SRI Model 420 Low Cost ($4995.00)

Gas Chromatograph for Cannabis Potency Testing

June 2016

The SRI Model 420 Gas Chromatograph (GC) is an ultra low cost and easy to operate GC which measures CBD and THC in cannabis and concentrate samples with the same accuracy as vastly more expensive and complicated laboratory instruments The Model 420 is equipped with a built-in hydrogen generator so only water and electricity are required for operation.

Why send samples to a lab when you can measure CBD and THC yourself in minutes at a cost of less than 25 cents per analysis.

Everything you need to begin is included in the kit except for:

A Windows computer with USB connection (laptop OK)

Distilled water from the grocery store (about $1)

Denatured alcohol from the hardware store (about $15)

You get:

An electronic balance to weigh the sample

Six extraction bottles

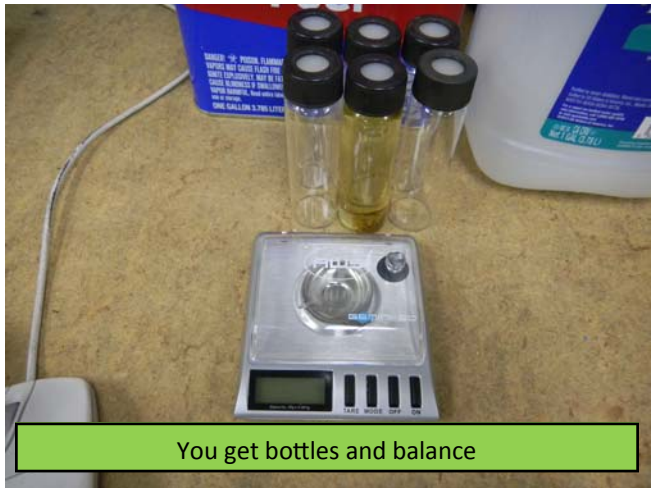
Calibration standard-enough for 400 analyses

Two injection syringes

To Order:

8610-0420 Model 420 GC kit for cannabis potency testing $4995.00

Just needs distilled water and electric power



You get bottles and balance

You get enough calibration standard for 400 analyses

SRI Model 8610C

Gas Chromatograph for Cannabis Potency Testing

SRI also manufactures more capable gas chromatographs for testing cannabis.

http://www.srigc.com/home/product_detail/medical-cannabis-cannabinoid-gc

These GCs can distinguish between CBD and CBC, and between THC and CBG which the simpler Model 420 can not do. The more capable GCs allow for more sophisticated analyses demanded by professional labs.

The SRI 8610C is the perfect size GC (gas chromatograph) for measuring CBD, CBDA, d8THC, d9THC, THCA, CBC, CBG and CBN levels in medical cannabis.

It can also be used to test for synthetic cannabinoids like SPICE, butane residuals, terpenes, aromas and edibles.

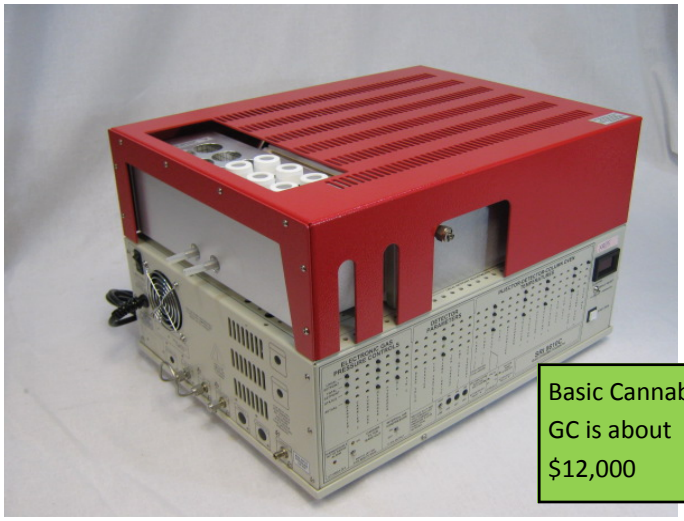
The basic cannabis testing GC is $12,170 (June 2016 prices) with a single FID detector and column. A simple 5 minute column change converts from cannabinoid analysis to residual solvents or terpene analysis.

With 2 or 3 FID detectors and columns, cannabinoids, residual solvents and terpene profiles can all be performed simultaneously on one GC with no hardware changes, completely avoiding downtime from column change-overs.The included built-in 50°C incubator speeds up the extraction process and is especially helpful in getting concentrates, medibles and/or butters to dissolve.

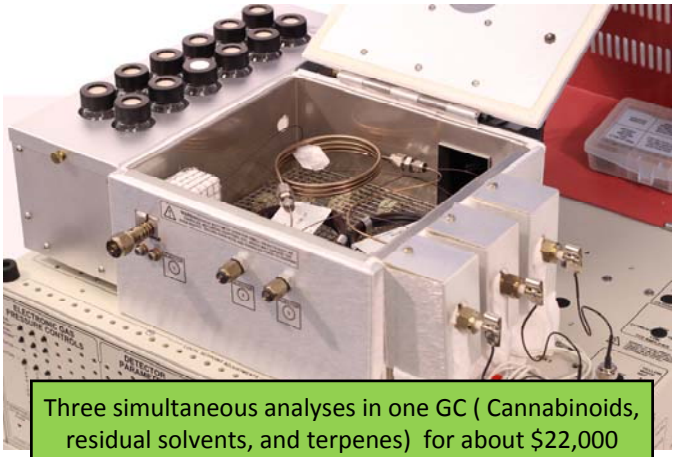
8610-0091 Basic Cannabis GC $12,170.

