

AUTOMATED SUSCEPTIBILITY TESTING USING R&S®ADVISE WITH R&S®ELEKTRA

Products:

- ▶ R&S®AdVISE
- ▶ R&S®ELEKTRA

The R&S®ELEKTRA EMC test software is a solution that controls complete EMC systems and automates measurements on equipment under test that is being tested for emissions and immunity compliance. It can be used to remotely control R&S®AdVISE, which is a visual inspection software to monitor up to 32 different Regions of Interest in one video for visible and audible change

This Application Note describes how to set up R&S®ELEKTRA and R&S®AdVISE for remote testing.

Anna Sachs | 1S005 | Version 1e | 07.2020

Please find the most up-to-date document on our homepage

<http://www.rohde-schwarz.com/appnote/1S005>



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1 Overview

R&S®AdVISE is a visual inspection software to monitor up to 32 different Regions of Interest in one video for visible and audible change.

The R&S®ELEKTRA EMC test software is a solution that controls complete EMC systems and automates measurements on equipment under test (EUT) that is being tested for emissions (EMI) and immunity (EMS) compliance. R&S®ELEKTRA simplifies configuration of test systems and test descriptions in accordance with common standards. It speeds up test execution and paves the way to quickly generating a comprehensive test report.

R&S®AdVISE can be controlled via a remote-control interface. If used together with R&S®ELEKTRA, the advanced driver is already implemented. That makes it possible to monitor all ROIs individually as well as a summary information remotely from R&S®ELEKTRA.

This Application Note describes how to setup R&S®AdVISE for remote testing (chapter 2). It explains how to establish a connection between R&S®AdVISE and R&S®ELEKTRA and how to configure R&S®ELEKTRA in order to perform a test (chapter 3). It also states how to conduct the actual test and how to generate a test report (chapter 4).

This Application Note comes together with a video that shows all operation steps. This can be retrieved on the R&S®AdVISE homepage under https://www.rohde-schwarz.com/_251220-892352.html

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2 Setting up R&S®AdVISE

In order to control R&S®AdVISE by remote, it has to be put in remote mode manually. Afterwards the test has to be started.

In addition to the usual configuration as described in the user manual, the following adjustments have to be made to run R&S®AdVISE in remote mode.

1. Go to: Setup → EMC System Options → select "R&S EMC Software"

2. Go to: Run Test → Remote → select your test → Run Test

3. Adjust "EMS Data Fields"

Tick or untick the different boxes enables the corresponding text fields in the video. Those categories that are unticked won't show up in the video window and won't be burned onto the video during the recording.

4. Click "Start test"

Now R&S®AdVISE is ready for remote testing.

From now on, R&S®AdVISE is under the control of the remote system and therefore responds only to the commands sent to it by the remote system. It is now comparable to a normal measurement device like an oscilloscope.

3 Setting up R&S®ELEKTRA

3.1 Connection to R&S®AdVISE

In R&S®ELEKTRA, the advanced remote driver is implemented for communicating with R&S®AdVISE. To add that driver to your device list, click on  in the upper right corner. Under "Monitoring", "AdVISE" is listed as an option. By clicking on it, it will automatically be added to your device list.

If you are working with the Configuration Wizard, R&S®AdVISE is already in the device list. To find it go to "Device List" → "Monitoring" → "AdVISE Visual Inspection"

Now under "Connection", fill in the connection data of the R&S®AdVISE Advanced Remote Interface as shown in [Figure 1](#):

- ▶ Interface Type: TCP/IP
- ▶ IP Address: IP Address of AdVISE
- ▶ Mode: Raw Socket IPv4
- ▶ Port: 7600

