
 Mute This Topic (<https://groups.io/g/TekScopes/ft/72721593?csrf=5513314409256117711&mute=1&p=Created%2C%2C%2C20%2C1%2C0%2C0>)

Tektronix 2465, 2465A, or 2465B

Date  <https://groups.io/g/TekScopes/topic/72721593?p=Created%2C%2C%2C20%2C2%2C0%2C0>



Ross Hollinger

2020-04-02  (<https://groups.io/g/TekScopes/message/165460>)

I am new to scopes and am looking for a good analog scope for HF work. I like these scopes, but am torn between the three. I like the idea on auto set up, which would leave the 2465 out, but I don't know if the 2465B would be overkill. About me, I tend to over buy on purpose. I'm a believer in buy it once and save money. The notion of "beginner" or "starter" anything doesn't resonate with me - if you can learn on one, you can learn on any. I have read that the 2400 series tend to overheat, or get real hot, when operating. Also, that the power supplies are less than desirable. But then, those are a few opinions that may not be valid. The thing that concerns me would be having to replace older caps that may leak, blah, blah. Are there any thoughts about these, and are there any suggestions about where to look for refurbished units from good repair facilities.

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Tom Gardner

2020-04-02  (<https://groups.io/g/TekScopes/message/165461>)

I have had both 2465s and 2445Bs. I've sold my B and kept the 2465.

The first question I would ask is whether a scope is the right instrument for your HF work. You should understand how the sensitivity and linearity and the input capacitance (\Rightarrow VSWR) will affect whatever you want to do. Frequently for RF work a 50ohm spectrum analyser is more appropriate.

Secondly, 24x5s don't have an internal battery for the calibration constants, which is an advantage to me. Replacing that battery isn't trivial.

All 24x5x should have their delayed action smoke generators (RIFA filter caps) replaced; I've had one remove part of the PCB prepreg when it erupted. Replacing other PSU caps is desirable.

The three SMD caps on the A5 board should be replaced before they leak.

Finally, your point about the autoseup. To me it is only a minor convenience; learning how to setup a scope is easy and an essential skill. Auto measurement is more convenient, but not essential since manually moving cursors isn't that difficult!

My opinion: if you want a scope, get a working 2465 which has had the caps replaced. YMMV.

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GerryR <totalautomation1@...>

2020-04-02  (<https://groups.io/g/TekScopes/message/165462>)

Hello Ross,


I have a 2565A that I am thinking of selling. It hasn't been re-capped (no issues there) but has had a new battery recently installed, and I have been through the recalibration procedure. It is in excellent condition. No issues that I know of. I am selling it complete with 3 probes (350 MHz) and with a Tektronix active probe (900 MHz) complete kit, and some extras. The power supply for the probe is a powerblock from Phoenix that I bought and added the proper connector for the probe. If you are interested, let me know; I was about to put it on EBay. I can send pictures and provide further details. I am retired and do not find as much use for it as I once needed.

Regards,

GerryR

KK4GER

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Chuck Harris <cfharris@...>

2020-04-02  (<https://groups.io/g/TekScopes/message/165463>)

I don't know where you heard that they overheat. They do not. They also do not get real hot when operating. The only time they have a problem with heat is when run in the sun in a desert... Or when kitty decides to fill the scope with leftover fur. If house cleaning is not a completely foreign concept to you, you should be fine.

The power supplies are intensely reliable, and very, very hard to damage. But, they are also old. The capacitors used in the switching sections of the supply do wear out, just like in any other power supply.

Each of the scopes you mention was the top of its class at the time it was offered. And they were not offered concurrently.

So, they are not starter scopes, or beginner scopes, but rather just scopes. Very high quality, and popular scopes.

The original member of the series, the 2465 was a ground breaker when it was introduced. It was a replacement for the venerable, and highly popular 465, only it was microprocessor controlled, had digital readout built on screen, measurement cursors, was much more compact... and sported an honest 300MHz bandwidth.