8610-0291 Basic Cannabis GC plus 2nd channel for residual solvents or terpenes $18,500.

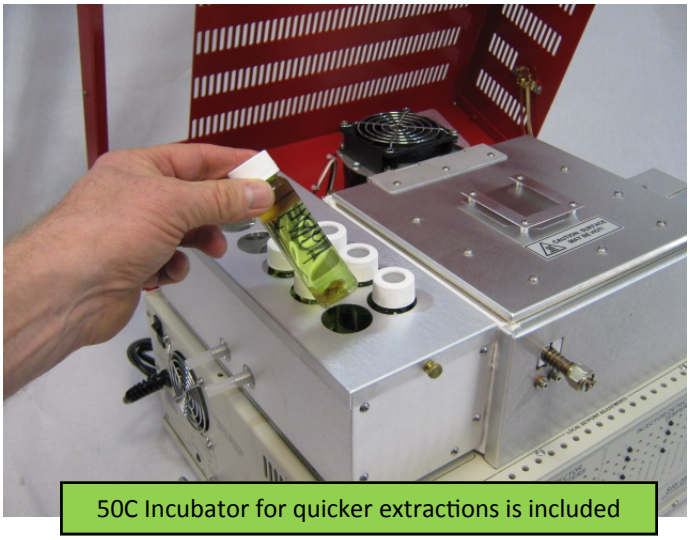
8610-0391 Basic Cannabis GC plus 2nd and 3rd channels for residual solvents and terpenes simultaneously $22,500.



Basic Cannabis GC is about $12,000



Three simultaneous analyses in one GC (Cannabinoids, residual solvents, and terpenes) for about $22,000

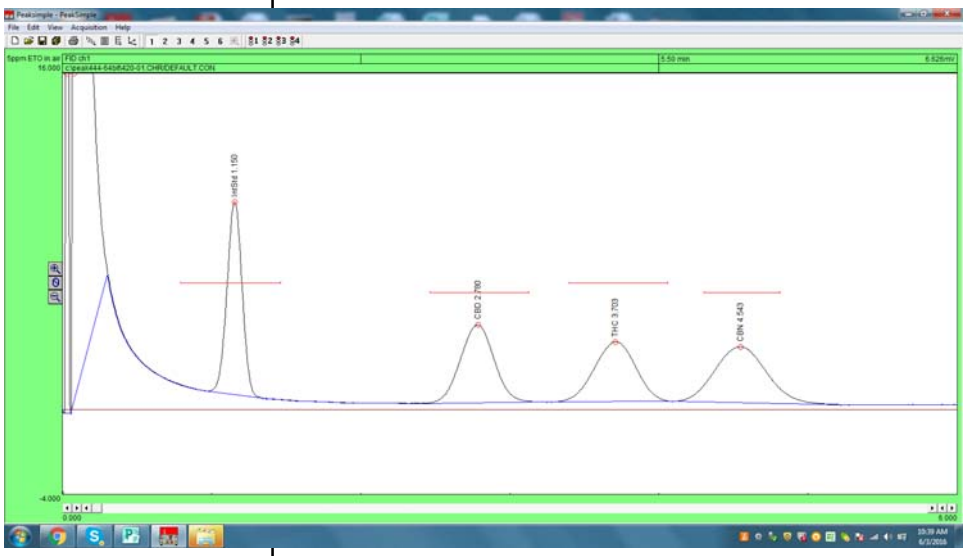


50C Incubator for quicker extractions is included

SRI Model 8610C

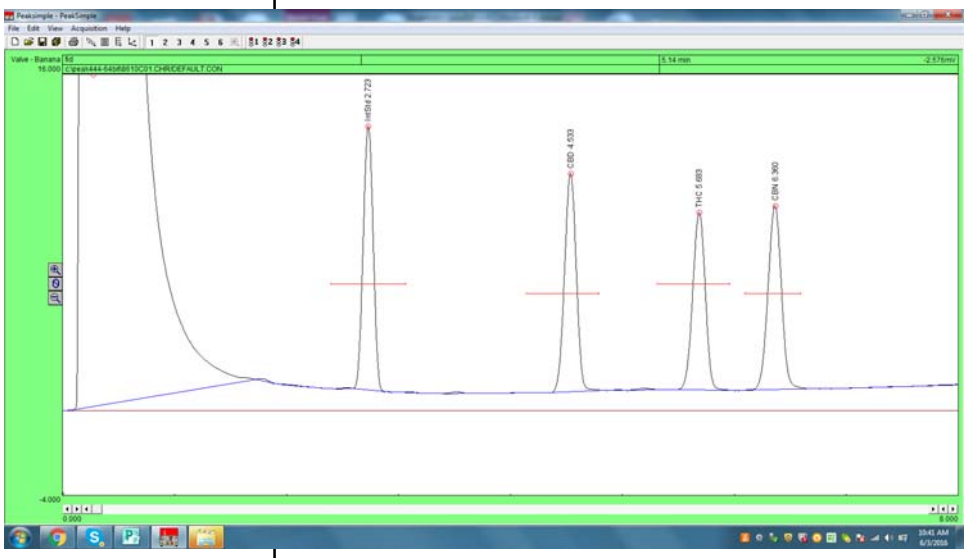
Gas Chromatograph for Cannabis Potency Testing

This chromatogram shows the injection of a calibration chromatogram with CBD, THC and CBN on the $4995.00 Model 420 GC.



