
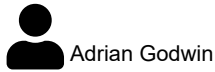



[Mute This Topic \(https://groups.io/g/HP-Agilent-Keysight-equipment/ft/91968578?csrf=5513314409256117711&mute=1&p=Created%2C%2C%2C20%2C20%2C1%2C20%2C0\)](https://groups.io/g/HP-Agilent-Keysight-equipment/ft/91968578?csrf=5513314409256117711&mute=1&p=Created%2C%2C%2C20%2C20%2C1%2C20%2C0)E4407B LO unlock Date  (<https://groups.io/g/HP-Agilent-Keysight-equipment/topic/91968578?p=Created%2C%2C%2C20%2C20%2C0%2C0>)

Adrian Godwin


Jun 26  (<https://groups.io/g/HP-Agilent-Keysight-equipment/message/127460>)

I agree with both Dave and Chuck. I'm definitely doing it wrong. In fact, I've got a preheater in the to-repair queue (needs a new fan) but the MHP30 has solved my immediate problem before getting around to that.

So how do I do it right ? Just keep twiddling the flow down until it works right ? How hot should the air be ? How can I measure the air temperature ? How long should it take to melt the solder (another problem I have is that I burn the fibreglass before melting the solder) ?

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Richard Parrish

Jun 26  (<https://groups.io/g/HP-Agilent-Keysight-equipment/message/127462>)

Which version of the ESA manual does Artek have? I'd forgotten that I had purchased this set when I ordered all the other late model CLIP manuals 15 years ago.


Ag! pn for the clip set is E4401-90310, dated April 2001

- Volume 1 covers A1A1 thru A7
- Volume 2 covers A7A1 thru A8A1A2
- The Service manual covers the various RF decks.

All the pages are the large version and it looks like the manual was printed in such a way as to make a straight copy unreadable without changing the brightness and contrast.

Richard Parrish

[Show quoted text](#)

 Reply Like MoreSven Schnelle <svenschnelle79@googlemail.com>Jun 26  (<https://groups.io/g/HP-Agilent-Keysight-equipment/message/127463>)

Hi Vladan,

with the additional load of the 8563E i use for measuring the signal the input to the Frequency divider is about -20dBm. Given that the keysight paper says:

f in = 1 to 4 GHz Min -18 Typ -25 to > +10 Max +10 dBm

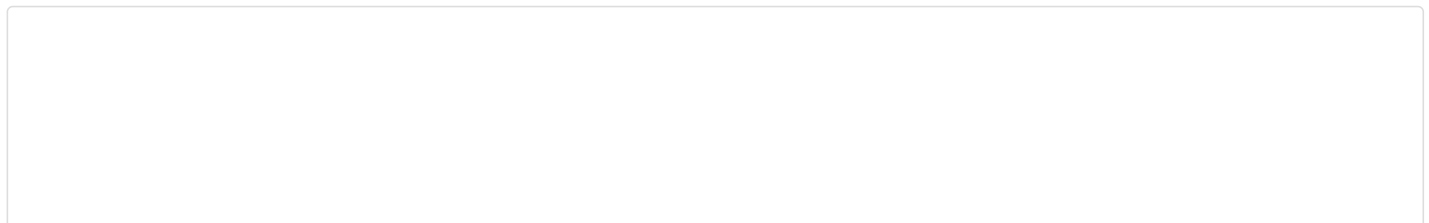
f in = 4 to 6 GHz Min -11 Typ -20 to > +10 Max +9 dBm