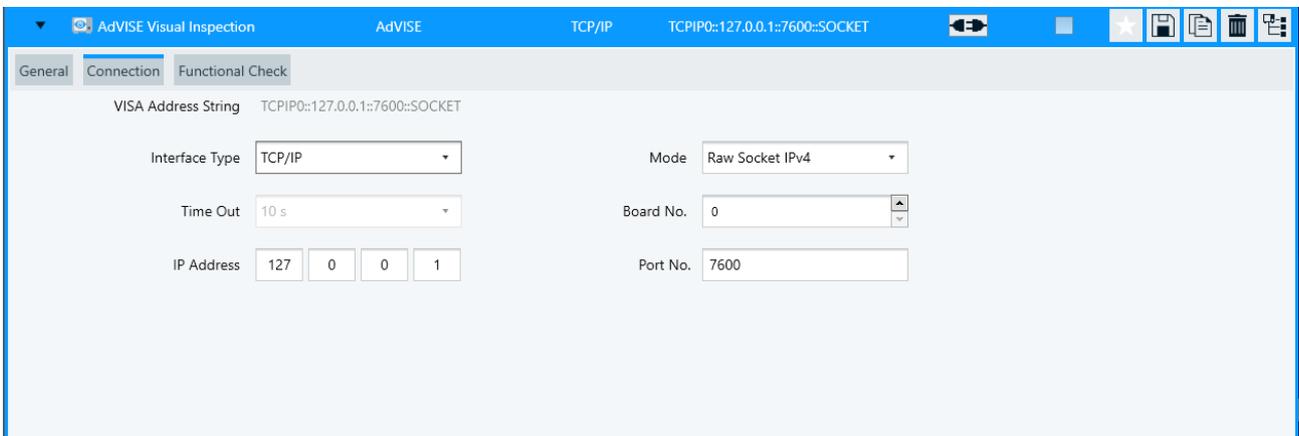


Figure 1: R&S®AdVISE Advanced Remote Interface Configuration in R&S®ELEKTRA

After entering the information, a connection can be established by clicking on . If the connection is successful, the symbol will change to .

To verify the connection, a test can be performed under "Functional check". First update the ROI list via the button "Update List". Then by clicking on "Test", a single test measurement is performed and the result displayed.

3.2 Setting up Test Templates

3.2.1 Configuring a Test Template for EUT Monitoring with R&S®AdVISE

To add a new Test Template for EUT Monitoring with R&S®AdVISE, go to "Test Templates" and click on the



Symbol in the lower left corner.

In the following menu, under "EMS" select "EUT Monitoring". Now the EUT Monitoring Channels can be configured. One channel is already provided by R&S®ELEKTRA and should look like in [Figure 2](#).

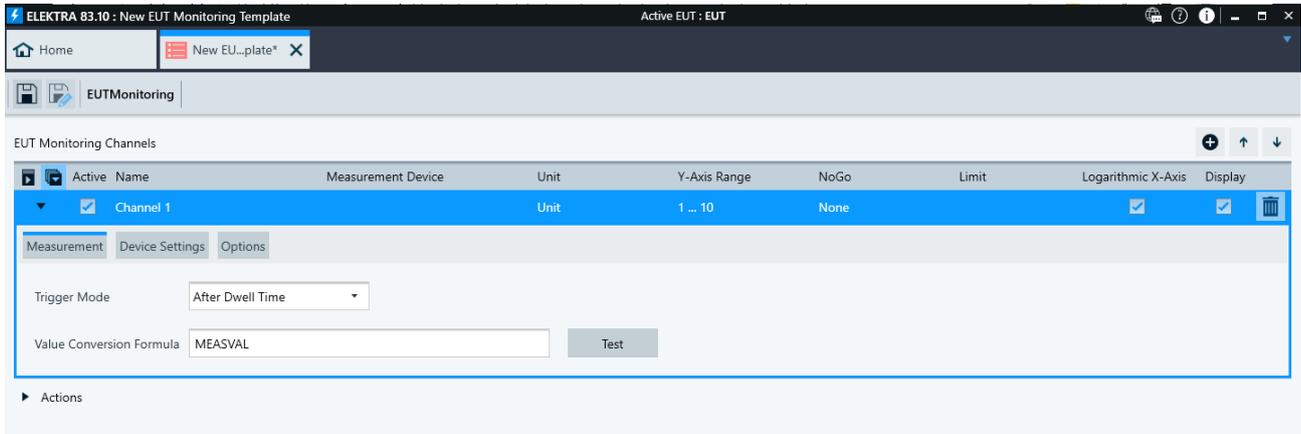


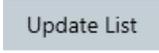
Figure 2: EUT monitoring menu

Each channel can be configured with the following steps (see [Figure 3](#)):

1. Go to: "Device Settings" → "Select Device" → "AdVISE Visual Inspection"

2. Confirm the selection with 

3. Update the ROI list under

"Device Properties" → "Settings" → "Signal to be monitored" → 

4. Select the ROI that is supposed to be monitored in this channel via the dropdown menu.

If R&S®AdVISE is not yet in running test state, the ROI list cannot be updated. In this case, the dropdown menu shows two default ROIs that are not necessarily available in R&S®AdVISE.