This shows the same calibration sample on the twelve thousand dollar Model 8610C configured for cannabis testing. This is the GC we suggest for professional labs.

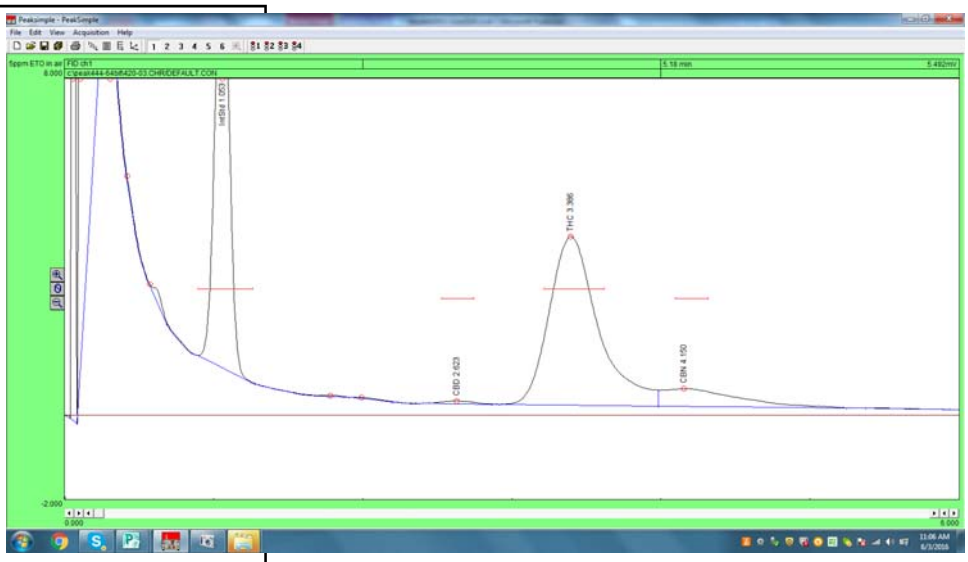
The peaks are a little sharper but aside from that, there is no major difference.



SRI Model 8610C

Gas Chromatograph for Cannabis Potency Testing

This chromatogram shows a real cannabis sample on the Model 420 GC.

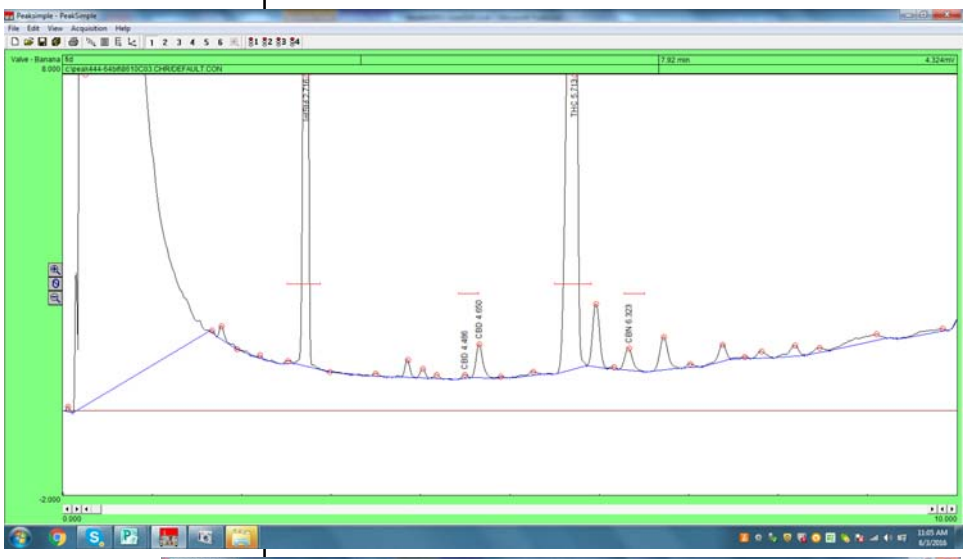


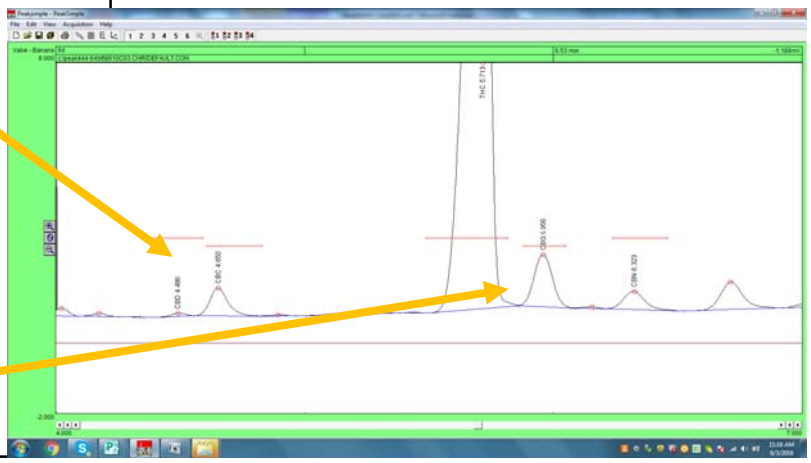
This is the same sample on the 8610C GC.