In my experience, the 2465 operates the smoothest of the whole family, because it had a CPU card that was designed to easily support the needs of the scope, rather a scope that was designed to fully utilize all of the capabilities of the CPU card.

The 2465A and B enhanced the operation to eliminate any controls that were wired directly to the circuit they controlled... putting the CPU card in between. But, they use exactly the same CPU and the same clock frequency as the older 2465. This causes control functions to stutter and balk from time to time as the CPU gets around to servicing the control function. It also causes controls

that get moved while power is off, to have their rotation range, become oddly biased... For instance, if you turn the scope off while intensity is in mid range, and then turn the intensity knob to the off position, on next power-up you will find that you can only brighten the intensity from there, not dim it. You have to run the intensity control its full range to get it to reset.

The Auto setup feature is nothing but marketing fluff. Nobody needs such a feature after about a day's worth of scope use.

The only time I ever use the AUTO button is when I am testing a customer's scope for full functionality. It is never necessary in real life.

The same goes for all the other features in that control group.

I expect that you would be happy with any one of the scopes you mentioned.

If you buy a "B" model, be warned that there are lots of franken scopes modified from 2445B models, rebadged as 2465B. If you buy any scope from someone whose ebay id is the same as that model, be sure to get his assurances that he is selling you a genuine scope that came from the tektronix factory as a 2465B. He will know what you mean. You might want to look elsewhere.

-Chuck Harris

Ross Hollinger via groups.io wrote:

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Alex

2020-04-02 <https://groups.io/g/TekScopes/message/165464>

On Thu, Apr 2, 2020 at 03:52 AM, Tom Gardner wrote:

The three SMD caps on the A5 board should be replaced before they leak.

There are actually a total of 4 caps that need to be replaced. Three are in one group near the NVRAM chip, the other is located towards the right hand side top corner of the board.

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victor.silva

2020-04-02 <https://groups.io/g/TekScopes/message/165465>

Chuck,

Excellent! Couldn't have said it better.

--Victor

 Reply Like More2020-04-02  (<https://groups.io/g/TekScopes/message/165466>)

Hey Ross,

I have both a 2467 (350MHz, contemporary of 2465A) and a 2465. There are minimal differences in features between the two scopes - see this link:

<https://www.tek.com/support/faqs/what-are-differences-between-oscilloscope-models-2465-2465a-and-2465b>
(<https://www.tek.com/support/faqs/what-are-differences-between-oscilloscope-models-2465-2465a-and-2465b>)

One feature difference that isn't mentioned there is the fan in the 2465 is as near silent as makes no difference - so long as the fan motor is in good shape.

The 2465 is obviously also older, and mine is due for a re-cap and a re-cal by now.

My 2467 has the CTT option, which is quite handy, though I really only use it for the counter.

I haven't noticed these scopes getting warm, but you have to make sure the airflow vents underneath the casework aren't blocked. You don't want to set these down flat on a shelf, with the casework flat against the shelving - they want to sit on the legs or raised up by the handle.

Siggie

On Thu, Apr 2, 2020 at 6:28 AM Ross Hollinger via groups.io <rhollinger@protonmail.com>@groups.io> wrote:

I am new to scopes and am looking for a good analog scope for HF work. I like these scopes, but am torn between the three. I like the idea on auto set up, which would leave the 2465 out, but I don't know if the 2465B would be overkill. About me, I tend to over buy on purpose. I'm a believer in buy it once and save money. The notion of "beginner" or "starter" anything doesn't resonate with me - if you can learn on one, you can learn on any. I have read that the 2400 series tend to overheat, or get real hot, when operating. Also, that the power supplies are less than desirable. But then, those are a few opinions that may not be valid. The thing that concerns me would be having to replace older caps that may leak, blah, blah. Are there any thoughts about these, and are there any suggestions about where to look for refurbished units from good repair facilities.