Please make sure, that R&S®AdVISE is connected and in running test state while configuring the test template.

5. If necessary, add more channels by clicking  in the upper right corner and configure them the same way.

Now, you can save and name the EUT Monitoring template.

Note: The name of the channel changes automatically to the name of the selected ROI. By updating the ROI list, not only the names of the available ROIs are queried by R&S®ELEKTRA, but also the corresponding parameters and limits. Also for working with R&S®AdVISE, the Trigger mode is set fixed to "Before dwell time". Because of that, only the name of the ROI has to be selected to conduct a test.

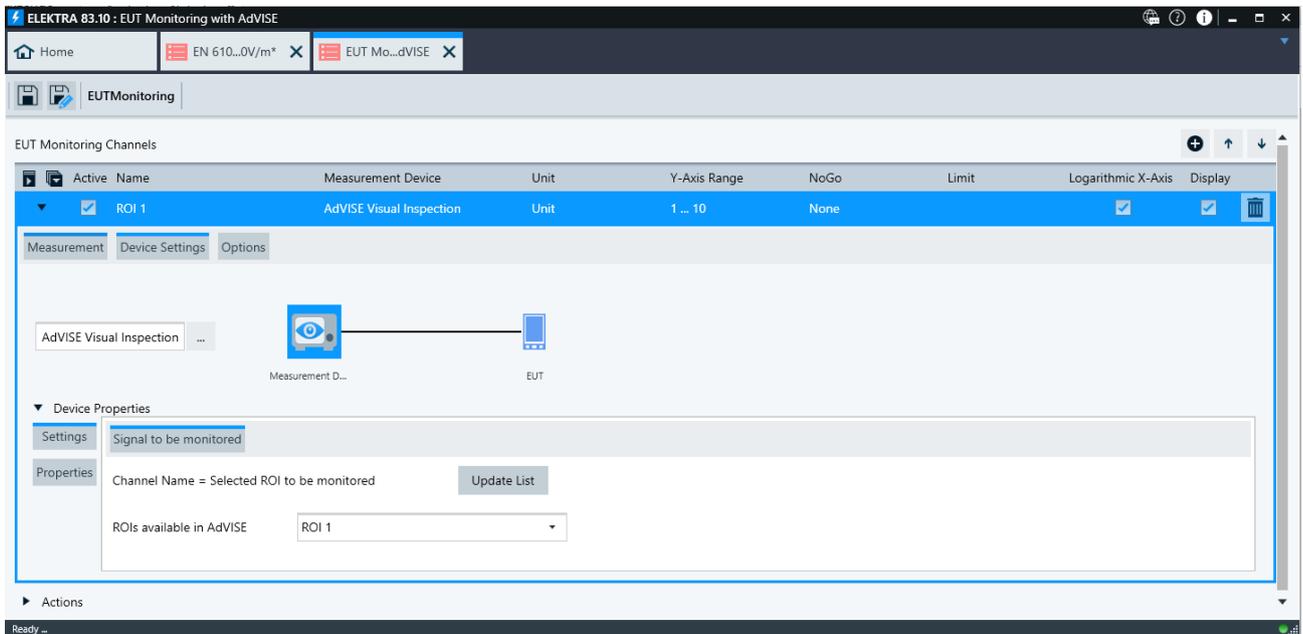


Figure 3: Device Settings Menu in EUT Monitoring Test Template

3.2.2 Configuring the Test Template for the Test

Set up your test template according to your requirements. For information on how to set up a test template, please refer to the R&S®ELEKTRA user manual.

In the EMS Test Template (see Figure 4) go to "General Settings" → "Setup" → "EUT Monitoring Template" and select the EUT Monitoring Template that is connected to the R&S®AdVICE ROIs.

Save the test template.

Now R&S®ELEKTRA is ready to perform a test with R&S®AdVICE.

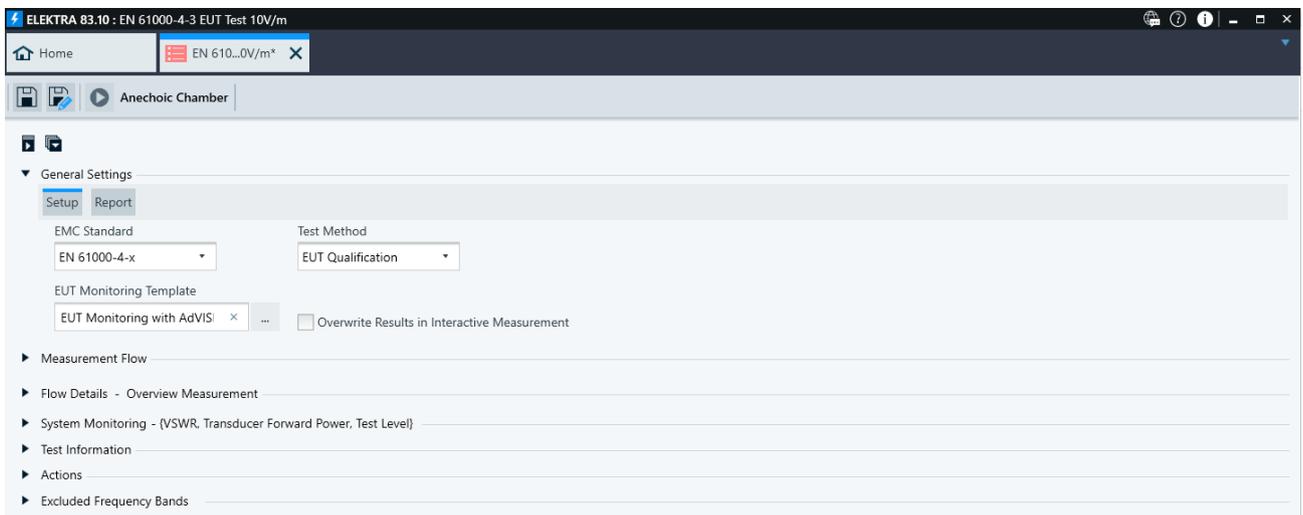


Figure 4: Menu of EMS Test Template

4 Performing a Test

4.1 Starting the test

The test can be started in two different ways.

Either run it directly from the test template by clicking  in the upper left corner. If this option is disabled, you have to press "Save" first.

Or configure a test via the "Tests" option in the main menu. This way the test can be repeated easily. For more information on how to configure a test, please refer to the user manual of R&S®ELEKTRA.

4.2 Conducting the test

Once a test is started, the test window opens as shown in [Figure 5](#).

