Restoring a Soviet VHF radio tester IK-2

G0SFJ, 20 February 2026

Many ex-Soviet army radio backpacks appeared on the surplus market after the fall of the USSR. I once bought an R-105 covering low VHF frequencies in Vilnius for over a hundred Euros, and a R-108M covering the 10m FM band for a fiver at a rally last year. See: https://www.greenradio.de/e_kp11.htm for basic details about them.

Mostly they are useful for their Kulikov portable antennas – I have fitted one to my SEM-35 and to that high-Q "magic antenna" by a combination of brass tubes and extenders from their "Radioman's bags".

They suffer from the power supply needed. These were 2.4-volt high amperage rechargeable batteries using a potassium salt, large, squat and fat things, now hard to find, and even harder to get into working condition.

So, I have two solutions: the first is to use 2-off 1.2v 10,000 mWH lithium-ion batteries in series. But these get warm as they discharge and I worry about that; they would need a proper discharge circuit. The second is a small circuit attached to an old computer XT power supply and botched to make the connections of +2.4 V, 0v, and –2.4 v. That power supply circuit is here: https://www.greenradio.de/e_schalt.htm

and I have two of them. I used one of them to power up the IK-2.

There's always a video on YouTube and the one showing the insides of this set is here:

https://www.youtube.com/watch?v=EoxaBm22HWE but it doesn't show it working. Here is mine:

It's in 3 parts: from Left to Right, the Signal Generator, a control section and crystal calibrator, and the Valve Voltmeter and frequency deviation meter. You can also see the 3 wires from my power supply at the top.

Mine does not have the cable and dummy load supplied like the one in the video, but I can see the date of manufacture from the serial number ending in 0966 – September 1966. So, it is nearly 60 years old.

But it does have the instructions on the inside of the front lid. I photographed them with google Lens applied to Google Translate and will show them in this next sequence.

On first switch on, nothing happened on the signal generator, and on the voltmeter, it seemed to go into oscillation and showed a steady meter reading. Clearly something wrong.

Switching off and disconnecting, I undid the screws on the front panel. In both the voltmeter and sig gen sections I found the same valve: this was a SG2P (in Cyrillic СГ2П). These valves looked very poorly with that white “blooming” inside.

I found the SG2P at the *radiomuseum* site here: https://www.radiomuseum.org/tubes/tube_sg2p.html . Apparently, it’s a voltage regulator. The circuit diagram is in the DOSAAF section of the Russian magazine “Radio” for 1974 . DOSAAF was a kind of combined cadet force for young Soviet citizens.

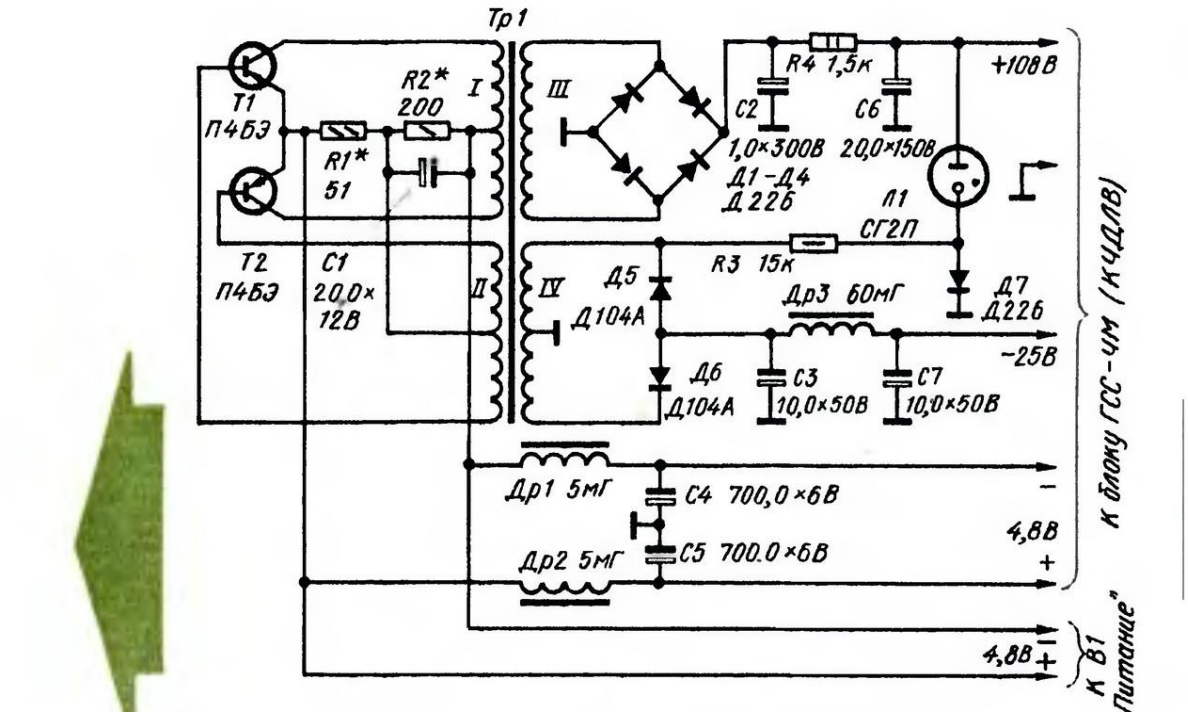
One of the comments about the video posted this link : Архив журнала «Радио» / 1974 / № 1 and the series continues in the next few issues. Here’s the location map

