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Topic: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B (Read 1307)

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Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B [Say Thanks](#) [Reply](#) [Quote](#)
« on: October 21, 2019, 02:27:26 pm »

Hi
I was wondering if anyone ever hacked these ESA spectrum analyzers to enable options?

some options like 1DR and 1DS (or even 1D5 for S/N > 4421) can be enabled by license key only

<https://www.keysight.com/main/editorial.jsp?cc=US&lc=eng&ckey=277453&nid=-11143.0.00&id=277453>

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mbielman
Contributor
 Posts: 24
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Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B [Say Thanks](#) [Reply](#) [Quote](#)
« Reply #1 on: November 08, 2019, 12:41:59 am »

I have the same question! Specifically I want to enable the RF Preamp option. (the hardware should be there) Wondering if I can set a bit in the EEprom on the processor card. OR maybe figure out the key(s) based on the serial number.

Anyone?

Mark B

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Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B [Say Thanks](#) [Reply](#) [Quote](#)

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mbielman

Contributor

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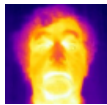
Frequent Contributor



Posts: 462
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PA0PBZ

Super Contributor



Posts: 4342
Country:

analogRF

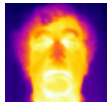
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« **Reply #2 on:** November 08, 2019, 02:45:15 am »

I have heard that these analyzers have been cracked but people who know how it's done, won't disclose anything 🙊

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Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B

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« **Reply #3 on:** November 08, 2019, 03:52:42 am »

I have an idea but it would be tedious and slightly dangerous...

Pull the EEPROM (processor board - an assumption on my part) from a unit that has some options enabled, and read that. Put it back, disable an option or two, remove it again and reread, then look for changes.

Ug!

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Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B

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« **Reply #4 on:** November 11, 2019, 02:20:05 pm »

disabling the option in the menus does not remove it from the EEPROM

I am pretty sure someone has found a way to enable the options but it is not shared....

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Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B

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« **Reply #5 on:** November 11, 2019, 02:51:49 pm »

If it's the same as the N1996a CSA and the E7495 it uses FlexLM, I'm the one to blame for the "enhancement" and I have no problem to have a look at these machines as they are discontinued anyway. Does anyone have root access to these machines already?

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Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B

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« **Reply #6 on:** November 11, 2019, 03:04:43 pm »

Quote from: PA0PBZ on November 11, 2019, 02:51:49 pm

If it's the same as the N1996a CSA and the E7495 it uses FlexLM, I'm the one to blame for the "enhancement" and I have no problem to have a look at these machines as they are discontinued anyway. Does anyone have root access to these machines already?

that would be awesome. unfortunately I don't have root access . I think N1996A is a much newer machine than ESA series...but of course they might be using the same os

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Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B

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« **Reply #7 on:** November 11, 2019, 03:09:57 pm »

Can you see what format the license code should be? That would probably show if it is FlexLM or something else.

I just downloaded the firmware upgrade but it is 9 discs 🗑️ And the other version for older OS does not run on my PC. -to be continued-

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Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B

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Frequent Contributor



Posts: 462

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« Reply #8 on: November 11, 2019, 03:16:45 pm »

actually I personally do not have one of these analyzers but have been hunting for one for quite some time. if there is a way to enable some non-hardware options then it would be awesome...I have worked with them though...

maybe this page will help?

<https://www.keysight.com/main/editorial.jspx?cc=US&lc=eng&ckey=1000004808:epsg:faq&nid=-35489.384884&id=1000004808:epsg:faq>

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Miek

Contributor

Posts: 25

Country:



Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B

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« Reply #9 on: November 11, 2019, 03:23:24 pm »

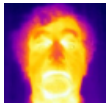
I think you may be able to just concatenate the five ESAFW files, though I'm not completely sure - there might be a header on each.

There are references in the source to FlexLM, and an RTOS named pSOS.

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PA0PBZ

Super Contributor



Posts: 4342

Country:



Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B

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« Reply #10 on: November 11, 2019, 05:54:35 pm »

So it runs on some kind of *nix, it is FlexLM and the license file is here: /usr/local/flexlm/licenses/license.dat.

The bad news is that the bytes that have to be patched in the other instruments are not to be found in the ESAFW file.

So, is there any way to communicate with the ESA, is there a prompt on a serial port? I don't think it has ethernet..

~~Is there a harddisk inside that is readable?~~ [Edit] No, it's flash.