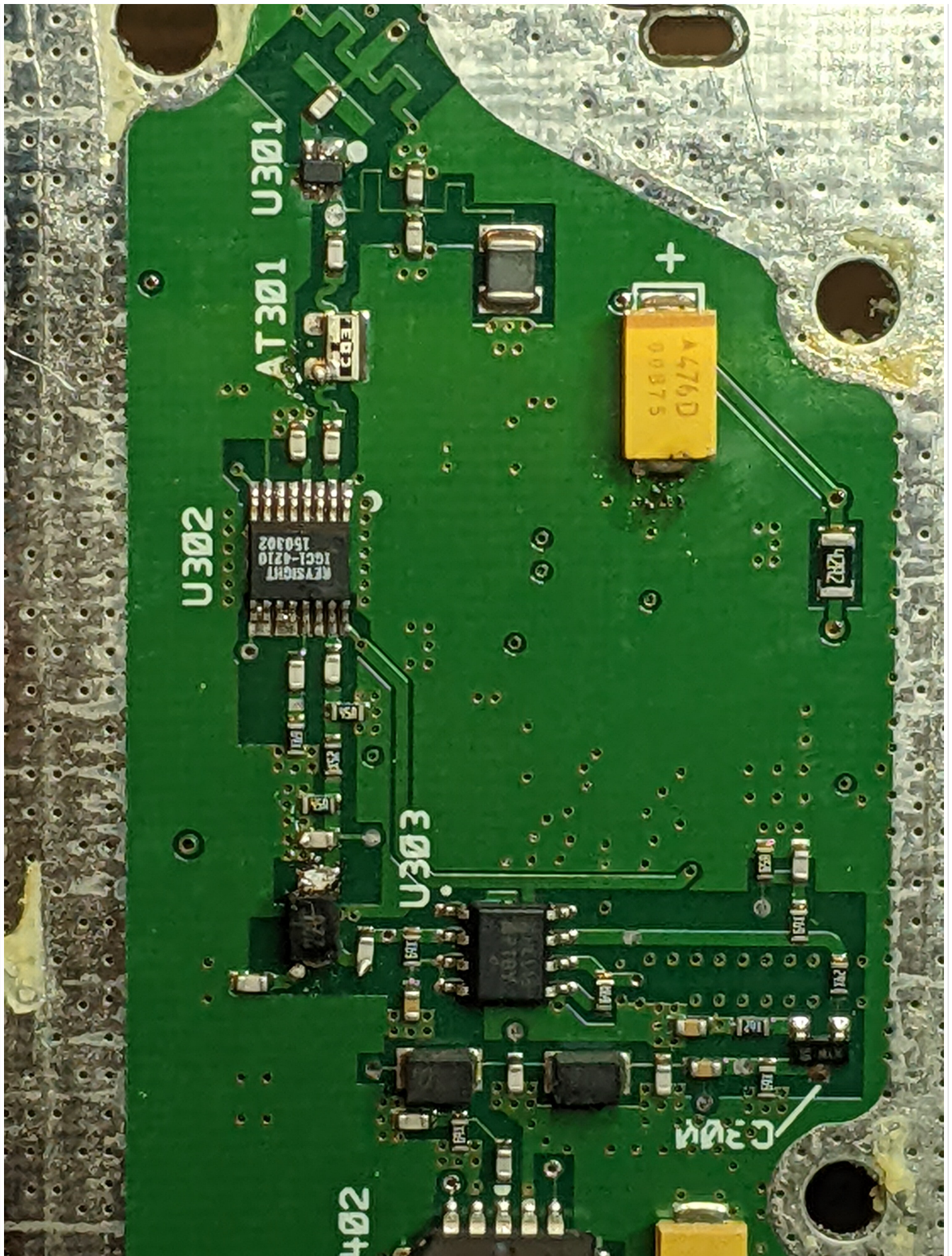
That might be almost enough - it's not exceeding the min specifications, but almost inside of the typical specs. There's an unknown Preamplifier before the prescaler, I'm measuring -30dBm input. So that one produces 10dB gain.

As a test I opened the coupling cap and fed in a signal from a frequency generator with up to 0dBm, but the odd divider behaviour persisted.

I attached a picture of the prescaler section - U301 is the preamplifier, U302 is the prescaler. Note that it has 'KEYSIGHT' written on it, so it can't be that old...

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(<https://groups.io/g/HP-Agilent-Keysight-equipment/attachment/127463/0/prescaler.jpg>)

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Chuck Harris

Jun 26 [🔗 \(https://groups.io/g/HP-Agilent-Keysight-equipment/message/127465\)](https://groups.io/g/HP-Agilent-Keysight-equipment/message/127465)

Generally, rework stations have a thermistor in the air stream in the hot air gun. The temperature of the air should be similar to what you would use with your soldering iron for the same type of solder. I typically run 290-350C, depending on whether I am melting leaded, or unleaded solder... the unleaded variety needs lots of flux and higher temperature... and still will make an ugly joint.

Rework stations also generally have an air flow gauge on the front panel. Higher rates of flow are reserved for the large manifolds/tips used for multi pin chips. Most of my work is done with a tip that has an about 1/8 inch hole. The air flow rate gauges/dials are generally relative airflow. I usually run 30% to 50% of full speed.

I will say it again: It is imperative that you use an underboard preheater. You cannot avoid burning the board unless you do. Starting out with a board that is pre-heated to 70-100C will allow you to throttle down your air speed, and your air temperature to much lower values. Even below 300C.

