

MODIFICATION RECOMMENDED

N5998A-02

S E R V I C E N O T E

Supersedes:
NONE

N5998A: HDMI 1.3 Protocol Analyzer and Generator

Serial Numbers: DE47300001/DE47300188

In certain cases the N5998A does not capture HDMI 1080p signals correctly and shows pixel errors after capturing HDMI frames.

To Be Performed By: Agilent-Qualified Personnel

Parts Required:

| P/N | Description | Qty. | |
|--|---------------------|------|-----------------------------|
| 0699-6623 | 4.7 KOhms Resistors | 1 | can be supplied by division |
| . | Jumper Wire | | |
| File: "VIC16_RGB_12Bit_60Hz.vgf" to be supplied by the division. | | | |

ADMINISTRATIVE INFORMATION

| | | | |
|---------------------------------|--|--|---|
| SERVICE NOTE CLASSIFICATION: | | | |
| MODIFICATION RECOMMENDED | | | |
| ACTION CATEGORY: | <input type="checkbox"/> IMMEDIATELY <input checked="" type="checkbox"/> ON SPECIFIED FAILURE <input checked="" type="checkbox"/> AGREEABLE TIME | STANDARDS | LABOR: 1.0 Hours |
| LOCATION CATEGORY: | <input type="checkbox"/> CUSTOMER INSTALLABLE <input type="checkbox"/> ON-SITE <input checked="" type="checkbox"/> SERVICE CENTER | SERVICE INVENTORY: <input type="checkbox"/> RETURN <input checked="" type="checkbox"/> SCRAP <input type="checkbox"/> SEE TEXT | USED PARTS: <input type="checkbox"/> RETURN <input checked="" type="checkbox"/> SCRAP <input type="checkbox"/> SEE TEXT |
| AVAILABILITY: | PRODUCT'S SUPPORT LIFE | NO CHARGE AVAILABLE UNTIL: June 1, 2009 | |
| AUTHOR: KH | PRODUCT LINE: PL24 | | |
| ADDITIONAL INFORMATION: | | | |

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Rev. 14



Note:

If the serial number of the N5998A is DE47300136 or less, please ensure that the service note N5998A-01 has been implemented first. Please contact Kurt Hellinga in case of questions.

Situation:

When capturing HDMI 1.3 1080p video frames with the N5998A, the instrument does not capture the frames correctly in all cases. If frames from specific DUTs are captured, pixel errors might occur. An illustration of these pixel errors is shown in figure 1 below:

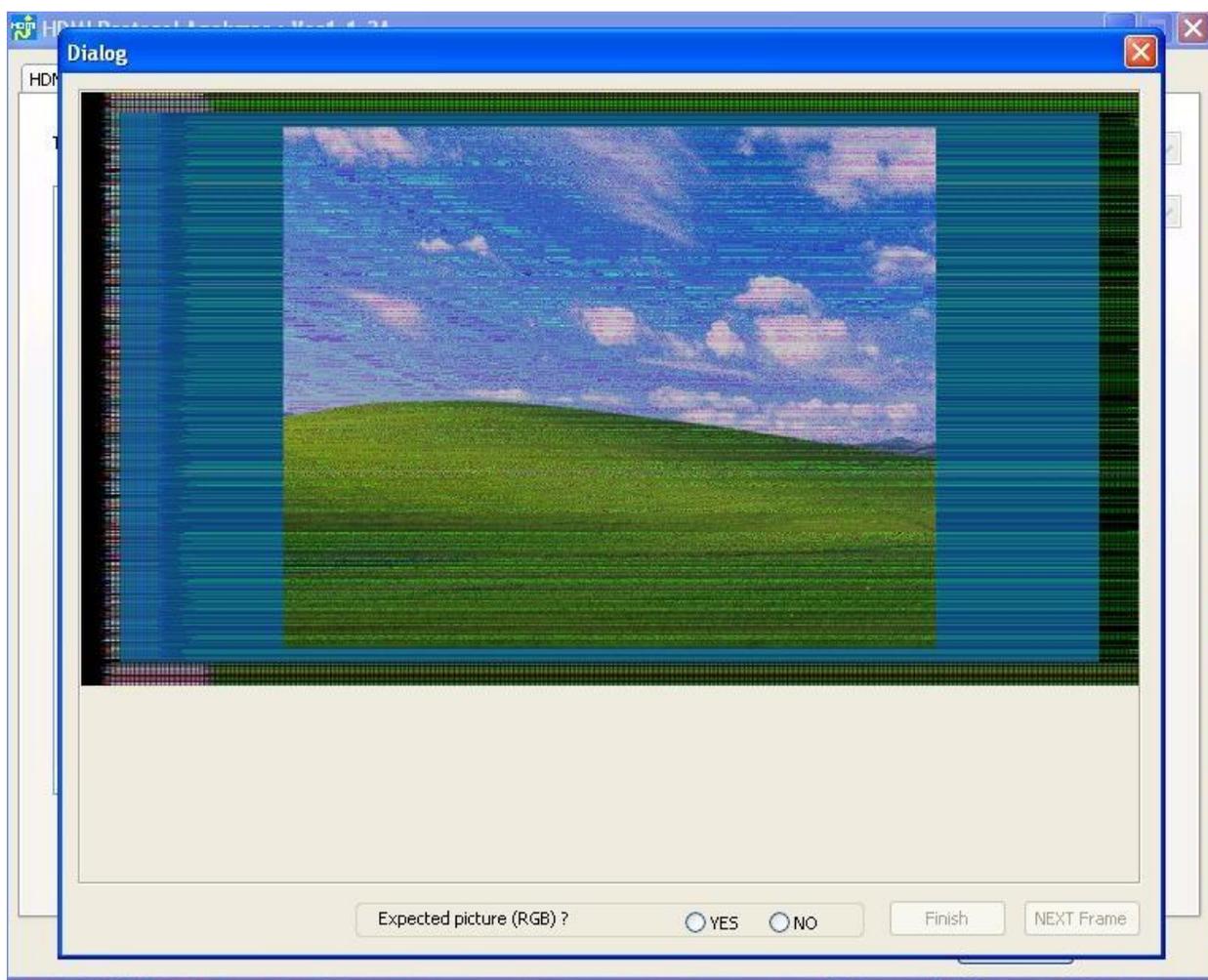


Figure 1

As a consequence of these pixel errors, the following HDMI 1.3 compliance tests specified in the HDMI 1.3b CTS might fail: 7-16, 7-17, 7-24 and 7-25.

Solution/Action:

Fixing this bug requires a few hardware modifications and the installation of software version 1.2 or later.