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Stephen Hanselman

2020-04-02  (<https://groups.io/g/TekScopes/message/165469>)

Look at what all the tech gurus are saying, they're right. I have used all of them and find the features of our 2465B (for two of us we have four) to be the best.

Chuck is right on target with the franken2465, I have seen some of those come across my bench.

So be careful, but get a 2465B.

Regards,

Stephen Hanselman
Datagate Systems, LLC

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stevenhorii

2020-04-02  (<https://groups.io/g/TekScopes/message/165471>)

If you are looking for a 2465 of any vintage, I suggest checking out the seller "2465b" on eBay. I have no financial connection with the seller, but I have bought items from him. He supplies them fully checked out and calibrated with a guarantee. The items I bought from him (not a 2465) were very conservatively described and were in better condition than he described.

He specializes in the 2465 and knows all the potential trouble points. For example, if you buy one of the scopes he has worked on, one thing he does is to put heat sinks on the chips that run hot.

His prices are not the lowest on eBay, but his knowledge and quality of work are hard to beat. If you want a scope that will work for you likely for years, look at his listings.

Steve

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Jan Weber

2020-04-02  (<https://groups.io/g/TekScopes/message/165474>)

Hi group,

I am sorry for asking, but curiosity has got the better part of me. How is it done making a Frankenstein 2465 out of a 2445?

Not that I'm planning to do it, I already have a 2465CT and a 2467B.

Regards

Jan

stevenhorii <sonodocsch@...> schrieb am Do., 2. Apr. 2020, 19:09:

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Jim Ford

2020-04-02  (<https://groups.io/g/TekScopes/message/165475>)

Hey, isn't that the guy who fakes 2445's as 2465's? Just sayin'. Jim Ford Sent from my Verizon, Samsung Galaxy smartphone

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johnhstrauch

2020-04-02  (<https://groups.io/g/TekScopes/message/165476>)

Don't go near that guy. I am one of many who have been screwed over with one of those high dollar rebadged units. I tested the bandwidth and checked the innards and it was NOT a 2465B. Just a bit over 300MHz bandwidth. The A5 board failed within a couple of months.

When I confronted the good seller he was totally unremorseful. Said the unit was past his gauranty limit and his fee was \$600 to fix it.

That was several years ago (early 2016) and it is still a bitter pill for me.

Be aware of unscrupleous people and check the archives here for the plentiful prior messages concerning him.

JH

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Bill E

2020-04-02 (<https://groups.io/g/TekScopes/message/165477>)

I personally like the A. I've used scopes of various flavors for 50 or so years (my first was an EICO kit I got for my 12th or so bday, 1 whole Mhz). I have a 2465 and a 2465A. Wouldn't mind trying a B, but there was a run of them that had some of the really flaky caps that were around, those need recapping for sure. But, any of these scopes are some of the last, great analog scopes. As for auto-setup, sure, anyone with some experience can set up a scope, I did that for decades. But, it is really convenient to just push a button if you're probing around a circuit with different voltages and currents, and you don't know exactly what the values are. Fluff? No. A crutch? Maybe. Useful? For sure. Both the A and B scopes add some useful features, mostly calculations related to the cursors.

Not to cause a flame-war, and yes, it's heresy, but I have to put a plug in for my HP 54542A scope, only HP scope I've ever used. But, for a digital scope, 4 chans, 2 gs/sec simultaneously on all 4, 500 Mhz bw, fantastic triggering, and actually usable out to 800+Mhz.. Sorry, I digress.

BTW, don't be afraid of the battery-backed calibration rams that have a separate battery, it's easy to replace the battery without losing cal data, you just have to do a little prep.OTOH, those awful Dallas ram-and-battery packages were one of the worst inventions of all time. But, even if you lose cal, you can actually recalibrate with some fairly common equipment and some improvisation, unlike some of the newer instruments that need an external PC running some proprietary and now non-existent special cal software. One reason I really dislike the later TEK scopes with embedded Windows. Facing that issue now with an HP 4195A spectrum analyzer. Not only does it need a PC and special sw, it expects specific equipment it diddles over the HP-IB chain. Essentially, boat anchor if you have to recal it.