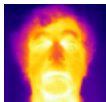
« Last Edit: November 11, 2019, 06:30:34 pm by PA0PBZ »

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PA0PBZ

Super Contributor



Posts: 4342

Country:



Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B

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« Reply #11 on: November 11, 2019, 06:46:34 pm »

Processor is Motorola Coldfire:

```

jsr      (a3)
move.l  d0,(sp)
jsr      (a2)
adda.w  #$24,sp ; '$'
move.l  d0,(sp)
pea     aDspbootrom ; "DspBootRom"
pea     (unk_E098).l
bsr.l   sub_3674
adda.w  #$24,sp ; '$'
move.l  #$1E118,(sp)
pea     (unk_3).w
clr.l   -(sp)
clr.l   -(sp)
move.l  #$493E7,-(sp)
pea     (unk_C).w
jsr      (a3)
move.l  d0,(sp)
lea     (unk_60CC).l,a2
jsr      (a2)
addq.w  #4,sp
move.l  d0,(sp)
move.l  #$18E70,-(sp)
pea     (unk_C).w
jsr      (a3)
move.l  d0,(sp)
jsr      (a2)
addq.w  #4,sp
move.l  d0,(sp)
pea     (off_8).w
jsr      (a3)
move.l  d0,(sp)
bsr.l   sub_6240
addq.w  #8,sp
addq.w  #4,sp
move.l  d0,(sp)
move.l  #$493F3,-(sp)

```

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mbielman

Contributor

Posts: 24

Country:



Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B

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« **Reply #12 on:** November 11, 2019, 08:59:44 pm »

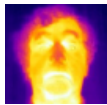
Not sure what you are trying to convey here. The ESA instruments use the MC68LC040 (integer only version) and as far as I know do not have a "traditional" OS at all, unlike the newer units.

If there is a way to interrogate the system, I would love to know how!

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PA0PBZ

Super Contributor



Posts: 4342

Country:



Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B

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« **Reply #13 on:** November 11, 2019, 09:17:43 pm »

I'm trying to find a way into the ESA to be able to patch the FlexLM part. It looks like the code disassembles fine as a Coldfire processor but you could be right that it is a 68LC040. It looks like it's not that different and it disassembles fine. The method I used to get around the FlexLM stuff in the other instruments is always returning "ok" on an entered license but you have to patch the FlexLM daemon. If you can't get to the file that is going to be difficult so I'm looking at the install.o file to see how it works and if there is a way to install a patched file, that's basically it 😊

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mbielman

Contributor

Posts: 24

Country:



Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B

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« **Reply #14 on:** November 11, 2019, 09:57:26 pm »

Yeah, not much differs I think between those processors, at least basic op codes. Coldfire is newer than the old MOT 680xx. As mentioned, don't think these run HP-UX, Windows or any such OS. So no idea if there is anything resembling a file system.


Although it has A: and C: drives (floppy and flash) so who knows! If it's there, you do not see it when the system boots.

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Scopetechniques

Contributor

Posts: 29

Country: 



 **Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B**

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« **Reply #15 on:** May 20, 2020, 09:25:48 pm »

No, the preamp option is not just software. It actually does have a hardware preamp after the input that can be turned on and off.


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tv84

Super Contributor



Posts: 1465

Country: 



 **Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B**

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« **Reply #16 on:** May 20, 2020, 09:51:05 pm »

Quote from: PA0PBZ on November 11, 2019, 09:17:43 pm

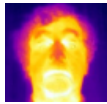
The method I used to get around the FlexLM stuff in the other instruments is always returning "ok" on an entered license but you have to patch the FlexLM daemon. If you can't get to the file that is going to be difficult so I'm looking at the install.o file to see how it works and if there is a way to install a patched file, that's basically it 😊

Have you succeeded? Do you have JTAG access?


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PA0PBZ

Super Contributor



Posts: 4342

Country: 



 **Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B**

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« **Reply #17 on:** May 21, 2020, 08:01:51 am »

Quote from: tv84 on May 20, 2020, 09:51:05 pm

Have you succeeded? Do you have JTAG access?

I gave up looking at the install file (can't remember why) and I don't have the hardware myself so the motivation is low.

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smgvbest

Supporter



Posts: 428

Country: 



 **Re: Enabling options on Agilent ESA series E4402B E4404B E4405B E4407B**

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« **Reply #18 on:** June 29, 2020, 02:36:22 am »

My turn to chime in. I just got ahold of a broken E4407B from Alltest. I will be posting a blog about the repair once it arrives in the mean time, this is a topic I am also interested in. I'd love to enable any of the license only options I could.

everything I see says this is not linux at all which I think we agree on I don't think FLExm is involved, they would have had to port it to their proprietary software which seems a waste.

I wonder if you could brute force this over SCPI. you can enter the license that way. be interesting to get a few options done.

Me first, I have to wait for mine to arrive then figure out what's broke

Does anyone have the actual CLIP for this I could borrow. I have the scanned version and even it the schematics are hard to read also anyone have a handle they are not using? Ill post in the wanted section but thought I would ask

« *Last Edit: June 29, 2020, 02:38:50 am by smgvbest* »

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Sandra
(Yes, I am a Woman :p)



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