To perform the hardware modifications, proceed as follows:

1. Remove the 4 screws and the two edges at the back of the instrument:

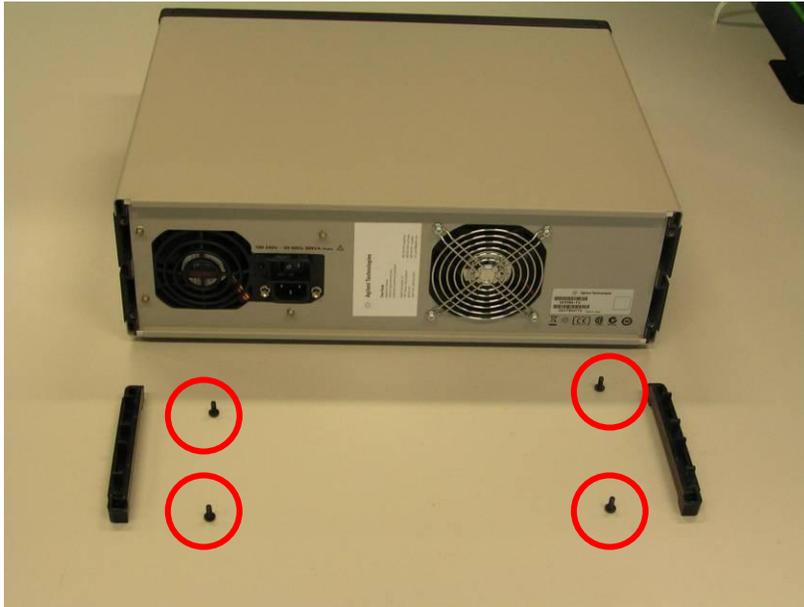


Figure 2

2. Slide off the cover of the instrument:



Figure 3

3. Disconnect the plugs as shown in the following 2 illustrations:

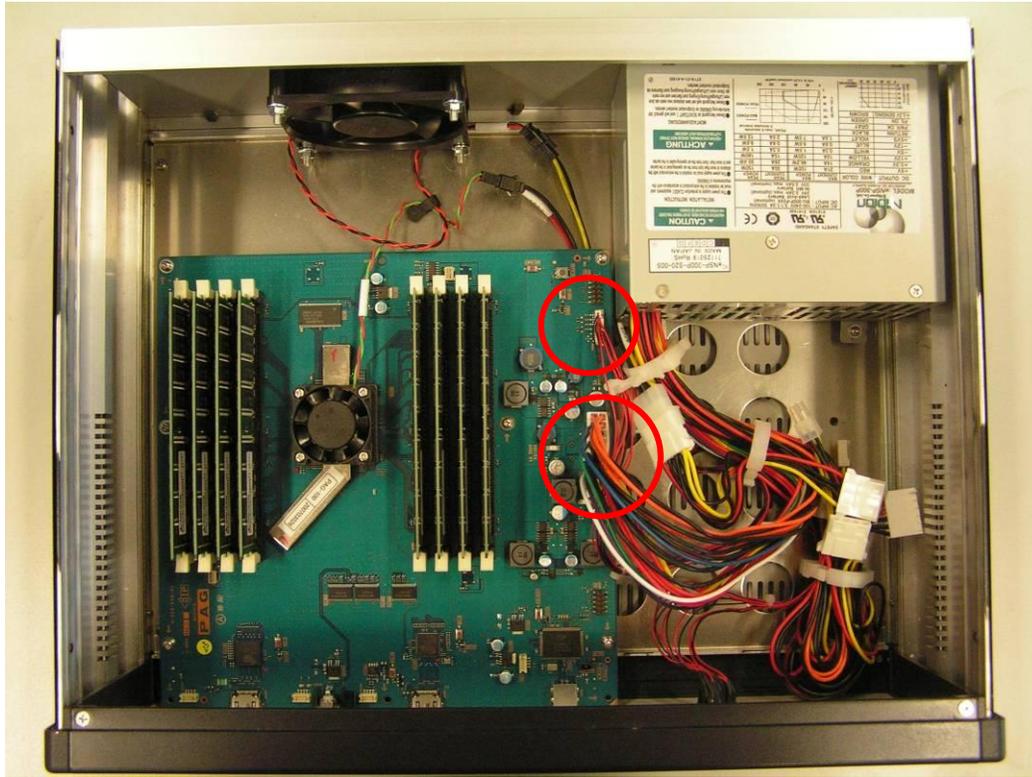


Figure 4

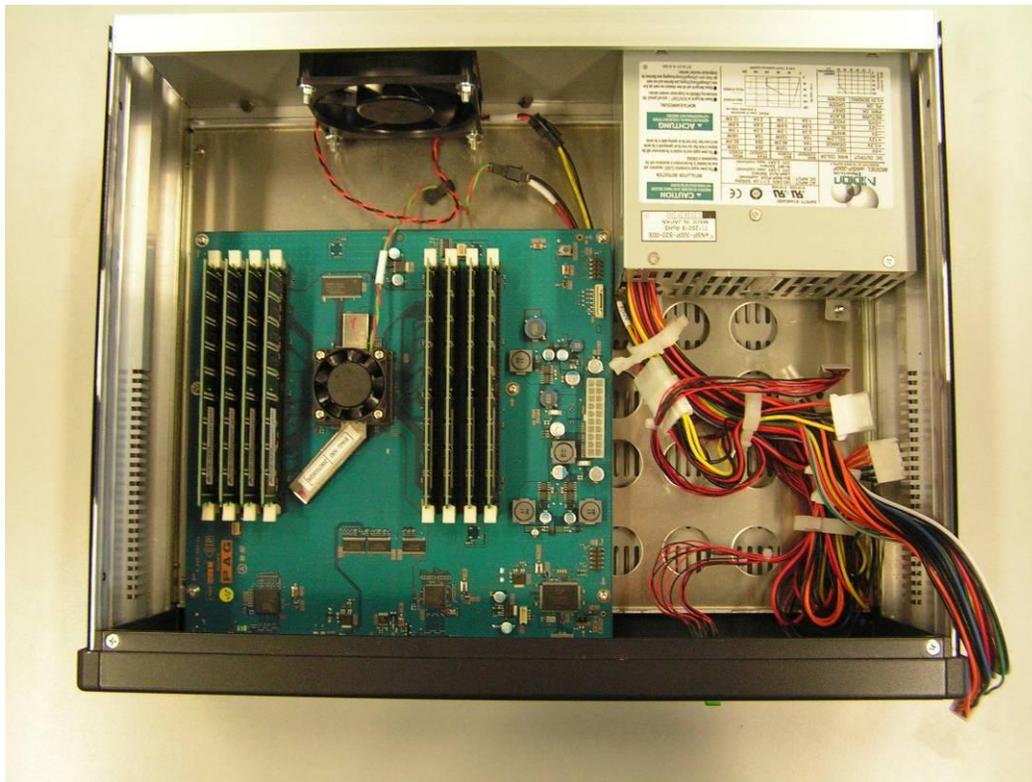