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satbeginner

2020-04-02 (<https://groups.io/g/TekScopes/message/165478>)

I think he is also the person who sells or sold newly made 2465B badges for the handles...

Only, they show up not just on real 2465B's, but also on rebadged "upgraded" other 24xx models....

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Chuck Harris <cfharris@...>

2020-04-02 (<https://groups.io/g/TekScopes/message/165480>)

You might want to check the archives for this group to see all of the kurfuffle that "2465b"'s "frankenscopes" (2445B scopes with 2465B labels) have caused.

-Chuck Harris

stevenhorii wrote:

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Ernesto (/g/TekScopes/profile/4335815)

2020-04-02 [🔗 \(https://groups.io/g/TekScopes/message/165481\)](https://groups.io/g/TekScopes/message/165481)

Hi Ross,

From a somewhat different angle than the other comments, if you like to know what is inside your beloved instrument, the 2465s come with the excellent manuals in the Tektronix tradition. I downloaded the service manual for 2465A from <http://bama.edebris.com/manuals/tek/> (<http://bama.edebris.com/manuals/tek/>) and browsed it with interest. Their "Theory of Operation" section and their circuit diagrams are informative and detailed. I learned here what a "Micro Channel Plate CRT" is (in the 2467). The circuit diagram of the high voltage supply is understandable, and even a "High Voltage Module" shows what is inside (!). In my judgment, this adds value to the instruments.

Ernesto

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Chuck Harris <cfharris@...>

2020-04-02 [🔗 \(https://groups.io/g/TekScopes/message/165482\)](https://groups.io/g/TekScopes/message/165482)

Briefly, because I have discussed this before:

- 1) Replace the labels that say 2445B with labels that say 2465B.
- 2) Add a jumper to the A1 motherboard connector that goes to the A5 controller. This jumper misrepresents the scope type as a 2465B to the controller. The controller, thinking it has a 2465B motherboard enables the 5ns/div step on the timing switch.
- 3) Isolate the two spiral inductor networks, by cutting traces, and solder in a pair of jumper wires to bridge the signal path.
- 4) Do your level best to tweak the response as a 2465B, even though you are missing 3 trimmer pots, 1 inductor, and a spiral delay line matching network; have 3 wrong valued trimmer capacitors and several wrong valued resistors; and your scope uses graded vertical preamp hybrids that were culled out after production because they could not meet the 2465B performance requirements.

Seems like a poor thing to do to your 2445B, but what do I know, I'm just a dumb engineer.

-Chuck Harris

Jan Weber via groups.io wrote:

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Tony Fleming

2020-04-02 [🔗 \(https://groups.io/g/TekScopes/message/165483\)](https://groups.io/g/TekScopes/message/165483)

Ernesto, you are a wealth of information!!! Thank you very much again.

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Tony Fleming

2020-04-02 (<https://groups.io/g/TekScopes/message/165484>)

Chuck, my Tektronix is 2465 DMM - is this the 2465A version?
Can I do what you recommend in step # 2 and 3?
Thank you very much for your help.

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Bill E

2020-04-02 (<https://groups.io/g/TekScopes/message/165485>)

Wow, that seems like a lot of work to sell a fake, especially when you can pick up a 2465 for \$250-350. But, the low priced ones need some careful due diligence. Look at the photos. If the seller doesn't have any that show an actual display, could be dead. I bought another 2465 as a parts unit, but turned out it actually worked fine after a few simple voltage checks and replacing a couple of caps. OTOH, could end up being exactly that, a parts unit.

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(<https://groups.io/g/TekScopes/topic/72764742?p=%2C%2C%2C20%2C0%2C0%2C0%3A%3A%2C%2C%2C0%2C0%2C0%2C72764742>)