If you don't have a preheater, don't do the repair with an air or IR rework station. It's that important.

I remove resistors, capacitors, transistors and diodes by just pushing them to the side with a probe (aka: toothpick). I pick them up later with tweezers.

IC's are best done using the appropriately sized manifold that applies air at only the solder joints. A chip popper, which is just a little bent up piece of spring wire that puts steady, but very weak pressure on lifting the chip. A steel guitar "E" string can be used to make a good popper.

[Contrary to what Dave says, BGA's work fine with hot air, as long as you preheat, and you have a big enough manifold to heat the whole top of the chip... Putting them back is another story!]

Electrolytic capacitors must be destroyed. Don't waste your time trying to unsolder an SMD electrolytic capacitor that has failed. Just grab it with pliers and give it a twist around its axis while lightly pressing downwards. This will rip its little leads out. If you lose a trace, it was lost before you even started. Use your soldering iron to remove the leads from the board, and your solder sucker to remove all of the old solder. Be sure to scrub the board to get rid of all traces of leaked electrolyte.

-Chuck Harris

On Sun, 26 Jun 2022 11:43:21 -0700 "Adrian Godwin" <artgodwin@gmail.com> wrote:

I agree with both Dave and Chuck. I'm definitely doing it wrong. In fact, I've got a preheater in the to-repair queue (needs a new fan) but the MHP30 has solved my immediate problem before getting around to that.

So how do I do it right ? Just keep twiddling the flow down until it works right ? How hot should the air be ? How can I measure the air temperature ? How long should it take to melt the solder (another problem I have is that I burn the fibreglass before melting the solder) ?

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Dave McGuire (/g/HP-Agilent-Keysight-equipment/profile/77825)

Jun 26 [🔗 \(https://groups.io/g/HP-Agilent-Keysight-equipment/message/127466\)](https://groups.io/g/HP-Agilent-Keysight-equipment/message/127466)

On June 26, 2022 4:03:47 PM "Chuck Harris" <cfharris@erols.com> wrote:

[Contrary to what Dave says, BGA's work fine with hot air, as long as you preheat, and you have a big enough manifold to heat the whole top of the chip... Putting them back is another story!]

I didn't say it didn't work. I said that IR is most commonly used for BGAs in industry, which it is.

-Dave

--

Dave McGuire, AK4HZ
New Kensington, PA


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Chuck Harris

Jun 26  (<https://groups.io/g/HP-Agilent-Keysight-equipment/message/127469>)

That is true, you did not say it didn't work. I guess I inferred more negativity into your statement than you intended.

If you want to get technical, IR is all they use in the industry these days. It gives very tight control over temperature, and makes it real easy to avoid burning things you don't want to burn.

I am pretty sure that hot air is now only used by rework technicians, and hobbyists.

I use IR to bake new batches of surface mount boards, IR to preheat rework boards, and hot air to melt/reflow the solder.

I don't like the IR rework stations because they all seem to use focused quartz halogen bulbs for the IR source. This makes them blindingly bright, and put out enough UV to get a quick sunburn. You have to work like you are arc welding.

The IR preheaters are different in that they use either quartz rods with a thin film metal resistance element deposited on their surface, or calrod based hot plate elements. They glow a dull red/orange.

-Chuck Harris

On Sun, 26 Jun 2022 16:30:29 -0400 "Dave McGuire" <mcguire@neurotica.com> wrote:

On June 26, 2022 4:03:47 PM "Chuck Harris" <cfharris@erols.com> wrote:

[Contrary to what Dave says, BGA's work fine with hot air, as long as you preheat, and you have a big enough manifold to heat the whole top of the chip... Putting them back is another story!]

I didn't say it didn't work. I said that IR is most commonly used for BGAs in industry, which it is.

-Dave

--

Dave McGuire, AK4HZ
New Kensington, PA

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Dave McGuire (/g/HP-Agilent-Keysight-equipment/profile/77825)

Jun 26 (<https://groups.io/g/HP-Agilent-Keysight-equipment/message/127472>)

On 6/26/22 18:40, Chuck Harris wrote:

That is true, you did not say it didn't work. I guess I inferred more negativity into your statement than you intended.

There was no negativity (intended, anyway) in my statement at all. It's the right tool for that job, nothing more. (and nothing less)

If you want to get technical, IR is all they use in the industry these days. It gives very tight control over temperature, and makes it real easy to avoid burning things you don't want to burn. I am pretty sure that hot air is now only used by rework technicians, and hobbyists.