This is a picture of the insides of the signal generator:

Вкладка 3 в журнал «Радио» № 2 за 1974 год

Стр. 46 Стр. 47 Стр. 48 ← Вкл. 3 → Вкл. 4 Стр. 49 Стр. 50

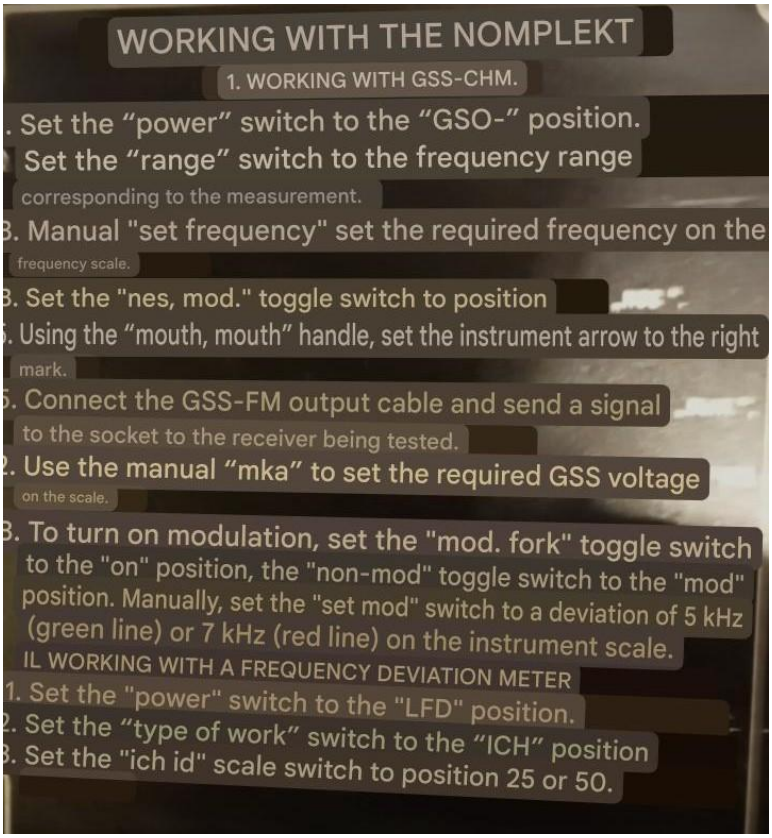
In the top left picture you can see a valve fitted horizontally – that's the SG2P. Almost everything else is enclosed in metal cabinets. These include small "rod" triode valves type**1Ж29Б** (1Zh29B) which are soldered in place. The only components easy to change are the two regulators.



The regulator is on the top right "L1" "Lamp 1". You can see that it maintains voltage between +1-8V and the diode before Earth (Ground). I found on ebay that the valve OB2 was identical to the Soviet SG2P but half the price so I bought two and fitted them.

Results

Here’s the translated sheet for the Left-Hand Side



This wasn’t google’s finest translation! However this is the setting I used:

To the right is the centre module. The pointer is set to the central position GSS (rcc in Cyrillic) and both the bottom switches are UP.