Notice that there are many more peaks which are separated.

These are all real cannabinoid peaks which the more expensive GC can resolve but which the Model 420 can not.

Especially note that the CBD peak is immediately next to the CBC peak.





And the CBG peak is well resolved from the THC.

Step by step Cannabis Potency Testing using the SRI Model 420 GC June 2016

Step 1:

Buy a gallon of denatured alcohol at the hardware store (Home Depot etc). The usual cost is about $15 for the gallon. Denatured alcohol is used for stove fuel in boat stoves and is a mix of 50/50 methanol and ethanol. Its poisonous to drink and flammable so use it in a well ventilated area away from flames and don't smoke around it.

Step 2:

Find the white internal standard powder. There will be about 1 gram of methyl stearate in a plastic cup supplied with the GC. Methyl Stearate is made from palm oil and is commonly found in cosmetics. Don't eat it either.

Step 3:

Put the entire contents into the gallon of denatured alcohol. Don't spill any. Use a popsicle stick or Q-tip to sweep all of it into the gallon container. It takes a while to dissolve if the denatured alcohol is cold, so put the denatured alcohol in the sun to warm up and shake it one or twice once it is warm. Remember its flammable so don't put it in the oven or on the stove.

Step by step Cannabis Potency Testing using the SRI Model 420 GC June 2016

Step 4:

Set up the balance (scale) which comes with the Model 420 GC. You have to put in the batteries and check the calibration with the little 10gram weight which comes with it.

If you have a more expensive balance then you can use that instead. The import thing is that the balance can read the weight down to 1 milligram (.001 gram).

Step 5:

Weigh approximately 100milligrams of cannabis into the little weighing dish. It does not have to be exactly 100milligrams as long as you record the actual weight. In the photo, it reads 107 milligrams

For concentrates, weigh 50milligrams of concentrate instead of 100 milligrams. An easy way to do this is to put a little strip of paper on the balance, tare the balance to read 000 and then dab about 50milligrams of concentrate on the paper.

Step by step Cannabis Potency Testing using the SRI Model 420 GC June 2016

Step 6:

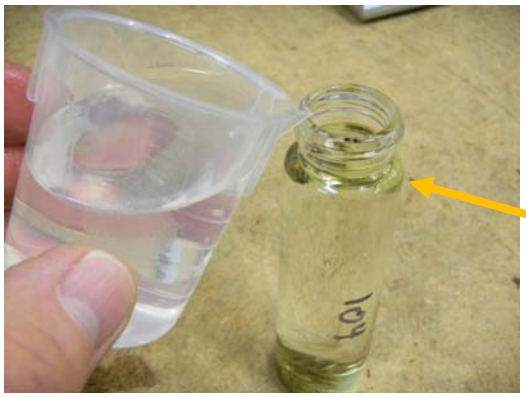
Put the 100 milligrams of cannabis (or 50milligrams of concentrate) into the 40 milliliter bottle. Be careful not to spill any as the weight of the cannabis is important to getting an accurate answer.

Write the name of the sample and the weight on the bottle with a magic marker

Step 7:

Pour some of the alcohol into the beaker which comes with the Model 420. The beaker makes it less likely you will spill and makes it easier to fill the 40ml bottle (the gallon is heavy).

Put the cap on the 40ml vial, give it a shake, and let it sit on the table for at least 15 minutes. This gives the alcohol time to dissolve the THC and CBD etc.



Fill the 40ml bottle to the neck where the glass narrows.

Step by step Cannabis Potency Testing using the SRI Model 420 GC June 2016

Step 8:

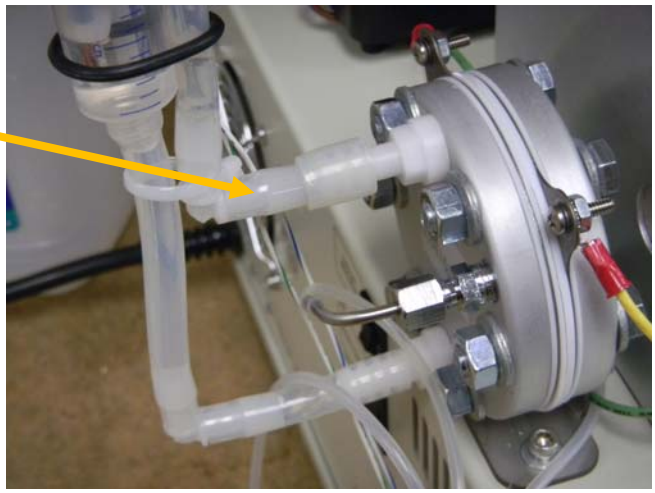
Buy a gallon of distilled water at the grocery store (about $1). Make sure it says " Distilled Water" , not "purified" water or "de-ionized" water. Do not use household tap water.

Fill the water reservoir with the distilled water. The water reservoir holds 20 milliliters which is enough for about 6 hours of operation.

Make sure the water reservoir is full before turning on the Model 420 power.