Figure 5

4. Remove the 3 screws at the front of the instrument as shown below:

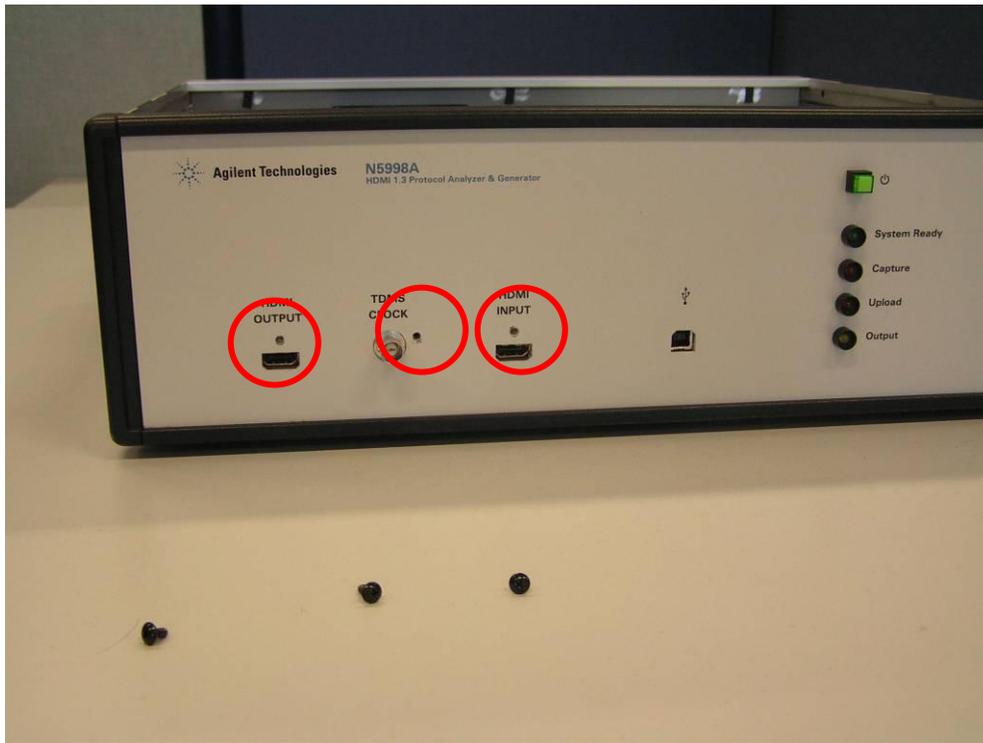


Figure 6

5. Remove the cooling vent:

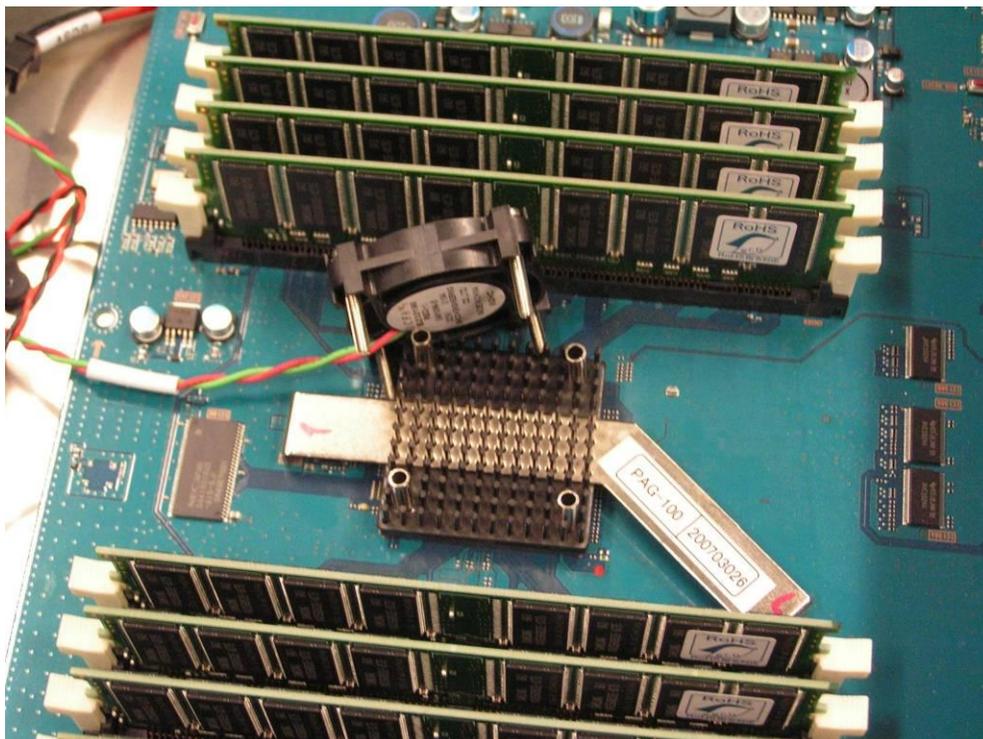


Figure 7

6. Remove the motherboard by removing the following screws:

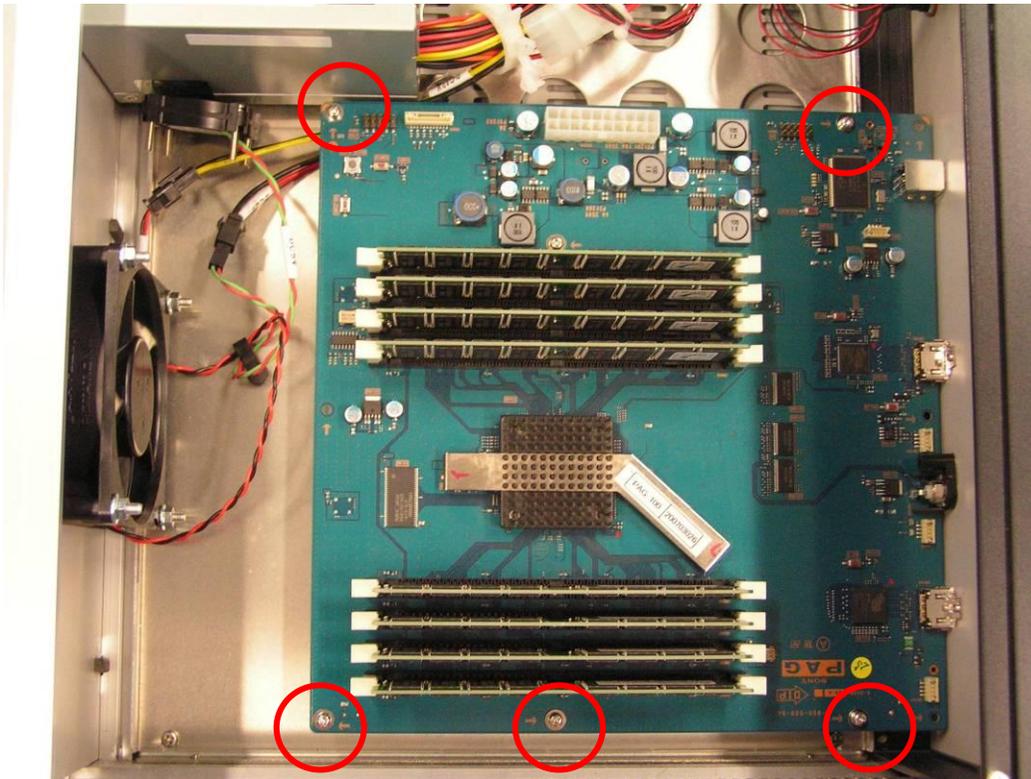


Figure 7

The areas which need modifications can be found in the following 2 areas:

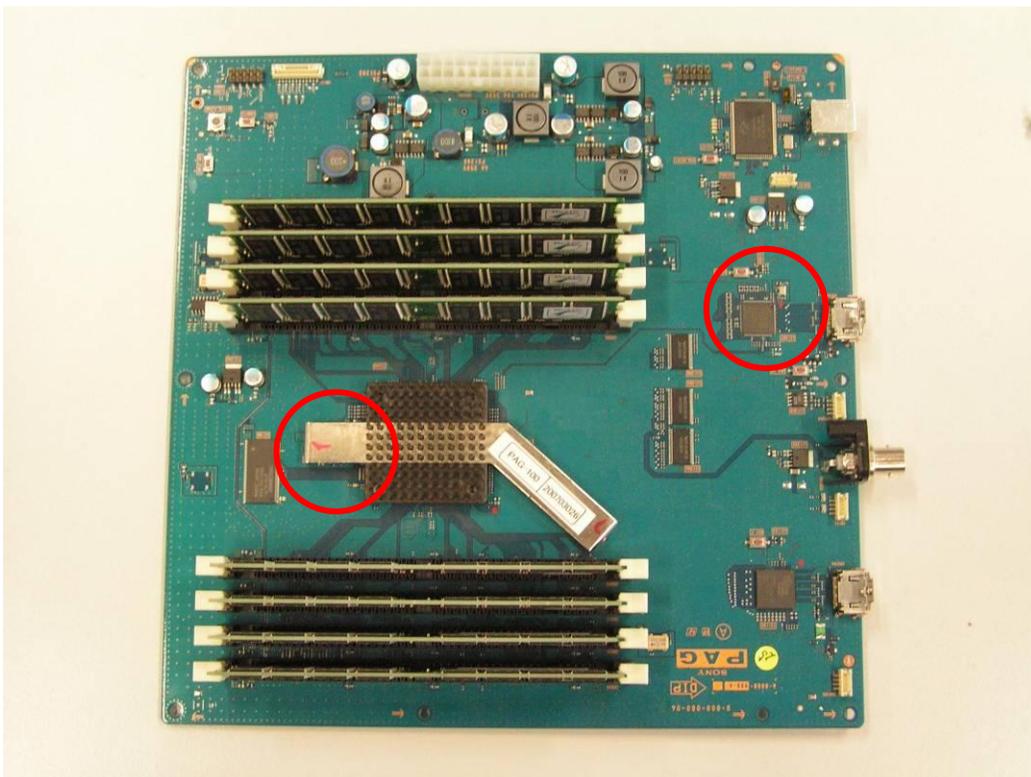


Figure 8

6. The following modifications need to be made near the Silicon Image Receiver Chip:

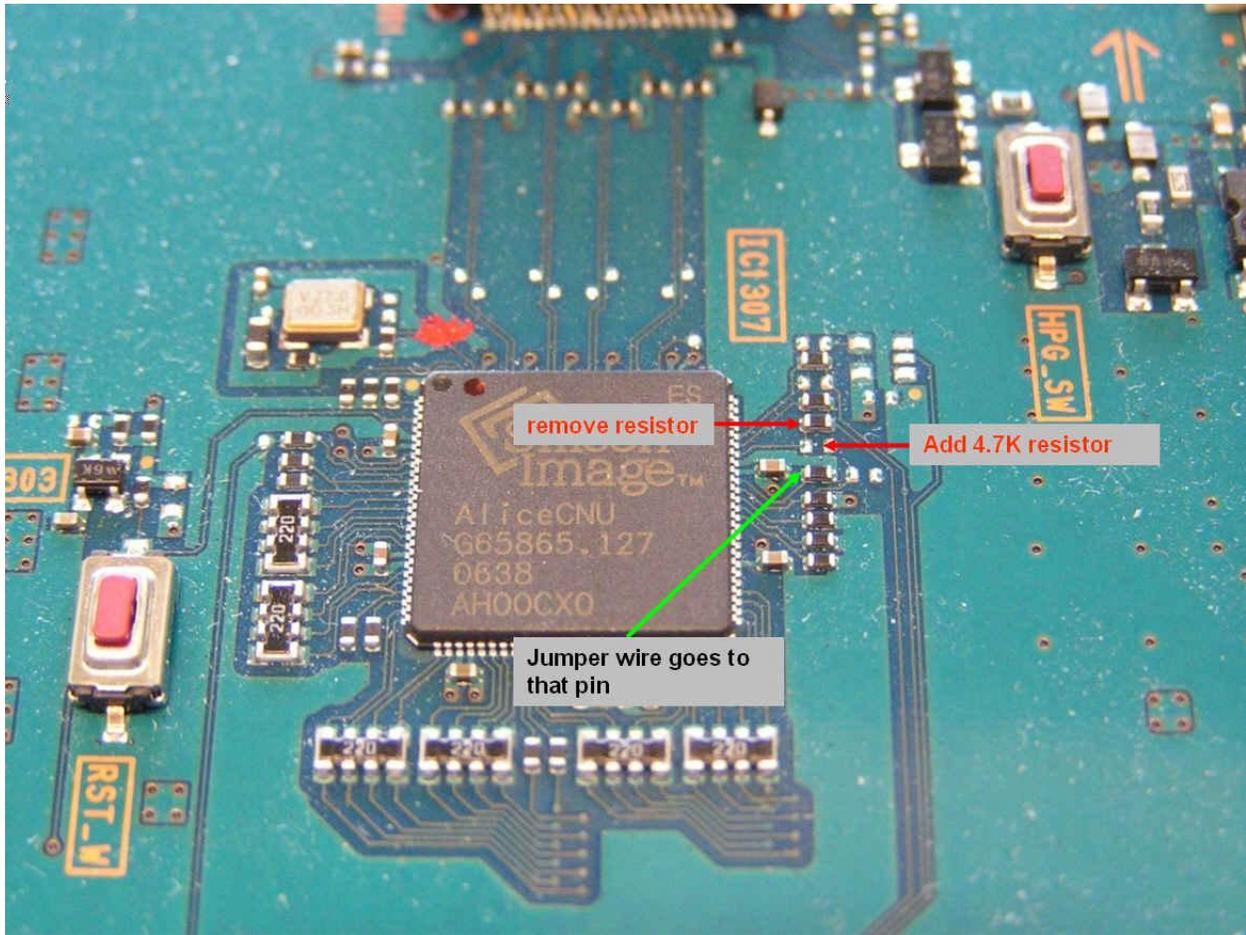


Figure 9

7. Near the FPGA one resistor needs to be removed and the other side of the jumper wire needs to be connected:

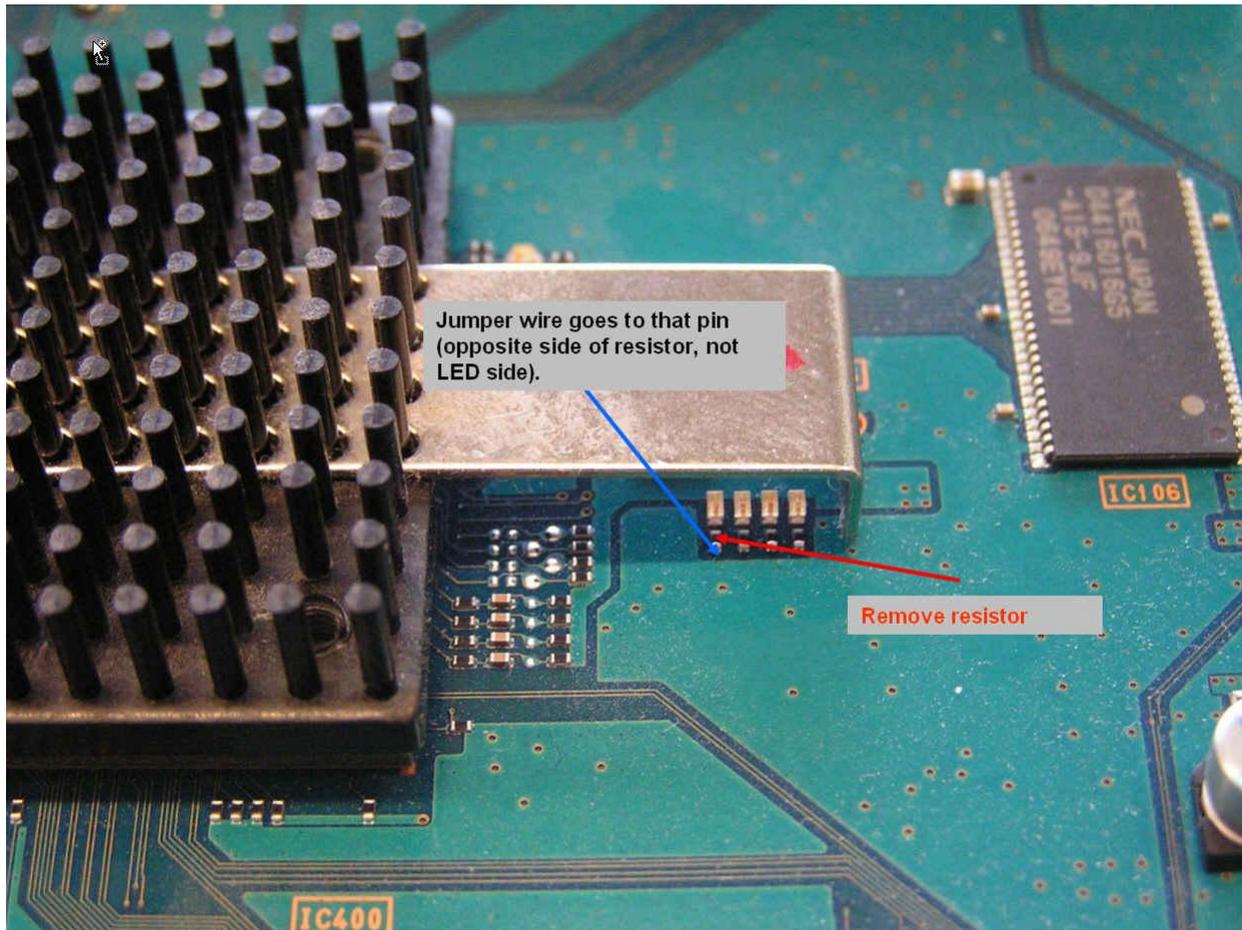


Figure 10

Now glue the jumper wire to the PCB board using appropriate epoxy.

This is how the board should look like after the modifications:

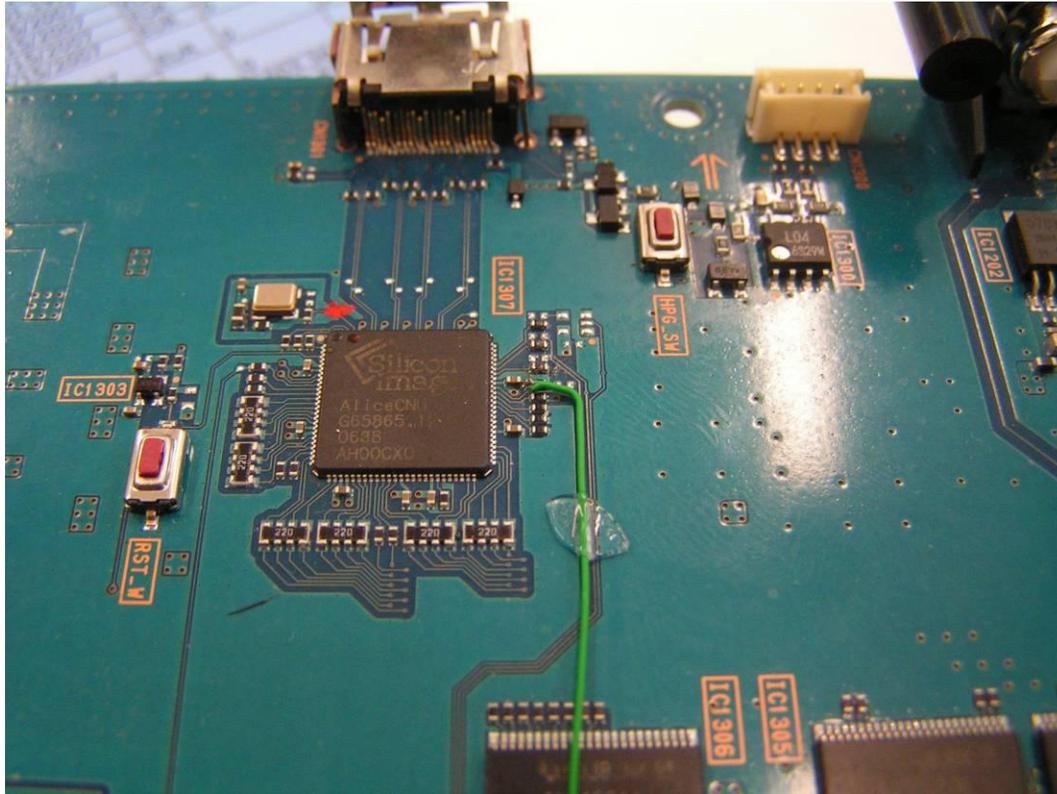


Figure 11

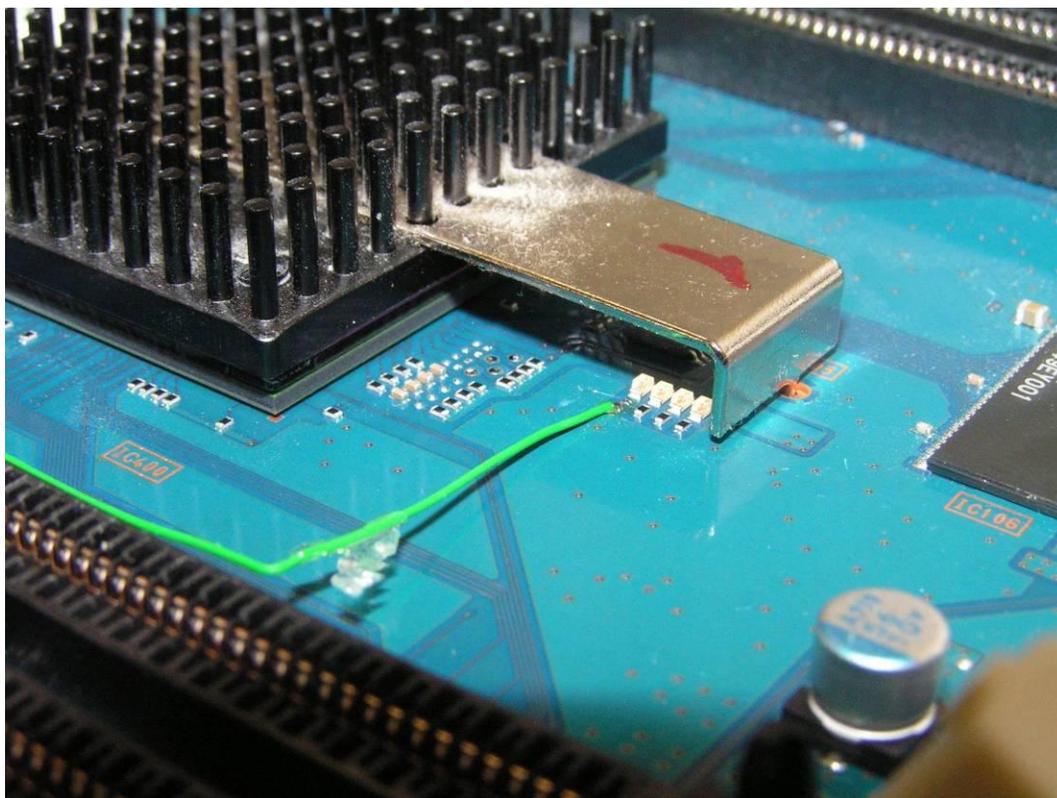


Figure 12

8. Reassemble the unit in the reverse order.

9. Verify correct operations as follows

For functional verification a second N5998A is required. A sufficient number of units should be available in demstock. Contact Kurt Hellinga (Telnet.: 778-3013) in case of issues or questions. Two PCs are needed to control the two N5998A's.