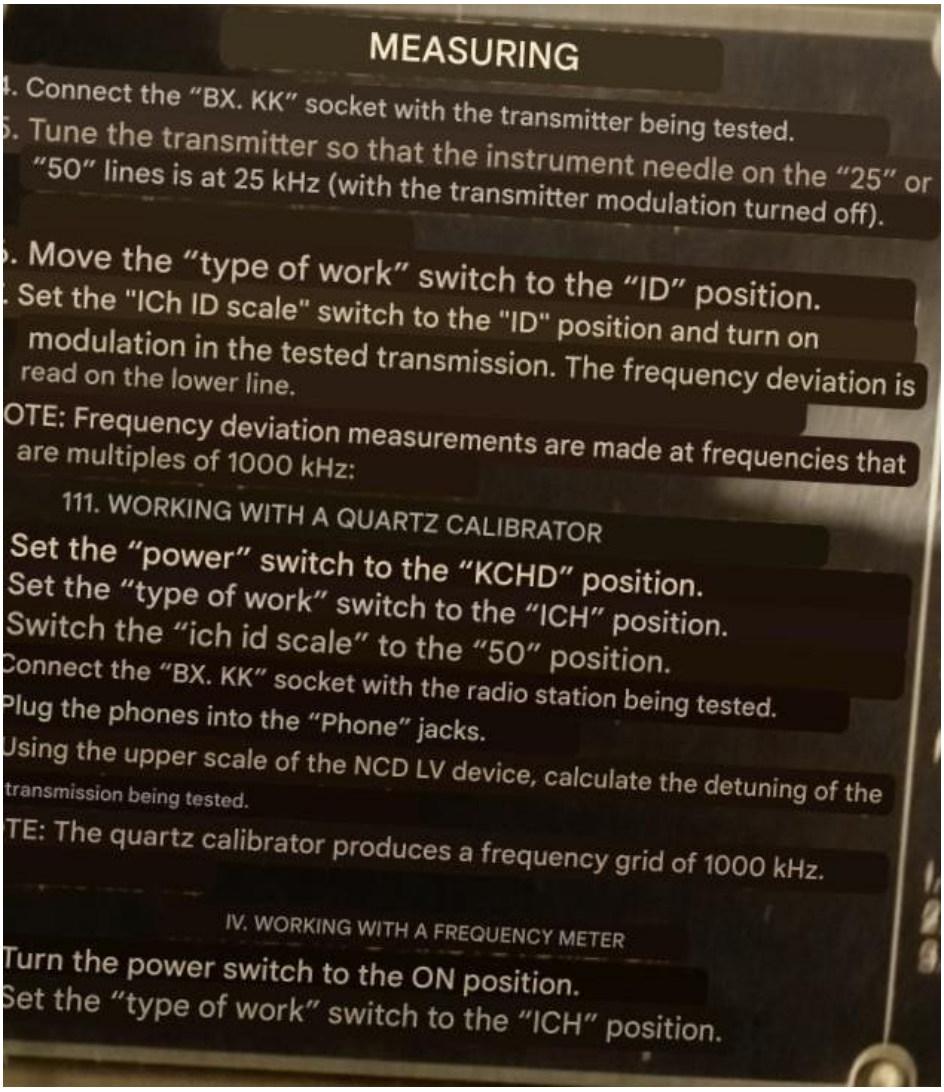
To the left, ignoring the meter for the moment, there is an unusual coax socket, a variable resistor labelled in microvolts, the frequency knob next to a glass dial where the frequency is displayed, a range switch and two on/off switches.

In my set, this combination exhaled a tone exactly on 29.600 (FM calling frequency) and 50.600 (in the 6 metre band) when set to the correct range and dial position.

Now to the meter. I think you can input the VHF transceiver via the coax socket and beat with the signal generator or crystal calibrator to measure FM deviation. Apparently over-enthusiastic operators turned up the power on the radio and burned out the test set!

Now, the Valve Voltmeter.

These are the instructions for the Middle and Right Hand Side panels.



MEASURING

4. Connect the "BX. KK" socket with the transmitter being tested.
5. Tune the transmitter so that the instrument needle on the "25" or "50" lines is at 25 kHz (with the transmitter modulation turned off).

6. Move the "type of work" switch to the "ID" position.
7. Set the "ICh ID scale" switch to the "ID" position and turn on modulation in the tested transmission. The frequency deviation is read on the lower line.