Yes, hot air is pretty much king for rework in assembly plants. No idea what the hobbyists are doing, aside from playing with toaster ovens.

I use IR to bake new batches of surface mount boards, IR to preheat rework boards, and hot air to melt/reflow the solder.

Same here.

I don't like the IR rework stations because they all seem to use focused quartz halogen bulbs for the IR source. This makes them blindingly bright, and put out enough UV to get a quick sunburn. You have to work like you are arc welding.

I have a small one of those. It's the kind of thing that can really mess you up if you're not careful. It has a ceramic IR under-heater as well, which stays hot for far longer than is reasonable after powering off. I don't use it often.

-Dave

--
Dave McGuire, AK4HZ
New Kensington, PA

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John Gord

Jun 26 (<https://groups.io/g/HP-Agilent-Keysight-equipment/message/127476>)

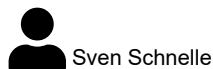
Richard,
Artek has the E4401-90310, April 2001 CLIP.
I recall Dave saying that he had to do quite a bit of work to make the scan readable.
--John Gord

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Sven Schnelle

Jul 28  (<https://groups.io/g/HP-Agilent-Keysight-equipment/message/128366>)

Hi List,

"Sven Schnelle via groups.io" <svenschnelle79@googlemail.com@groups.io> writes:

Hi Vladan,

with the additional load of the 8563E i use for measuring the signal the input to the Frequency divider is about -20dBm.
Given that the keysight paper says:

f in = 1 to 4 GHz Min -18 Typ -25 to > +10 Max +10 dBm

f in = 4 to 6 GHz Min -11 Typ -20 to > +10 Max +9 dBm

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I attached a picture of the prescaler section - U301 is the preamplifier, U302 is the prescaler. Note that it has 'KEYSIGHT' written on it, so it can't be that old...

On Sun, Jun 26, 2022 at 8:08 PM pianovt via groups.io <pianovt@yahoo.com@groups.io> wrote:

Sven,

I can't answer your question about the divide numbers, but I think some of these dividers needed a minimum input signal level, or they would oscillate. (This was in their specification sheets). So, make sure you have a strong enough signal going into the divider.

I ordered a 1GC1-4210 replacement module from Leo Bodnar, it arrived today. Soldering was a bit challenging for me, but the E4407B is now working again. Sweeping works now without any LO Unlock. The only thing that i noticed is that the SA sometimes stops sweeping for a fraction of a second, and makes a clicking noise (sounds like a reed relay). Anyone knows whether that's normal?

I see a similar behaviour with the trace update stopping for a short amount of time on my 8563E when the frequency counter is enabled, but i couldn't figure out any similar thing on the E4407B.

Regards
Sven Reply Like More



Sven Schnelle

Jul 28 (https://groups.io/g/HP-Agilent-Keysight-equipment/message/128367)

Hi List,

"Sven Schnelle" <svens@stackframe.org> writes:

The only thing that i noticed is that the SA sometimes stops sweeping for a fraction of a second, and makes a clicking noise (sounds like a reed relay). Anyone knows whether that's normal?

Seems to be normal:

"It is normal to hear clicking when the Auto Alignment function is on. During the interval between sweeps, portions of the analyzer's circuitry are realigned. Some of the circuitry is controlled by relays. It is the rapid switching of these relays between sweeps which causes the clicking sound. Under normal operation, these relays will last over 50 years.

To eliminate the clicking sound, turn off the automatic alignment. (See the Alignments key description in your User's guide.") With Auto Align turned off, however, the Align Now All function should be performed periodically. For more information on how often to perform Align Now All when the Auto Alignment function is off, refer to the appropriate "Specifications and Characteristics" chapter in your specifications guide."

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30 of
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1 (https://groups.io/g/HP-Agilent-Keysight-equipment/topic/e4407b_lo_unlock/91968578?p=Created%2C%2C%2C20%2C1%2C0%2C0&jump=1)

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(<https://groups.io/g/HP-Agilent-Keysight-equipment/topic/92625243?p=%2C%2C%2C20%2C0%2C0%2C0%3A%3A%2C%2C%2C0%2C0%2C92625243>)

(<https://groups.io/g/HP-Agilent-Keysight-equipment/topic/92680039?p=%2C%2C%2C20%2C0%2C0%2C0%3A%3A%2C%2C%2C0%2C0%2C92680039>)