, rarely happened in the 1920's radios.
4. The front panel was deeply cleaned with an oil-soaked cloth. A mix of brown and black paint and a fine brush was used to paint scratches. My intention was to keep the original front panel color. For some other Atwater Kent radios of my collection, seriously damaged, front panels have been fully painted, but the color match with original and patina are very difficult to reproduce.
5. All measured values of L, C, and AF transformers are updated in the schematic in the last page. The coils are smaller than in earlier models 30, but have the same inductance of 300 µH.

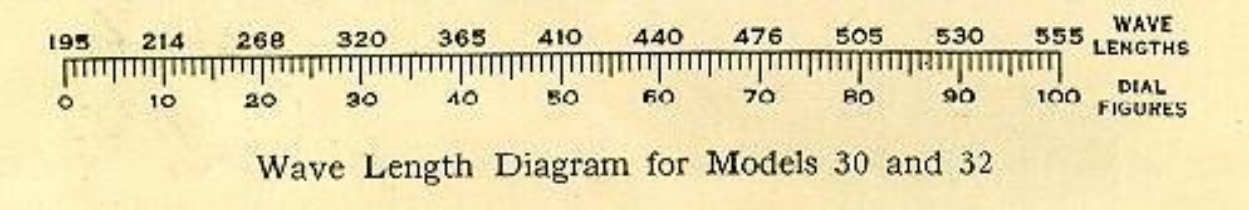


At the purchase, the 2nd AF tube was 171A, as in previous image (B+ = 135 V, C- = -22 V, see schematic for DC bias of all final AF tubes). The radio works also very good with the final AF tube type 201A (B+ = 90 V, C- = -4.5 V). All other tubes are 201A. The detector can also use a 200A tube.

6. A short wire antenna of 10 ft, without ground connection was used for indoor reception. The tuning capacitors are variable from 0 % (35 pF, minimum capacitance) to 100 % (305 pF, maximum capacitance) and can move together with a synchronous mechanical system.
   Below are some AM stations received in Montreal city:

	Montreal AM Station	Call	Frequency (KHz)	Wave Length (m)	Tuning dial (%)
1	Ma Petite Radio	CFQR	600	500	73
2	Montréal Canadiens	TSN	690	435	55
3	Radio circulation	CKAC	730	**411**	**50**
4	Newstalk 800	CJAD	800	375	41
5	Super Station CFNV940	CFNV	940	**319**	**30**
8	Multilingual Canadian Radio	CFMB	1280	234	15
9	French Ethnic Radio	CPAM	1410	**213**	**10**

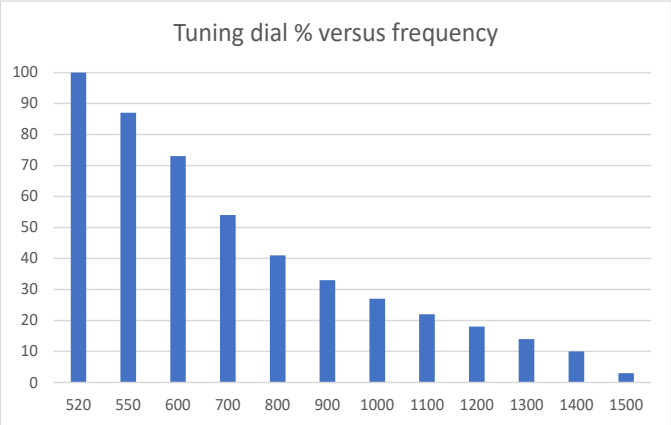
7. The next image is from the **original Atwater Kent documentation for model 30**. As seen, the dial figures are practically the same, see bold values in the previous table.



Wave Length Diagram for Models 30 and 32

8. **Dial figures** in % over the BC band, obtained with the Rohde & Schwarz SM300 signal generator (using a 50 Ω to 400 Ω converter, equivalent to a long wire antenna impedance) are listed in the next table and histogram.

No	Frequency (kHz)	C (%)
1	**520**	100
2	**550**	87
3	**600**	73
4	**700**	54
5	**800**	41
6	**900**	33
7	**1000**	27
8	**1100**	22
9	**1200**	18
10	**1300**	14
11	**1400**	10
12	**1500**	3



Tuning dial (%) versus the frequency

9. **Receiver sensitivity** is around -50 dBm over the whole AM band (525 – 1500 kHz) with more than 10 dB (S+N)/N ratio. Noise level is around -65 dBm.
   Compared to the Atwater Kent models 20 and 20C, with similar components, the receiver sensitivity is reduced with at least 10 dB, even if 6 tubes are used instead of 5. The problem is the alignment of the tuning circuits with a single mechanical control. In practice, for a perfect tuning, there are few % variation from a tuning circuit to another, in special in the first stage where a certain antenna tuning is preferable. However, an easier tuning is done with the model 30 than with previous tree dial models.

10. The **updated** W3NLB **schematic** with my measured RLC values: