

T80-K1 V2.22

Release Note

Products:

| R&S®T80-K1

This document gives an overview of the additional features and improvements that are implemented with version 2.22

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1 Scope

This document gives an overview of the additional features and improvements that are implemented with version 2.22 of System Software T80-K1.

This new software version includes several new features, the most important being support of the R&S SFE as desired signal generator for DVB, DAB and analog TV, and support of the R&S DVSG as baseband video signal generator for analog TV (AV mode) replacing the SGxF series and the SFF, which have been discontinued, as well as external MPEG TS generator for DVB replacing the DVG, which also has been discontinued.

Subject to change.

2 Installation

The installation is performed automatically by the set-up program. Please start the **setup.exe** file on the CD-ROM and follow the installation instructions.

There are four choices possible in the set-up program:

- Complete installation (check application files, database files and KCISPR files),
- Partial installation of application (check application files only),
- Partial installation of database (check database files only),
- Partial installation for Korean CISPR standard (check KCISPR files only).

Please check all boxes to perform a complete installation. This is recommended because Version 2.22 contains new configuration files (e.g. MHD_LIB.INI for including the new drivers as baseband signal generators). Installing the new version to the default path C:\T80-K1.222 and default folder "T80-K1 2.22" will keep the existing installation untouched and working.

The installation program will create a separate Icon named **T80-K1 V2.22 KCISPR** if KCISPR files is selected. When clicking this icon, T80-K1 loads a separate configuration file set with specific parameter settings for Korean CISPR standard, e.g. a wanted carrier frequency of 88.1 MHz for input immunity measurements below the FM band for radio receivers.

When starting the newly installed T80-K1 for the first time, several error messages will appear in series stating that some devices are not available and the device driver will be set to inactive mode. T80-K1 is delivered with a device configuration that exceeds the scope of any real system. Therefore, in any installation there will be some driver(s) missing. To adapt the device configuration to your real system please load the device configuration from your existing installation via the main menu entry File >> Load Configuration. In case you do not have access to your previous device configuration files, please enter the device configuration (main menu entry Options >> Device Configuration) and delete all devices from the device list that are marked with a "No" in the "Active" column. Exit the device configuration by clicking on "OK", so that the new configuration is saved to hard disk.

The data from your existing installation can be transferred with the "**Navigator (Backup Database)...**" function of T80-K1.

Example for file transfer procedure:

- Start the new application.
- Menu **File >> Navigator (Backup Database)**, select the Function **Import**, select the Drive: **C:\T80-K1.221\DATA**, select the File Type, say **Test Parameter**, select the files you like to transfer and click on **Execute**.
- Repeat the procedure to transfer the System Transducer and Test files, if necessary.

Note: If you do **not** transfer the System transducer files, a new system calibration must be performed.

Attention:

All data files in the T80-K1 are stored in the internal database. It is only possible to move files from this database via the EXPORT and MOVE functions (e.g. for backup of the measurement data). Never use the WINDOWS Explorer for moving files from the internal database into another directory or drive because this will damage the T80-K1 database and all measurement data will be destroyed! A complete new installation will be the consequence.

Similarly, please use exclusively the submenu Navigator (Backup Database)... for importing data files from outside into T80-K1's database. The length of the EXPORT data path is limited to 31 characters maximum due to technical reason. If a longer path name is used an error message is reported to the operator.

3 New Instruments for Video Signal Generation

3.1 R&S SFE for Desired Signal Generation

The functional range of the R&S SFE is very similar to that of the R&S SFU, which has been the standard instrument for TV broadcast RF signal generation in the TS9980 for some years now. Originally, the R&S SFE could not support more than two TV standards at a time in one instrument, and for that reason was not considered to be a full equivalent for the R&S SFU, but this limitation has been overcome.

The driver implemented in T80-K1 for controlling the R&S SFE has the same User Interface as the one for the R&S SFU. It can be entered three times to the TS9980 Device Configuration, and be used for analog TV ("TV-SYSTEM"), digital TV ("DVB-SYSTEM") or DAB radio ("DAB-SYSTEM"). Please refer to TS9980 Newsletter number 7 (March 2007) for a detailed description.

Just two differences to the R&S SFU driver are noticeable:

- The R&S SFE does not contain an option for interferer management like the R&S SFU. Therefore, it is not possible, in a S1 test for DAB receivers, to generate the unwanted signal in the adjacent channel from the R&S SFE. The standard TS9980 interfering generator will be used to that purpose instead.
- The R&S SFE has no GPIB interface. It must be remotely controlled via LAN (TCP/IP). To this purpose, a dedicated interface application has been implemented (see section 3.3 below). **Please make sure to start this interface application before starting T80-K1 if you are using a R&S SFE in your system.**

3.2 R&S DVSG for Baseband Signal Generation

The instruments used until now in TS9980 for baseband signal generation have been discontinued in the past years. This applies to the analog TV generators (SGxF series, SFF) as well as to the digital MPEG generator (DVG). The replacement for all of them is the R&S DVSG. The only exception is that the DVSG is not able to generate signals for analog TV SECAM standard, so no replacement is available for the R&S SGSF.

Additionally, the R&S DVSG is able to generate signals in formats and for hardware interfaces (for example, HDMI and DVI signals) not supported by the previous instrument series.

The R&S DVSG has no GPIB interface. It must be remotely controlled via LAN (TCP/IP). To this purpose, a dedicated interface application has been implemented (see section 3.3 below). **Please make sure to start this interface application before starting T80-K1 if you are using a R&S DVSG in your system.**

3.2.1 Transport Stream Generator for DVB

If the DVSG driver is entered to the T80-K1 Device Configuration with the name of “MPEG-GEN”, it will be used as transport stream generator for DVB systems in case the DVB RF signal generator does not support internal baseband generation. In this context, it will replace the R&S DVG used until now. However, this will not be needed if a R&S SFU or R&S SFE is used in the system, as these instruments do generate the baseband signals internally if the corresponding options are fitted.

Figure 1 here below shows the Properties of the driver in this case:

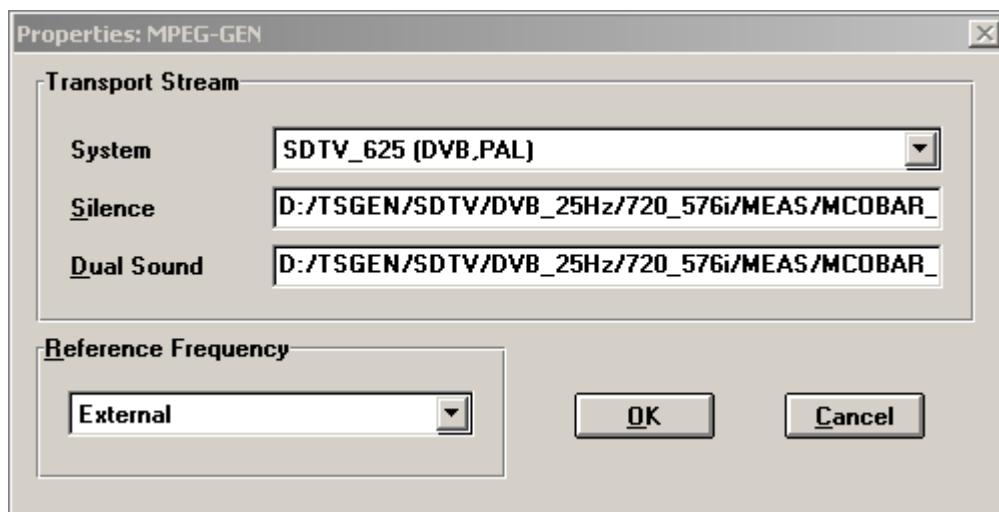


Figure 1: Properties dialog of the DVSG driver loaded as MPEG-GEN

Four TV systems can be selected in the selection box at the top:

- “SDTV_625 (DVB, PAL)” → used for all DVB countries and technologies except as stated in the following.
- “SDTV_525 (ATSC, NTSC)” → used for countries in which ATSC is the standard for digital TV.
- “HDTV” → not used for device MPEG-GEN.
- “SDTV_525 (DVB Taiwan)” → used if DVB-T with country Taiwan is selected in the application.

For each of these systems, two files shall be configured for use with the internal Transport Stream Generator (option DVSG-K20), one denoted as Silence (no audio signal coded), and one as Dual Sound (standard 1 kHz stereo tone for EMC testing). Files compatible for use with the TS generator should have one of the extensions *.gts, *.trp or *.ts. These can be found on the instrument's hard disk, in the folder D:\Lib TS Generator\.

If option DVSG-K20 is not fitted to the instrument, or the selected file type is not compatible with it, the driver will try to use the AV Signal Generator (option DVSG-K10). Again, files compatible with this option shall be selected, in this case with the extension *.avg. These can be found, on the instrument's hard disk, in the folder D:\Lib AV Generator\.

If the signal generator option is not usable either, then the AV Signal Player (option DVSG-B30) will be activated, if available and if the selected files have the extension *.avp, by default located on the instrument's hard disk in the folder D:\Lib AV Player\.

The four systems available for selection in the Properties dialog are:

- “SDTV_625 (DVB, PAL)” → used for all DVB countries and technologies except as stated in the following.
- “SDTV_525 (ATSC, NTSC)” → used for countries in which ATSC is the standard for digital TV.
- “HDTV” → not used for device MPEG-GEN.
- “SDTV_525 (DVB Taiwan)” → used if DVB-T with country Taiwan is selected in the application.

3.2.2 AV Signal Generator for Analog TV

If the DVSG driver is entered to the T80-K1 Device Configuration with the name of “VIDEO-GENERATOR”, it will be used as baseband signal generator for analog TV systems, mainly for AV operating modes, as the RF signal generators like R&S SFU or R&S SFE do not feature an output for the internally generated baseband signal. In this context, the DVSG will replace the R&S SGxF series and the R&S SFF used until now, and controlled with the TVGEN driver in T80-K1. The only exception is the support for TV standard SECAM, which is not available in the DVSG.

What is new compared to the old instruments is that analog TV signals are available in high resolution formats as HDMI or DVI at the corresponding outputs. It is not necessary to activate these explicitly, as the DVSG automatically generates any signal at all interfaces as long as the file selected for replay is coded in a compatible format.

The Properties dialog of the driver in this case is exactly identical to the case described above for the MPEG-GEN case. The meaning of the available system selections will be slightly different:

- “SDTV_625 (DVB, PAL)” → used for all countries in which PAL is the standard for analog TV.
- “SDTV_525 (ATSC, NTSC)” → used for countries in which NTSC is the standard for digital TV.
- “HDTV” → used if the Operating Mode (class AV) selected in the T80-K1 Test Parameter Set for the measurement is named “HDMI” or “DVI”.
- “SDTV_525 (DVB Taiwan)” → not used for device VIDEO-GENERATOR.

The driver will activate the AV Signal Generator (option DVSG-K10) for playback if the selected files are compatible for use by this option. Typically, a file with extension *.avg should be selected, which can be found, on the DVSG's hard disk, in the folder D:\Lib AV Generator\.

If this option is not fitted, or the format of the selected file is not compatible, then the AV Signal Player (option DVSG-B30) will be used. Again, files compatible with this option shall be selected, in this case with the extension *.avp. These can be found, on the instrument's hard disk, in the folder D:\Lib AV Player\. Also, files with extension *.gts, located in the D:\Lib TS Generator\ can be replayed with the AV Signal player.

The software will not use the Transport Stream Generator for replaying analog TV signals.

3.3 LAN Interface Control Application for SFE and DVSG

As stated, both new generator instruments can only be controlled via LAN (TCP/IP). To this purpose, a dedicated application has been implemented serving as intermediate interface between T80-K1 and the TCP/IP hardware interface. This application is called "T80-K1 LAN Control Interface". A link is installed to the Windows Start menu in the same group as the main link to T80-K1 V2.22 when installing this new software version.

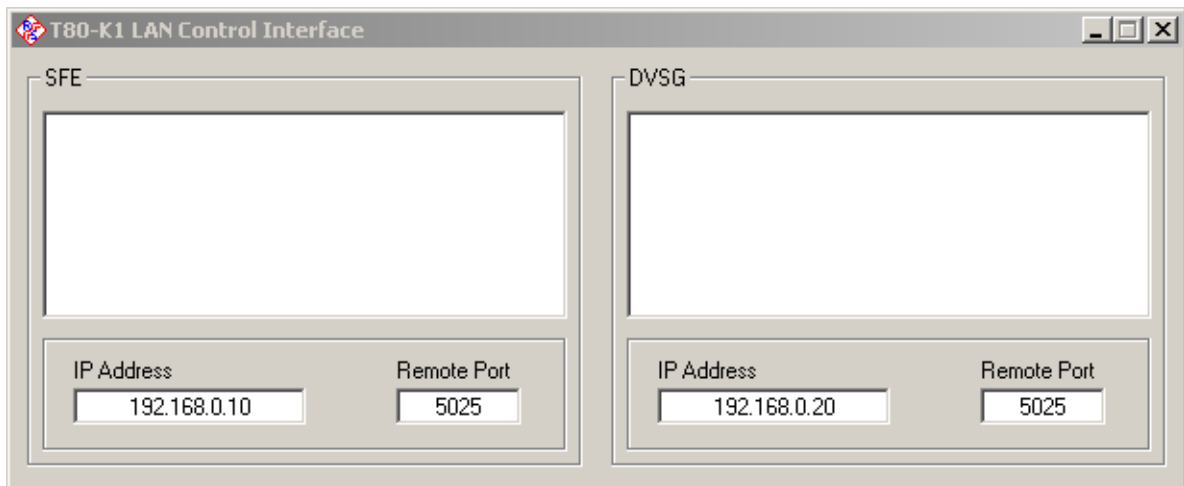
Please make sure to start this interface application before starting T80-K1 if you are using a R&S SFE or the R&S DVSG in your system. It will not be possible to remotely control these instruments if the application is not started.

3.3.1 User Interface

The application starts in minimized mode, a symbol will appear in the Windows task bar:



Clicking on this symbol will cause the control dialog for this application to be displayed:



Please use this dialog when connecting the new instruments for the first time for entering the IP address and the remote port at which the SFE and the DVSG can be found. Please refer to the respective manuals for information about how to configure the IP interface on the devices themselves. Remote TCP port is set to 5025 on both instruments by default. It should not need to be changed except when changing it on the instrument.

The upper text boxes will be used for a live display of the command traffic between T80-K1 and the instrument during operation.

After T80-K1 operation is finished, the LAN Interface Application can be closed as well. Please use the button with the cross in the upper right for doing so. On closing, the application will save the last position where it was displayed on screen, and be reappear at the same location when being started again.

3.3.2 Notes on Configuring an IP Network

For making sure that the T80-K1 LAN Interface Application is able to control the SFE or DVSG, it is not enough just to enter the correct IP addresses. The addresses must also be accessible from the control PC used in the TS9980 system.

The key concept for defining IP addresses of all involved terminal devices correctly is the IP subnet mask. This is a parameter composed by four numeric fields, each in the value range from 0 to 255, used for defining which range of IP addresses will be able to communicate with the instrument. If a field contains the number 255, only external devices with exactly the same number in this field will be able to communicate with the device. If the field contains a 0, then the external device may have any number in its field.

For setting up a local network including the TS9980 control PC, one SFE and one DVSG, it is recommended to configure a local IP subnet with IP addresses in the 192.168.x.y, which in the IP standard are reserved for proprietary local networks. Default subnet mask in this case is recommended to be 255.255.255.0, meaning that a common number shall be chosen for the x number field, while the y numbers shall be different from one device to the other.

For an example, use subnet mask 255.255.255.0 for all three devices, and use IP addresses 192.168.0.10 for the SFE, 192.168.0.20 for the DVSG and 192.168.0.30 for the control PC. As said, the last number (10, 20 and 30) is arbitrary, any value between 0 and 255 is valid.

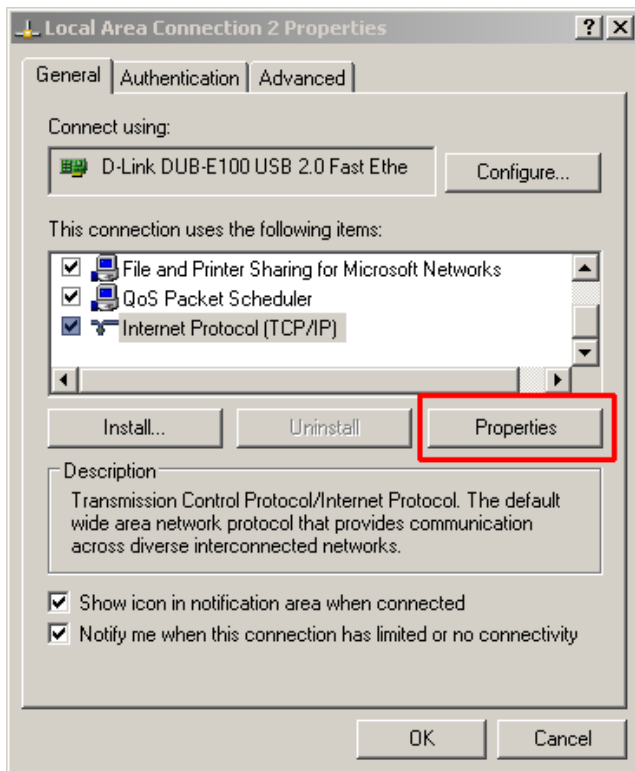
Please refer to the SFE and DVSG manual for information about how to change the IP address and subnet mask on each of the instruments. The GUI item to activate is the Setup >> Communication dialog.

For configuring the control PC's IP address, please ask your company IT administrator if your PC is attached to a company network. For a stand-alone PC, please proceed as follows:

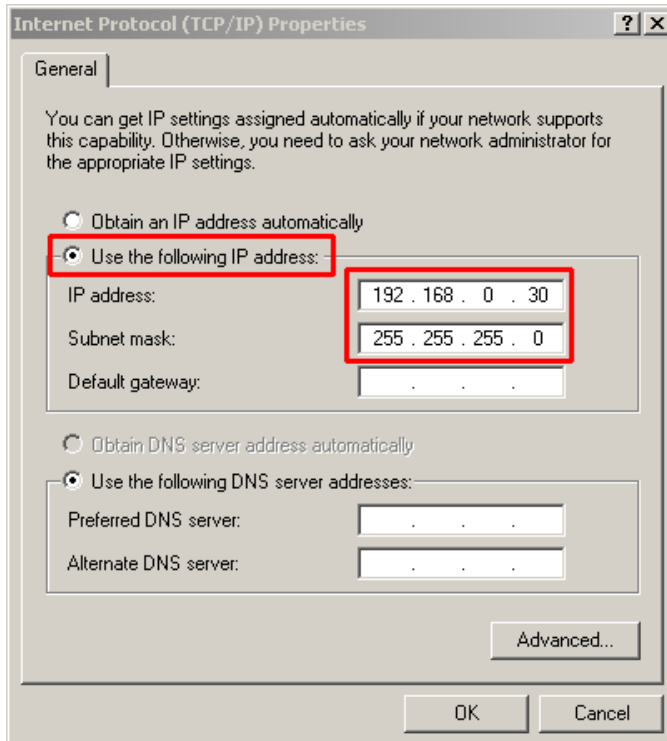
- Press the Windows Start button
- In the Windows Start menu, select **Settings >> Network Connections**
- Double-click on the connection associated to the LAN interface you will be using for controlling the SFE and/or DVSG



- The Properties dialog for this LAN connection will be opened. Scroll down in the box in the middle of the dialog until finding the **Internet Protocol (TCP/IP)** entry. Double-click on this item, or select it and click on **Properties**:



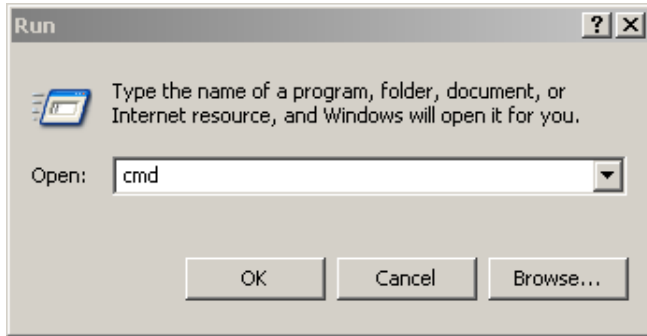
- This will open the Properties for the associated TCP/IP configuration:



- Select to use a manually configured IP address and enter the address and the subnet mask as recommended above. Save all changes by closing the dialogs clicking on OK.

Once the IP addresses have been defined, please do a fast check for verifying whether the control PC can really communicate with the instrument(s). To this purpose please do the following:

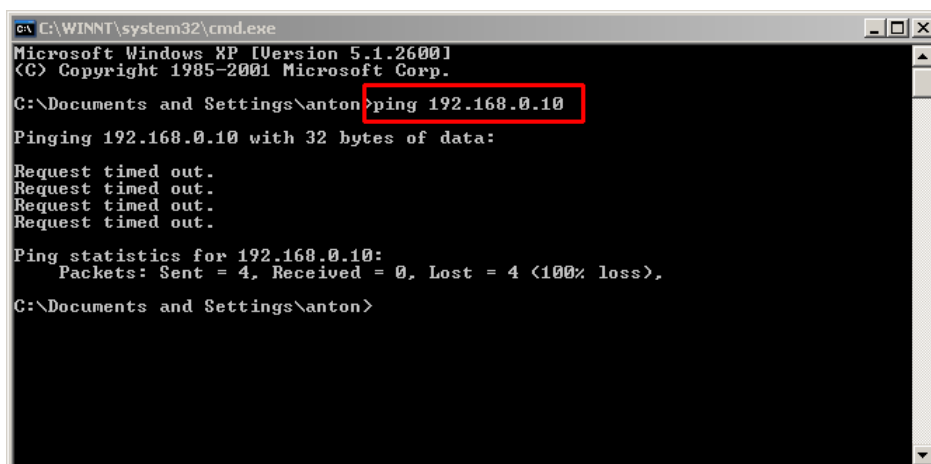
- Switch on the instrument you want to address
- Open a DOS command box as follows:
- In the Windows Start menu, select **Run...** and enter the command string **cmd**



- Click on **OK** and a DOS command box will be opened:



- Enter the command for pinging the IP address assigned to the SFE or DVSG



- If there is no answer from the device (as in the example above), please revise you hardware and your IP addressing scheme
- If the instruments answers (the statistics of the ping command reads "Received = 4, Lost = 0"), then the communication is properly configured.

Hardware Considerations

For connecting the newly supported instrument(s) and the control PC, the easiest configuration is to use a point-to-point connection between you PC's LAN interface socket and the instrument with a LAN patch cable.

This of course is useful only if you have one instrument to control and the PC's connection is not used for other purposes. For more complex systems (eg., connecting a SFE and a DVSG), it is recommended to use a commercial LAN switch and to connect the PC and both instruments to the switch. Of course, the above indications about configuring a common IP subnet must be closely followed.

If your PC is connected to an internal company network and hence has no free LAN connector, please consider the possibility of adding a second LAN interface, eg. a commercial USB-to-LAN converter, or ask your company IP network administrator for the possibilities of addressing the instruments over the company network.

4 New Features and Improvements

Several changes, especially the improvements (bug fixes) have been available earlier than with release of this new version. First availability is stated with every item if applicable. Changes for which no explicit date is stated are new to V2.22.

4.1 New Countries for DVB-T (Option T80-K7)

Czech Republic, Poland and UK-T2 (UK with DVB-T2) have been added to the list of countries supported for DVB-T testing. This required changes in the main application as well as the SFU driver. The new driver for the R&S SFE also supports these new countries.

As with the other countries, changes to the technical parameters of the generated video signal or definition of the default test channels can be done via the applicable configuration file G_SFUX.INI or G_SFEX.ini. The default signal profiles for these new countries are:

```
[Czech_T]
Modulation=64 QAM
I/Q Mode=Normal
I/Q Coder=Data
Code Rate=2/3
BandwidthVhf=8.00 MHz
BandwidthUhf=8.00 MHz
FFT Mode=8K
Guard Interval=1/4
```

```
[Poland_T]
Modulation=64 QAM
I/Q Mode=Normal
I/Q Coder=Data
Code Rate=2/3
BandwidthVhf=8.00 MHz
BandwidthUhf=8.00 MHz
FFT Mode=8K
Guard Interval=1/32
```

```
[UK_T2]
Modulation=256 QAM
I/Q Mode=Normal
I/Q Coder=Data
Code Rate=2/3
BandwidthVhf=8.00 MHz
BandwidthUhf=8.00 MHz
FFT Mode=32K
Guard Interval=1/128
```

4.2 DAB Testing (Option T80-K8)

- DAB S4 testing now uses a dedicated limit line.
First availability: July 2008.
- Several corrections in DAB test flow. No muting check is performed for DAB testing.
First availability: July 2009.

4.3 Main Application

- Y-axis scaling of a graphic for sound measurements now always includes S/N labels correctly.
- IF values down to 0 MHz are now allowed to support modern tuner designs. Adaptation of limit lines at test start has been reworked accordingly.
- Run-time calibration for the S2b interference signal path attenuation is now performed only in the frequency range of this test (26-30 MHz).
- The upper limit for the impedance of sub-woofer audio monitoring channels has been increased to 20 kOhm.
First availability: June 2008.
- Two new columns have been added to the result table for S4 tests. These include the Correction Factor applied to the raw measured value and the level measured at the EUT.
First availability: December 2008.
- A new Operating mode "DVD Record" has been added to the default Operating Modes. Consequently, Operating mode selection has now been enabled for EUTs of type DVD.
First availability: March 2009.
- Desired audio signal for sub-woofers is now read out correctly from file REC.INI.
First availability: July 2009.

4.4 Device Drivers

- SFU driver: Changing the file names of the test streams in the Properties dialog now works correctly.
- SFU driver (DAB) does not enable Special Settings on the Instrument and does not set the mode explicitly.
First availability: July 2009.
- SFU driver (Analog TV) now programs the audio frequency for Far Eastern countries to the correct value (15 kHz). In early firmware versions of the instrument (up to 1.70) this was not possible, but was emulated by setting 30 kHz with 6 dB less of level.
- SFM driver programs the IF of the desired signal according to the value configured in file SFM.ini.
Note: This functionality is not available in current video generators and hence not supported in the applicable T80-K1 drivers.
First availability: October 2008.

- UPL driver now makes sure that the internal band-pass filter is switched off under all circumstances if it is not needed.
- SMR driver does not check for option SML-B3 if the selected instrument is a SMB100A. Also, valid frequency range for SMB100A is now correctly extended to 3.2 GHz.
First availability: June 2009.
- NIAI driver (plug-in card for JACKY calibration) now can be configured to additionally support an URV5 as DC measuring instrument.
First availability: March 2010.

5 Changes to Standard EN55020

The standard for EMC tests on broadcast receivers, EN55020, has undergone no changes since release of Ed. 6 in 2006. Please refer to TS9980 Newsletter no. 7 (March 2007) for a detailed reference. Only two Interpretation Notes, clarifying two questions regarding applicability of tests to digital-only receivers have been published.

About Rohde & Schwarz

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