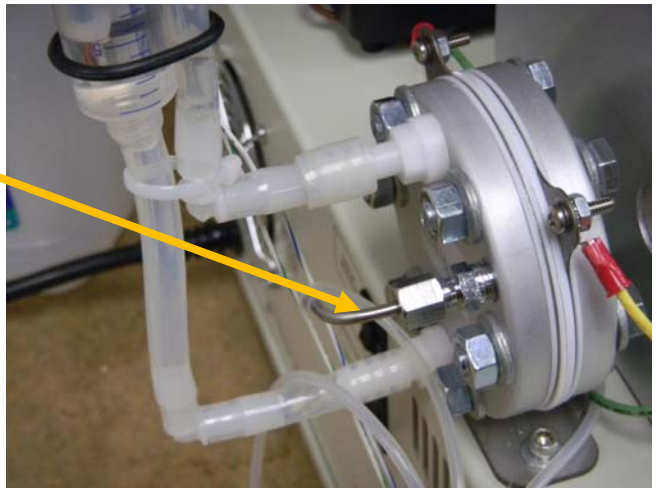
The hydrogen generator (which is built-in to the Model 420) produces hydrogen gas and oxygen gas.. The oxygen gas and extra water bubbles up through the return tube and back into the water reservoir.

Oxygen bubbles up through this tube along with extra water back into the reservoir



Step by step Cannabis Potency Testing using the SRI Model 420 GC June 2016

Hydrogen exits the hydrogen generator along with extra water from the metal tube.



The hydrogen flows into a water separator mounted on the left side of the Model 420.

Water gradually accumulates in the water separator.

Every time the reservoir is filled, the accumulated water in the water separator must be drained by turning the red stopcock.

The water will slowly flow out of the separator and out this tube.

Put the tube in the beaker to avoid getting the tabletop wet. Do not re-use the water, just pour it down the sink.

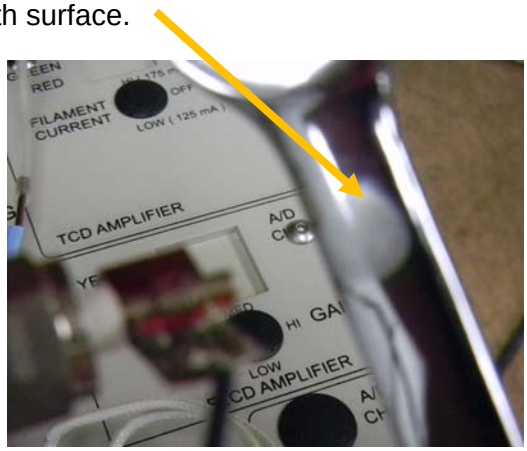
Step by step Cannabis Potency Testing using the SRI Model 420 GC June 2016

Step 9:

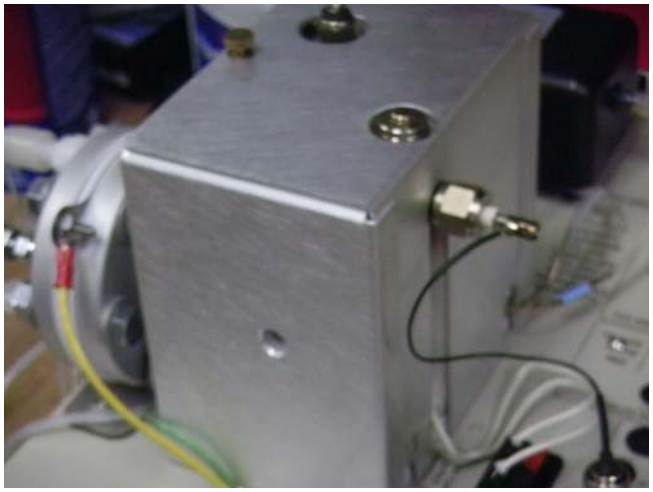
Turn on the main power switch located on the left side of the Model 420. The displays on the front will illuminate. The left side display controls the GC's column operating temperature. This is normally set to 210 degrees Centigrade and fluctuates about 1 degree up or down after it heats up. The green digits on the bottom is the setpoint and the red digits at the top is the actual temperature. The red digits will change a little, but not more than about 1 degree.

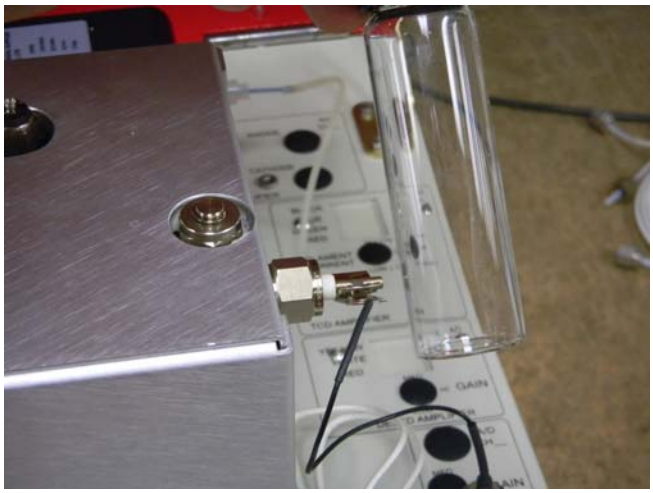
The right side display shows the hydrogen generator voltage (the red digits at the top) and the current (amps) (blue digits at bottom). When the hydrogen generator is operating correctly the values will be as shown in the photo.

