

R&E - Feature #1299

Help sonicyang to repair HP 34401A

01/13/2016 04:46 AM - tin

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|-------------------------|-----------------------------------|
| Status: Closed | Start date: 01/16/2016 |
| Priority: Normal | Due date: 01/16/2016 |
| Assignee: tin | % Done: 100% |
| Category: | Estimated time: 6.00 hours |
| Target version: | |

Description

Meet sonic at Banciao MRT 1:30pm Jan.16

Meter Has following Issues

- It's reporting Error 604.
- DC measurement is extremely inaccurate.
- Ohm measurement is non-working, but do reports ~ 0ohm if I short the test leads.
- Conductive Test is Working as expected.

As I tear it down, measuring the DC supplies, ~~+10V~~ +15V and 5V, are all good and Voltage refs, 7.5V, 5V, +-10V, are also good.

IC, Numbering U420, U105, U106, U312, U305, and voltage regulator are all hot as about 40~45 degrees Celsius, as other chips are 33~36 only.

And, I measured U102's resistance. Everything is on spot except

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Pin15 - Pin21 should be 100K measured 69K
Pin29 - Pin30 should be 30K measured 20K
Pin15 - Pin13 should be 100K measured 82K
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I also had a 34401A with the Error 604 a while back. This instrument had big problems in the OHMS reading and it turned out to be U201 that fixed it.

- The tantalum cap is well known (any engineer still using those should be barred of ever designing anything ever again and branded on his forehead with the text 'Tantalum User'. Tantalums are a PEST) I lost the count of how many times i had to fix a machine or instrument and the cause was a fried tantalum. The only good Tantalum is one that is not fitted into anything i own.
- The swithc is also known
- the 2512 resistor ladder next to the front or rear jacks can crack loose in a range of serial numbers
- the cpu on the front panel can explode if tone of the VFD drivers calls it quits and commits harakiri in a fiery fireball.
There is another tantalum in the True RMS section that can kill that one off as well.

Useful threads:

<http://www.eevblog.com/forum/testgear/hp-34401a-what-to-worry-about-when-buying-used/msg707008/#msg707008>
<http://www.eevblog.com/forum/repair/hp-34401a-repair/msg471050/#msg471050>
<http://www.eevblog.com/forum/repair/hp-34401a-error-604/msg769609/#msg769609>
<http://www.eevblog.com/forum/repair/agilent-34401a-repair-help-request-%28showing-voltage-without-input%29/msg443134/#msg443134>
<http://www.eevblog.com/forum/repair/another-34401a-repair-question/msg787984/#msg787984>

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Calibration

1. Zero adjustment 4W short
2. -10V, +500VDC, 10mA@1kHz calibration if A/D , U101 or U505 RAM changed
3. 4W adjustment

History

#1 - 01/13/2016 04:56 AM - tin

- File Accredited-Calibration-Certificate.pdf added

Example cal cert

#2 - 01/18/2016 02:44 AM - tin

- Status changed from New to Closed

- % Done changed from 0 to 100

Fixed, [worklog](#)

Files

| | | | |
|--|---------|------------|-----|
| 34401-90013.pdf | 4.16 MB | 01/13/2016 | tin |
| Accredited-Calibration-Certificate.pdf | 5.02 MB | 01/13/2016 | tin |