NOTE: Frequency deviation measurements are made at frequencies that are multiples of 1000 kHz:

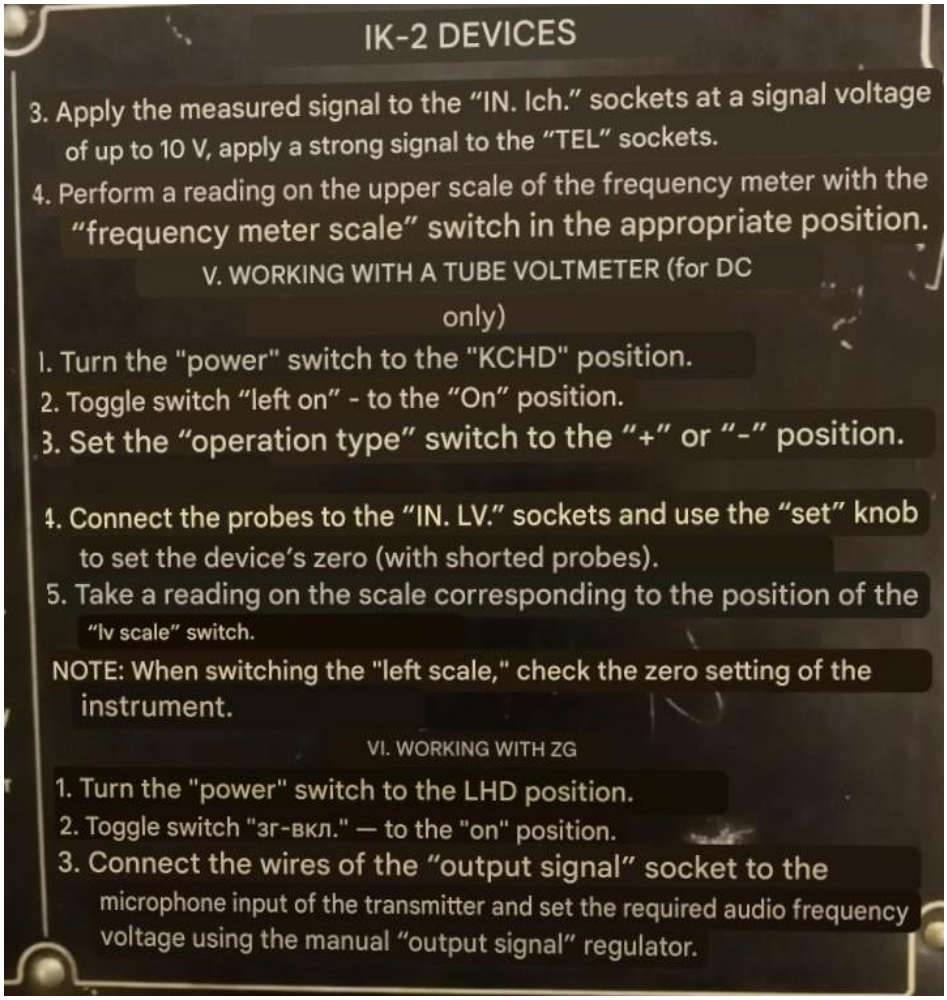
111. WORKING WITH A QUARTZ CALIBRATOR

Set the "power" switch to the "KCHD" position.
Set the "type of work" switch to the "ICH" position.
Switch the "ich id scale" to the "50" position.
Connect the "BX. KK" socket with the radio station being tested.
Plug the phones into the "Phone" jacks.
Using the upper scale of the NCD LV device, calculate the detuning of the transmission being tested.

NOTE: The quartz calibrator produces a frequency grid of 1000 kHz.