Under the Model 420's red lid is the GC oven, injector and FID (flame ionization)detector. The FID detector has a tiny hydrogen flame which burns inside the stainless steel body. When hydrogen burns it makes water which shows up as water vapor on the side of the 40ml bottle or even better on a shiny wrench or other smooth surface.



The flame lights itself as long as the hydrogen is flowing .

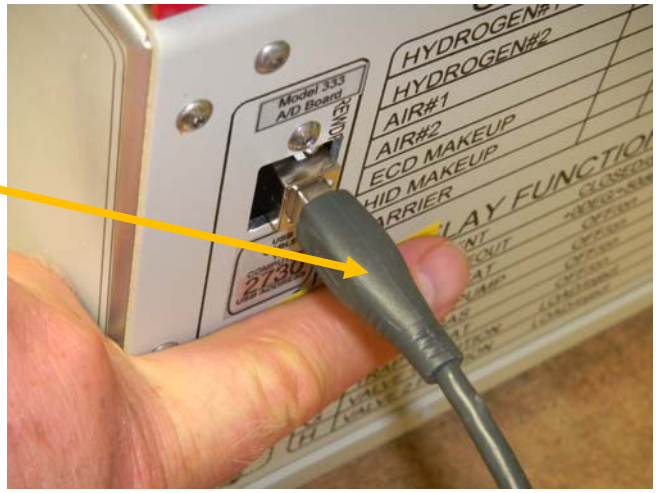




Step by step Cannabis Potency Testing using the SRI Model 420 GC June 2016

Step 10:

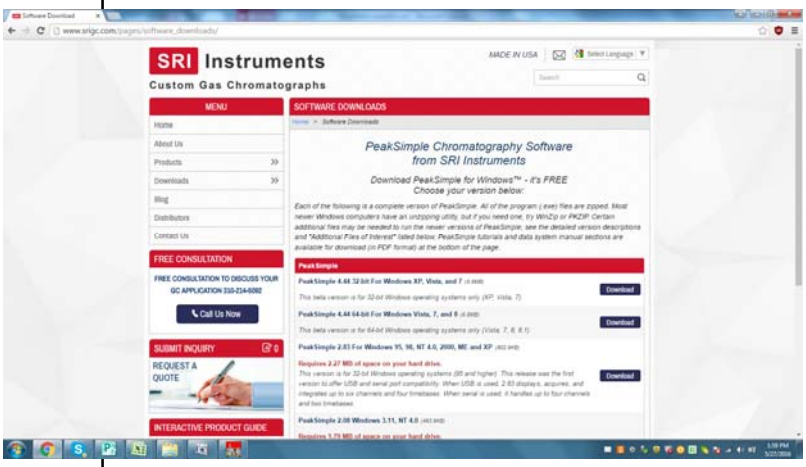
Plug the Model 420 into your Windows XP or later computer using the provided USB cable.



Download the PeakSimple software from SRI's website.

Click here to download PeakSimple

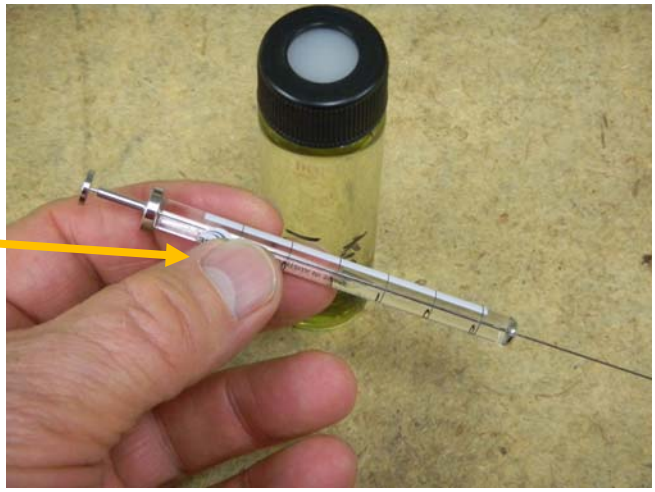
There will be a special version of the software which has everything already set up for the CBD and THC analysis.



Step by step Cannabis Potency Testing using the SRI Model 420 GC June 2016

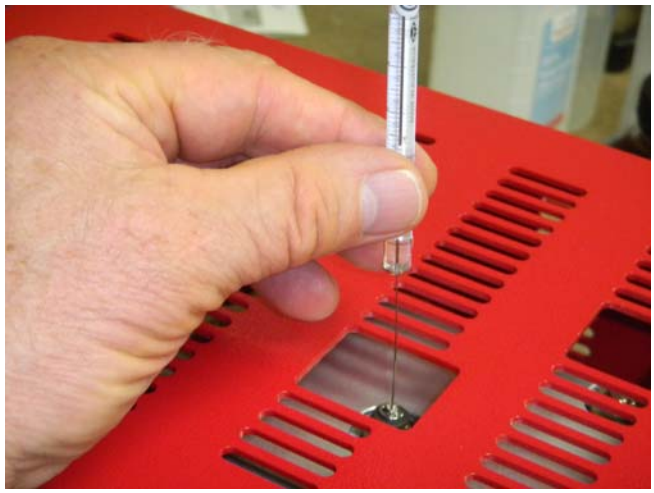
Step 11:

Use the provided 10 ul (10 microliter) syringe to suck up 1 ul (1 microliter) of the cannabis extract you previously prepared. This may have a greenish color by now.