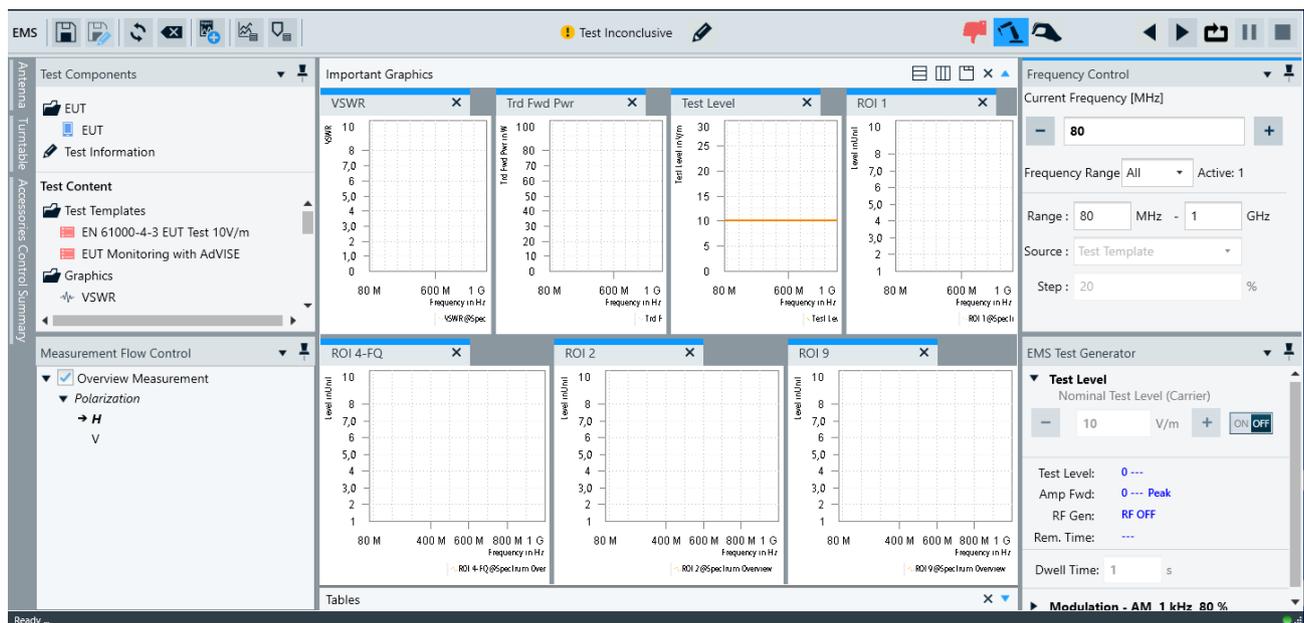


Figure 5: Test window in R&S®ELEKTRA

For more information about the different menus and editing options please refer to the user manual of R&S®ELEKTRA.

The test now is started by pressing the "Play" button in the upper right corner.

Once the test is started, it is important to make sure, that the connection to R&S®AdVICE is still up. Therefore, under "Test Validation" → "Device Check" the device "AdVICE visual inspection" should be displayed next to a tick. If devices are in the test, that are not physically connected, the option "Simulate" allows to simulate the missing devices.

When the test is started, R&S®ELEKTRA receives all ROI information such as the adjusted limits from R&S®AdVICE and starts writing the ROI data in diagrams as shown in [Figure 6](#). It also transmits the EMS information to R&S®AdVICE, where it is burnt onto the video for easier reviewing as is shown in [Figure 7](#).