Connect the two N5998A's by connecting the HDMI output of the second N5998A to the HDMI input of the N5998A to be tested (the unit with the HW modifications). The second N5998A will be used to generate a 1080p frame to be captured by the N5998A under test. If the N5998A under test captures the frame correctly the unit is functionally correct.

To generate a 1080p frame with the second N5998A start the N5998A and select the "HDMI Video Timing Generator" Tab at the top of the screen. Select file "VIC16_RGB_12Bit_60Hz.vgf" and Video Format Timing 16: 1920x1080p@60Hz. (Contact Kurt Hellinga (kurt_hellinga@agilent.com) to get a copy of the file.)

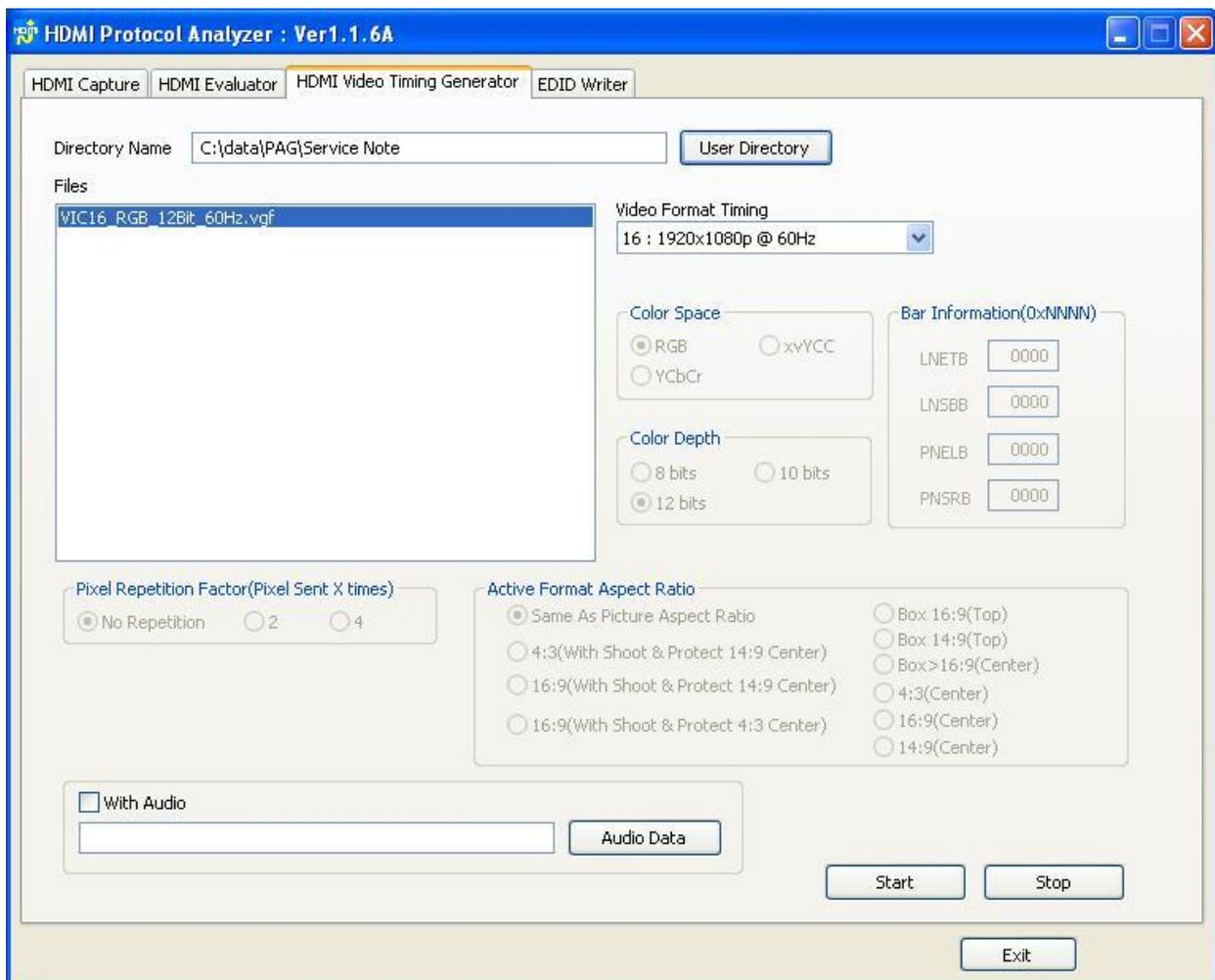


Figure 13

Press Start to start generating the frame.

The N5998A to be tested must be set to capture the 1080p frame:

Select Tab HDMI Capture, select the frequency range for 222.75 MHz (4 ranges might be shown), select a file name and an upload size (200MByte is sufficient):