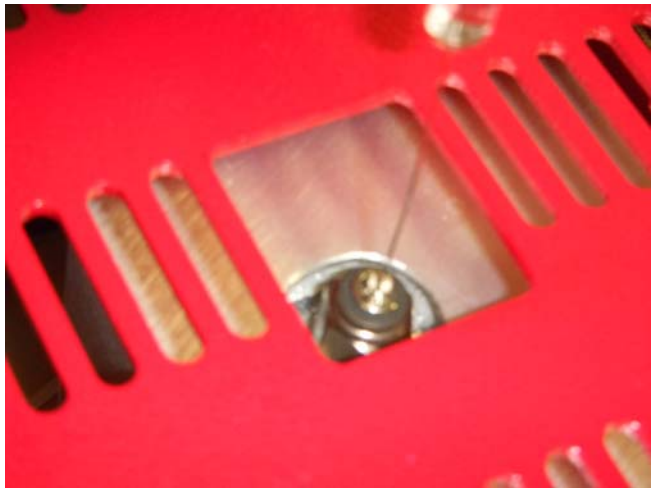


Its not critical to measure exactly 1 ul, but try to be somewhat close to 1 ul. Pull the syringe plunger back after you fill the 1ul so there is some air in the syringe needle. This makes it less likely to lose some sample if you accidentally touch the plunger while making the injection.

Position the syringe in the injector but do not push it down yet. You will feel the rubber septum when the tip of the syringe touches it.



When you are ready, press the computer's spacebar to start the analysis and within a few seconds push the syringe down all the way and depress the plunger.

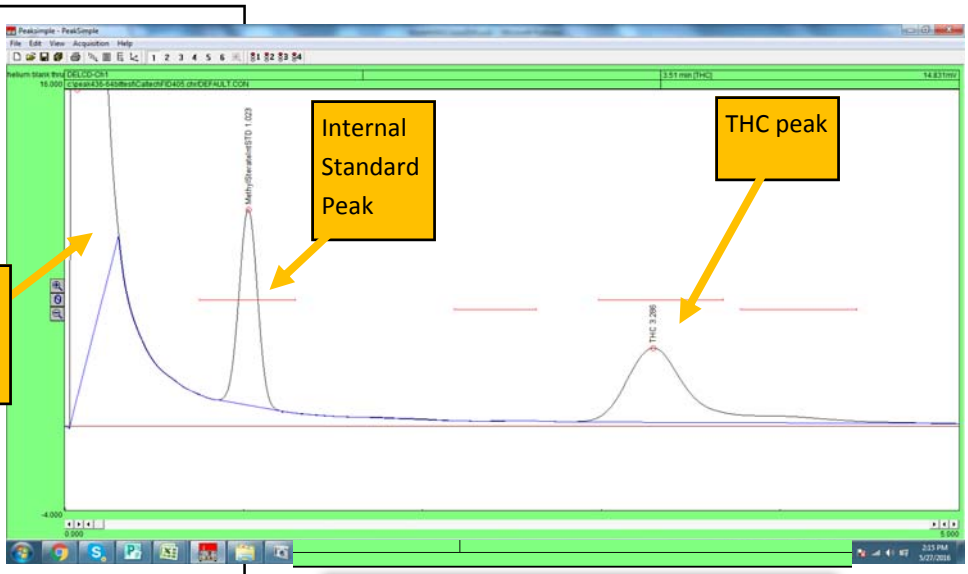


This injects the 1ul of cannabis extract into the GC.

Step by step Cannabis Potency Testing using the SRI Model 420 GC June 2016

Step 12:

A chromatogram will appear on the computer screen which looks something like this. It takes about 5 minutes altogether.

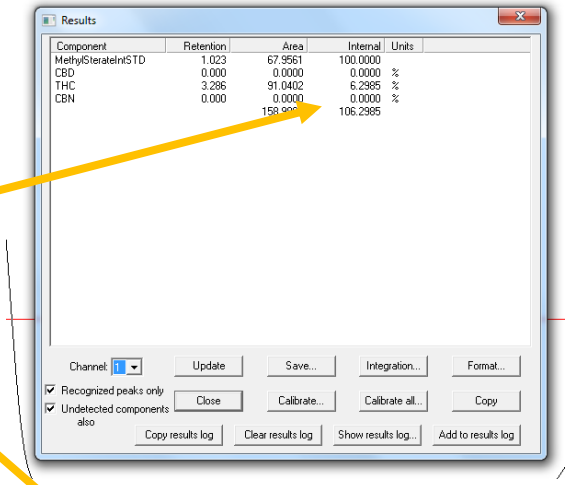


The first peak is very large and appears almost immediately. This is the denatured alcohol peak.

The second peak is the methyl stearate internal standard peak.

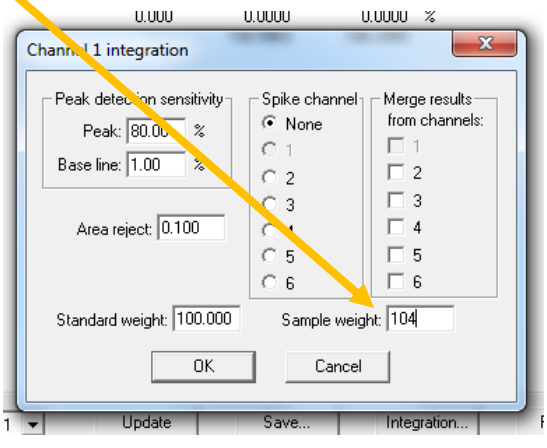
The 3rd peak is the THC peak.