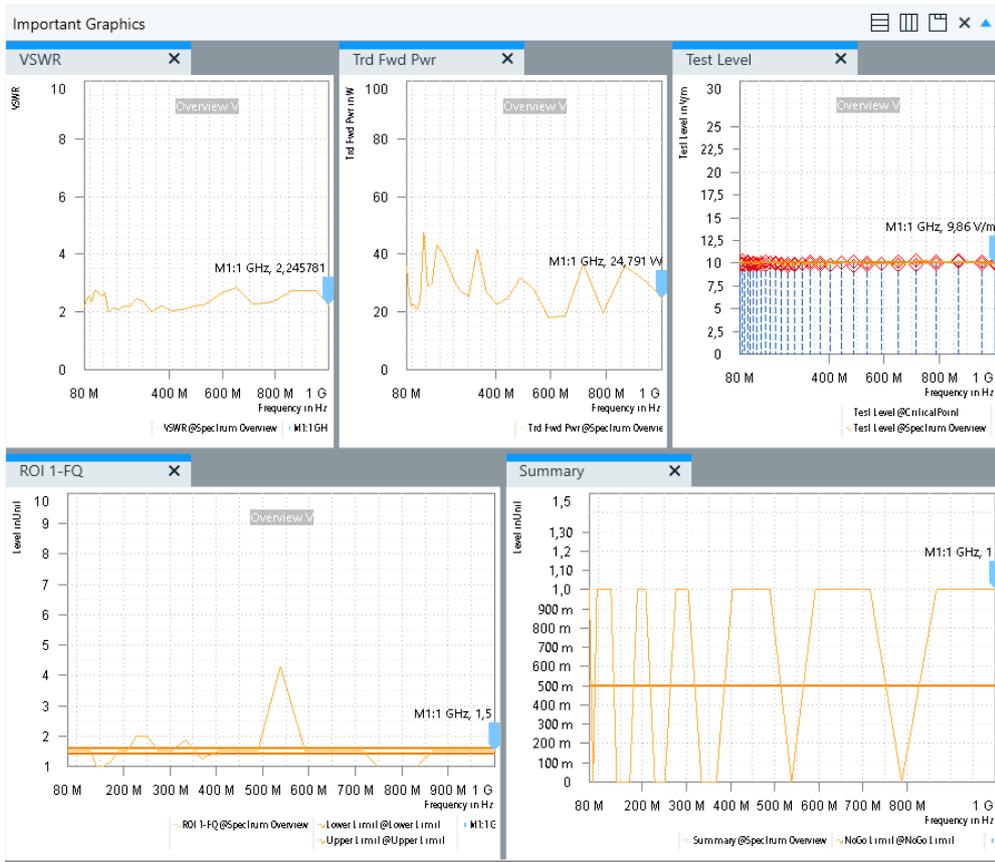


Figure 6: ROI Data in R&S@ELEKTRA

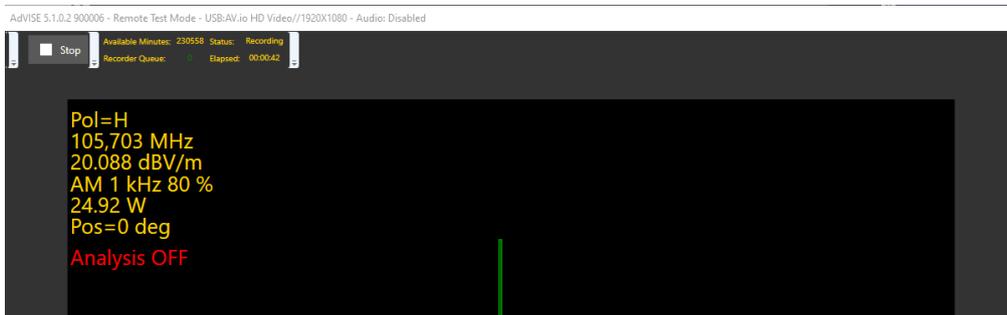


Figure 7: EMS information in R&S@AdVISE

After saving the test, it shows up under "Tests" in the main menu and can be repeated.

4.3 Ending a test

The test ends automatically after all frequencies have been stepped through.

If you want to pause the test before that, it can be done two ways. By pressing the stop button, the measurement is paused and R&S@AdVISE is closed. If you want to continue with the test afterwards, you will have to open and configure R&S@AdVISE again.

By pressing pause, the measurement pauses, but R&S@AdVISE remains in running test state, so that the test may be continued afterwards without reconfiguring R&S@AdVISE.

4.4 Creating a Test report

A test report can be created by clicking the "Add Report" button in the menu bar, as shown in [Figure 8](#).



Figure 8: Menu bar in R&S®ELEKTRA

The report can be modified and exported. For further information please refer to the user manual of R&S®ELEKTRA.

The ROI events and their corresponding EMS information are shown in the "Critical Points" table in R&S®ELEKTRA. R&S®AdVICE stores the ROI event times and values in a video as well as in a test report table.

4.5 Troubleshooting

4.5.1 Validation Check fails

- ▶ See if the connection to R&S®AdVICE is still up. R&S®AdVICE has to be in running test mode. If the connection is up, R&S®AdVICE should say so in the EMC connection status.
- ▶ Maybe one of the ROIs included in the test is not available in R&S®AdVICE. Update the ROI list in the EUT Monitoring test template.
- ▶ Devices included in the test are not connected. To solve that, either connect the devices or go to "Home" → "Administration" → "General Settings" and make sure, "Allow Device Simulation" is enabled.

Then in the Test Validation menu of the test click "Simulate" to simulate all unavailable devices.

4.5.2 Changes are not updated

If changes are made to any part of the setup, they always have to be saved before they are actually adopted. R&S®ELEKTRA indicates unsaved changes with a little blue asterisk on the save button like in [Figure 9](#) or with an asterisk behind the name of the tab as in [Figure 10](#).



Figure 9: Unsaved Changes Indicated on Save Button



Figure 10: Unsaved Changes Indicated On Tab Name

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Application Note | Automated susceptibility testing using R&S®AdVISE
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