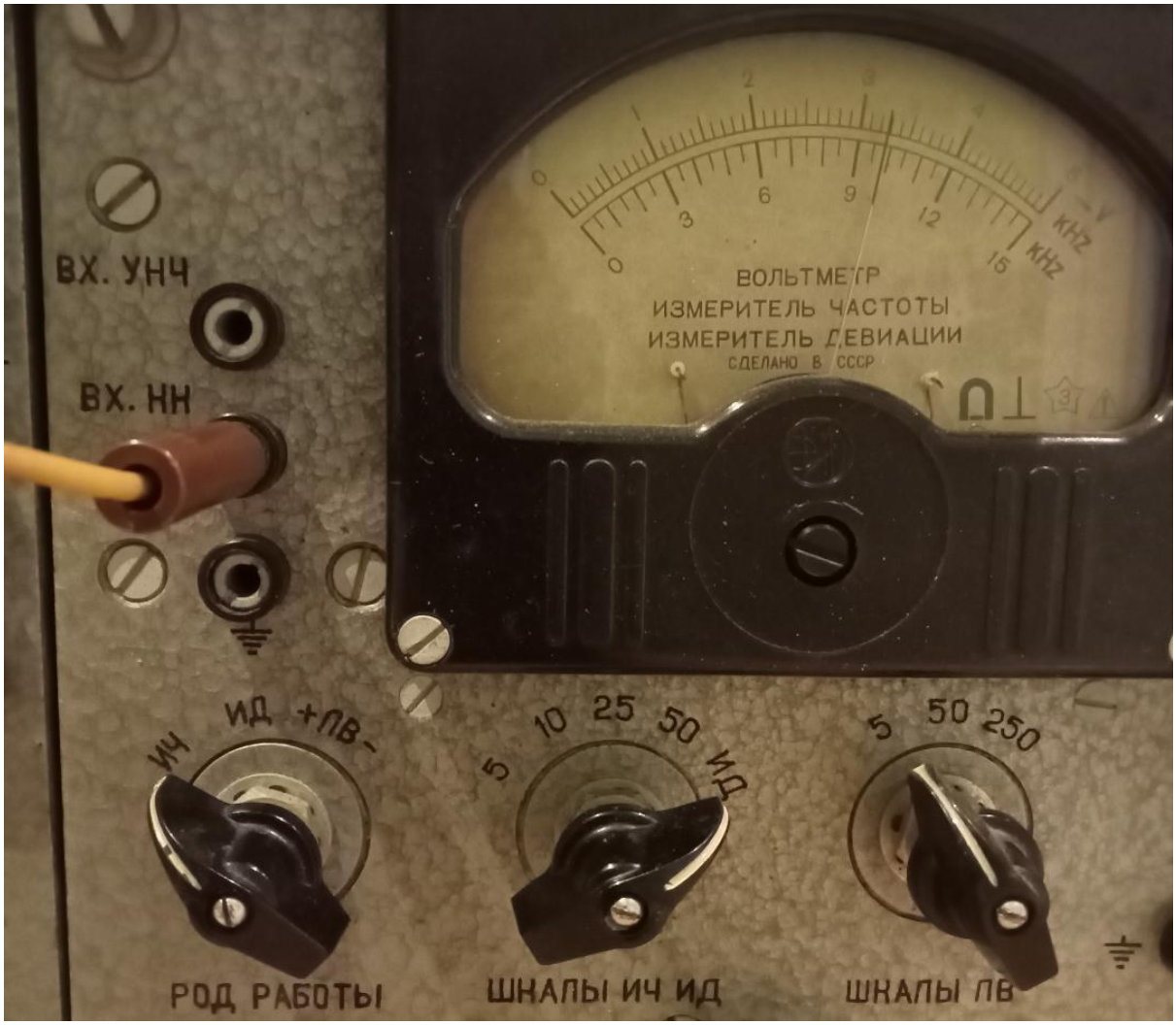
IV. WORKING WITH A FREQUENCY METER

Turn the power switch to the ON position.
Set the "type of work" switch to the "ICH" position.



Again, google wasn't brilliant.

Before I changed the valves, here is the meter in oscillation. You can see that the meter is set by the left pointer to Internal frequency, the right pointer to Internal Deviation, and there is one lead in the socket:



There's a powerful signal coming in from the test lead! Clearly, something is amiss here: time to disconnect, open up and replace the only replaceable part!

After changing the valve, I set the front panel like this, and zero'd the meter.

Note that the main pointer knob on the centre panel is set to the right. Then the first pointer is set to" +LV-"and the right hand range knob for "Scale LV" is set to 60. The multimeter leads (which I bought from the flea market in Tbilisi) are on the bottom two sockets to the right. The knob immediately below zero's the meter, then with this combination it measured my expired PP3 battery very well.

Conclusion

Well, I paid a fiver for this 60 year old piece of test gear, and my £5 R1-108M included the power supply. The valves were about £4 each. So not much expenditure at all. And if you've read this far, I hope you have enjoyed it as much as I have1

73 de Andy G0SFJ