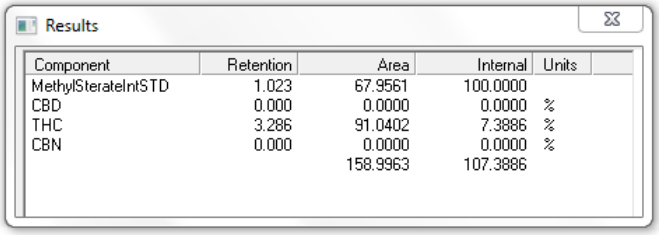
The PeakSimple software calculates the size of the THC peak (the area under the curve, not the height) and compares it to the size of the Internal Standard peak. This gives you the answer which shows up in the software's Results screen.



Another screen (just one mouse click away) lets you enter the actual weight of the cannabis we put in the 40 ml bottle (104 milligrams).

So you enter the number 104 in this box and that corrects the answer.





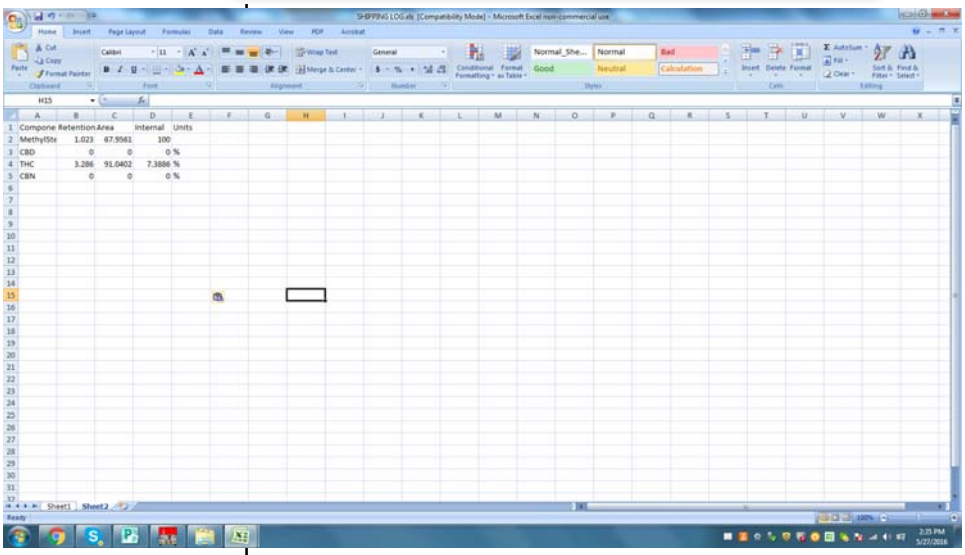
In this case the answer comes out to be 7.38% THC.

Step by step Cannabis Potency Testing using the SRI Model 420 GC June 2016

The Results are easily pasted into Excel, Word or other program with just a couple mouse clicks.

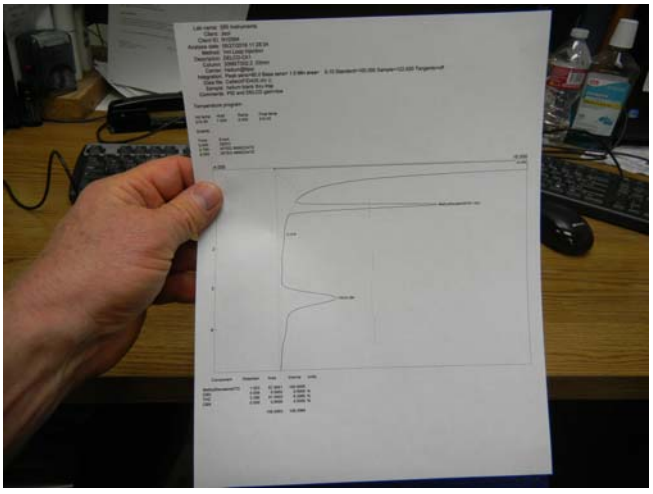
Results

Component	Retention	Area	Internal	Units
MethylSterateIntSTD	1.023	67.9561	100.0000	
CBD	0.000	0.0000	0.0000	%
THC	3.286	91.0402	7.3886	%
CBN	0.000	0.0000	0.0000	%
		158.9963	107.3886	



You can also print to a pdf or to paper.

The Model 420 GC is now ready to measure the next sample.



Step by step Cannabis Potency Testing using the SRI Model 420 GC June 2016

The Model 420 GC comes with a one year warranty.

Built-in Limitations : pre Release **- but saleable due in July2016**

2 metre MXT-1 0.53mmID 5um colmn amd effective resolution

isothemal oven ONLY (no temperaure prograamming

H2 Generatore (minimal pressure re long columns???)

Purity(???) low O2 Content essntial for trace analyis (<5ppmO2 and <220C required applications

B uilt-in Amini ir Compresor for FID (presumed)

Non optimised FID / limitaions of new design ????

ALL to be confirmed later !

Designed specifically for Potency Medical Cannabis use

Model 420 package supplied AS IS!

Other Model Applications - eg general Bottle-Gas Educational use

ALL within these above constraints

Model upgrade to higher price at date of purchase ex USA

(ONLY a few in-house modifications are feasible)