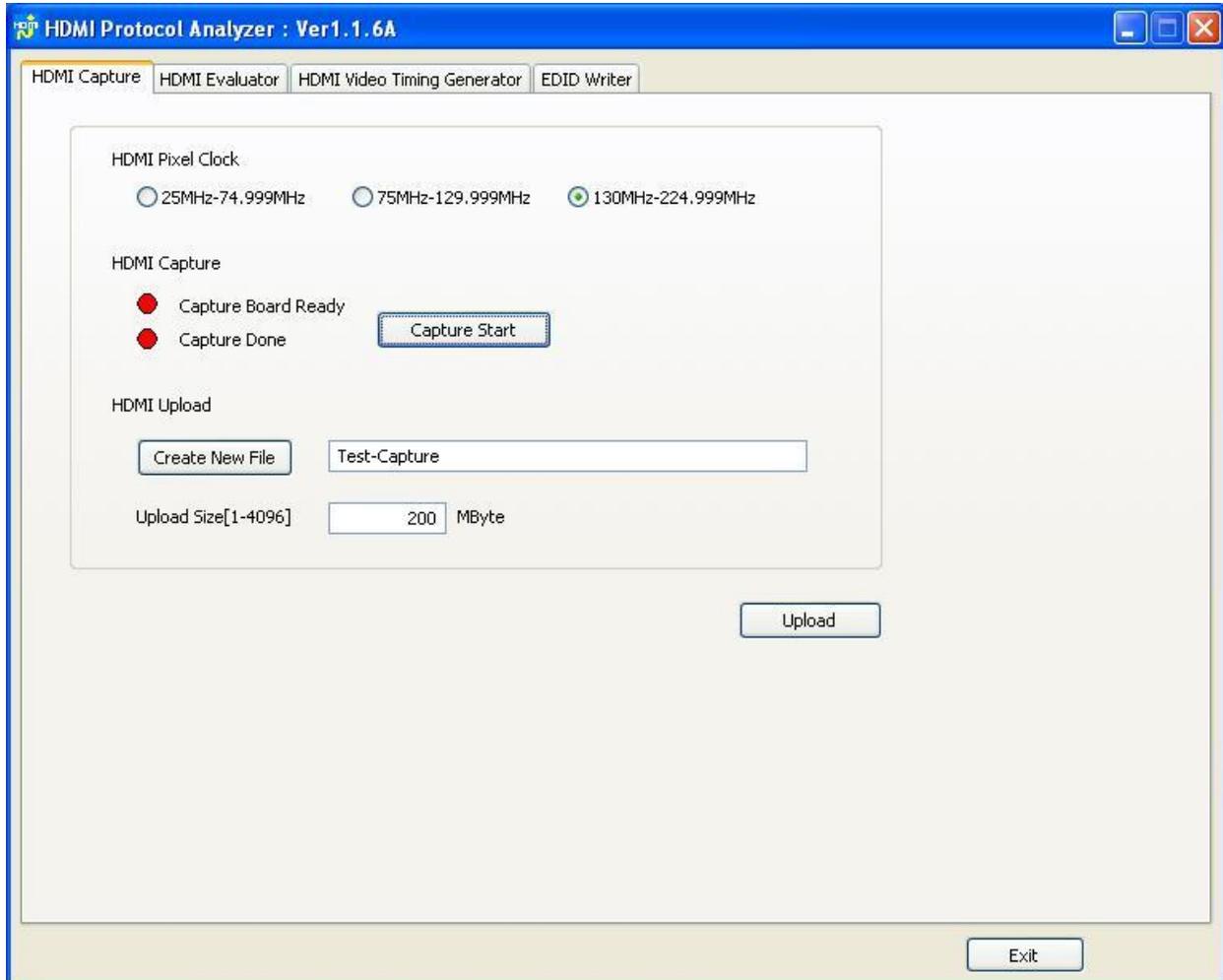


Figure 14

When the “Capture Board Ready” indicator is green, press the “Capture Start” button. When the “Capture Done” indicator is green, select a directory and filename on the PC using the “Create New File” button. Specify a file size of 200 MByte and press “Upload”, the captured file will be stored on your PC.

Now the captured file must be evaluated.

Select the “HDMI Evaluator” Tab at the top. Enter the Target File Name (the filename and directory you have specified in the HDMI Capture tab), select Video Format Timing “16: 1920x1080p @ 60Hz”, select Test ID “(7-27) AVI InfoFrame” and check the “AVI InfoFrame Packet” Checkbox.

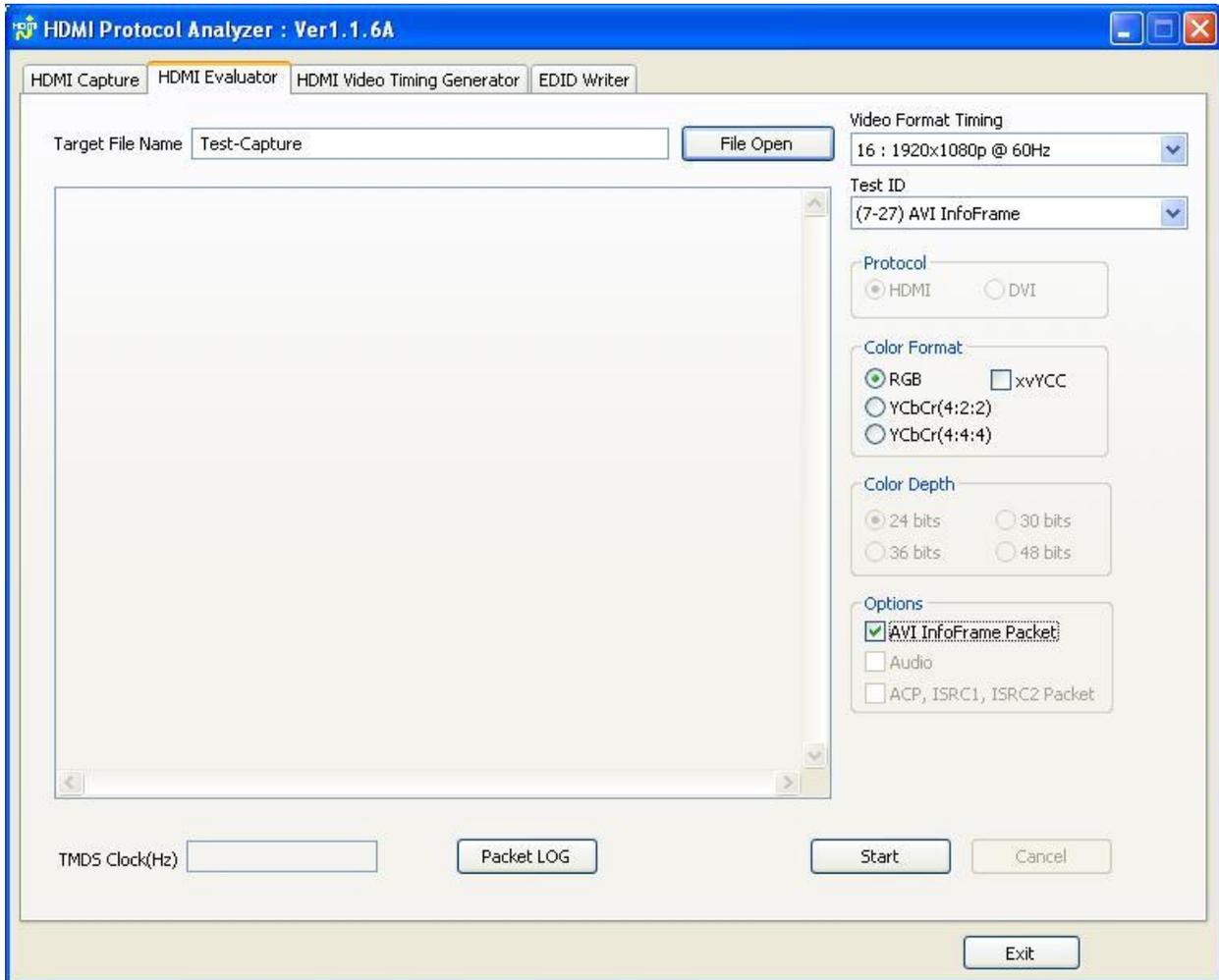


Figure 15

Press start.

Now the test starts.

