Measurements Model 59 GDO – Coil Construction

I bought this Grid Dip Oscillator at a Ham flea market a few years ago. I paid $15 for it and thought it was a great deal for a good GDO. The only problem was that it was missing the 2.2 to 5 MHz coil.

The thought at the time was that if I need the coil I would make one. Well recently I needed one. The first thing I did was to search on line to see if there was any information on the coil I needed and I did not find any.

Looking at the lower frequency coils I had, I measured the diameter and length as ¾ inch by 1½ inches. This was less the banana plugs used. All of the lower frequency coil forms were this size. I had to determine the inductance needed and some of the on line calculators were useful here. I planned to wind the coil on a 20mm OD white PVC pipe which is close to the diameter of the ¾ inch coils already being used. I don't know what gauge wire they used to get the inductance required for the 2.2 to 5 MHz coil and also get it on the form. I used 28 gauge wire because that's what I had but it did require a longer form.

When I did the calculations for the inductance need for the 2.2 to 5 MHz coil it came out to approximately 95 µH. An on line calculator help in determine the length of the winding on the coil form and number of turns required. One thing should be noted here is that the oscillator is a Colpitts design with a two section variable capacitor with a total capacity of 110 pf. The two sections are in series therefore the usable capacity is 55 pf. This is what you use to calculate the required inductance.

I wound the coil to 105 µH figuring I could unwind turns to get what was required. It turns out there were not enough turns on it. Thinking about this, the problem was I should have not calculated the inductance from 2.2 MHz but from about 2 MHz where the dial begins. The 2.2 is the first dial marker on the scale. The calculated inductance is 115 µH, something to think about if you have the requirement to wind any GDO coils.

I decided not to do anything about it. The dial calibration was off by a few percent but the coil I wound did cover the whole range. If I wanted a more accurate reading I would

get the dip and then use a frequency counter or an SDR receiver to get the exact frequency. Below I used another GDO coil to serve as a pick-up for the counter. I would have looked to improve the accuracy if I use the GDO more.

Measuring the dip frequency using a frequency counter.

Below is a table of the inductance measured for the 5 lower frequency coils. This could be useful if someone wants to make a coil. I can't guarantee the accuracy of the readings but they should be close. The readings were taken with an AADE LC meter II. You may have to add or take off windings to get the dial readings close. The factory coils are serialized to match the head apparently to improve accuracy. I added clear heat shrink tubing to the coils I have to help protect the windings.

Frequency	Inductance
2.2 to 5 MHz	115 µH est.
5 to 10 MHz	22.71 µH
10 to 22 MHz	5.35 µH
22 to 45 MHz	1.23 µH
45 to 100 MHz	0.374 µH

One thing I noticed is that the plug spacing for the coils are not the standard ¾ inch used for dual banana plugs. It appear to be a little smaller than ¾ inch.

As mentioned earlier there maybe more information available for these coils on line but I did not find any.

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