During the test the following screen will be displayed:

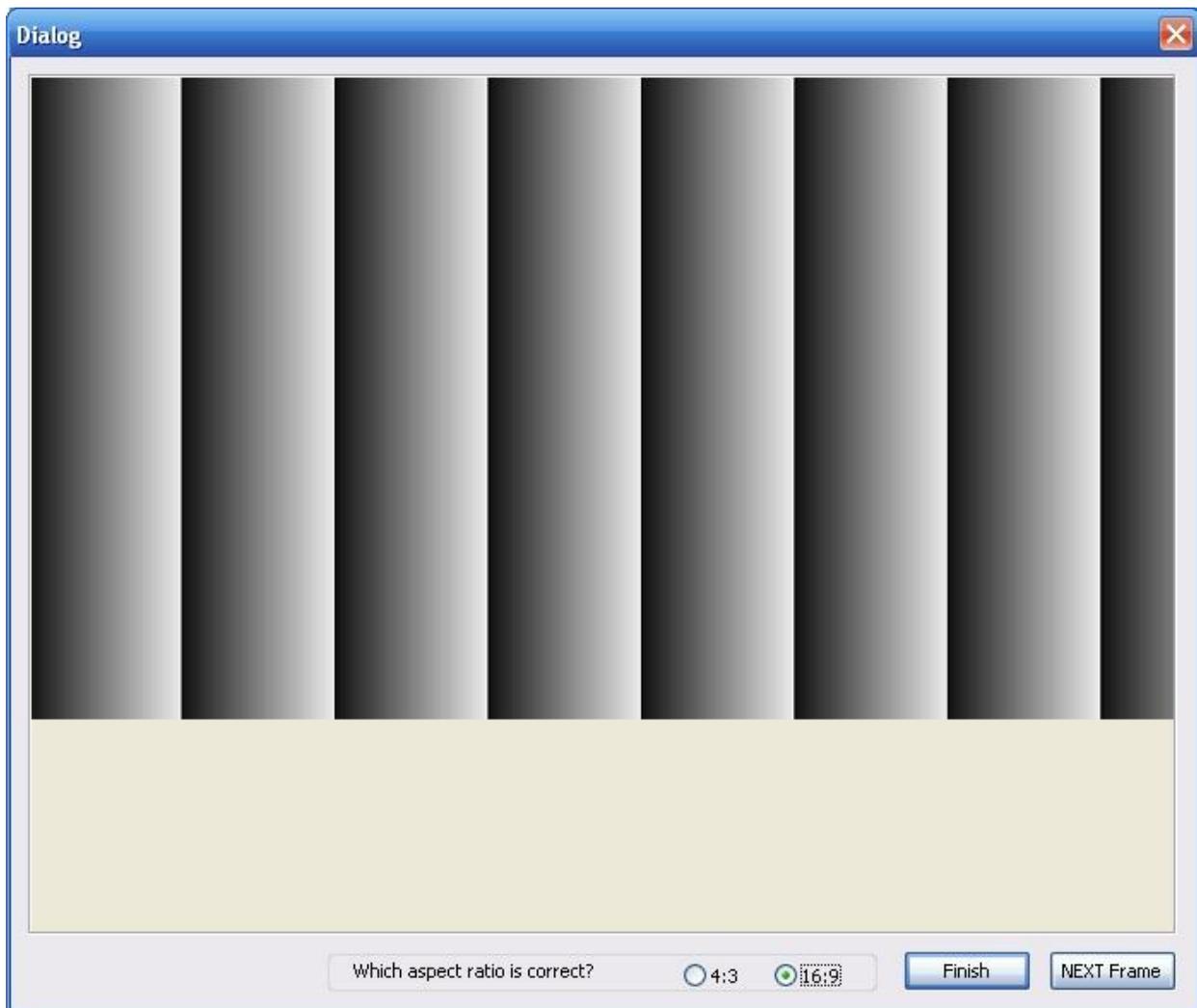


Figure 16

On this screen check for pixel errors. If you see the above grey scale without any colored random pixels this is correct.

Select aspect ratio 16:9 and press “Finish”.

Select test item 7-25 Video Format Timing and insert “222 750 000” Hz in the TMD5 Clock Range. Click the start button to start the test and verify that the logfile shows a pass at the end of each tested frame.

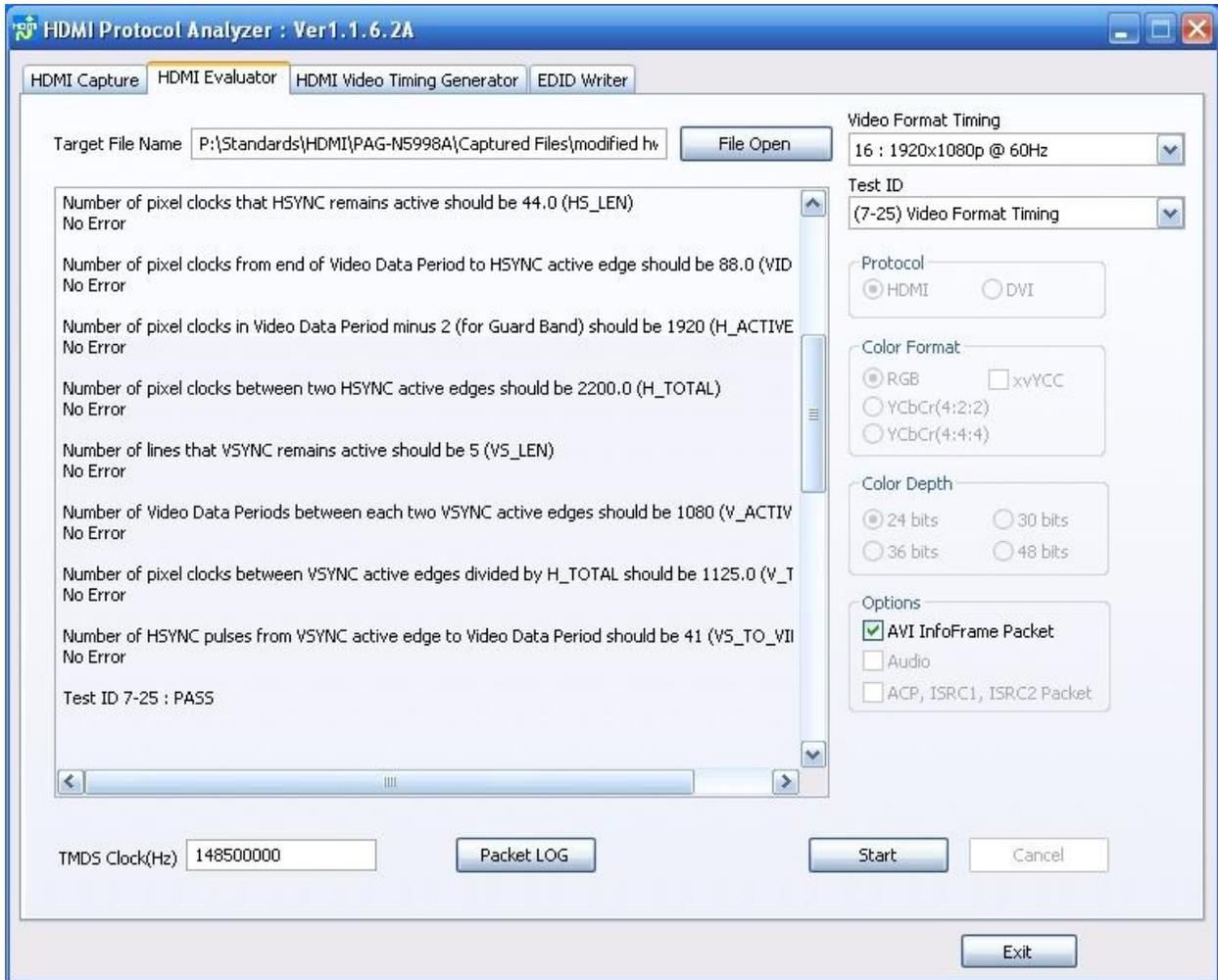


Figure 17