

Description
RDS Operator Program for R&S SML-B5
SML-RDS-APP V2

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Setup

System requirements:

PC with NI IEC or COM interface, graphics resolution better then 800 x 600 pixels, WIN 98, 2000, XP

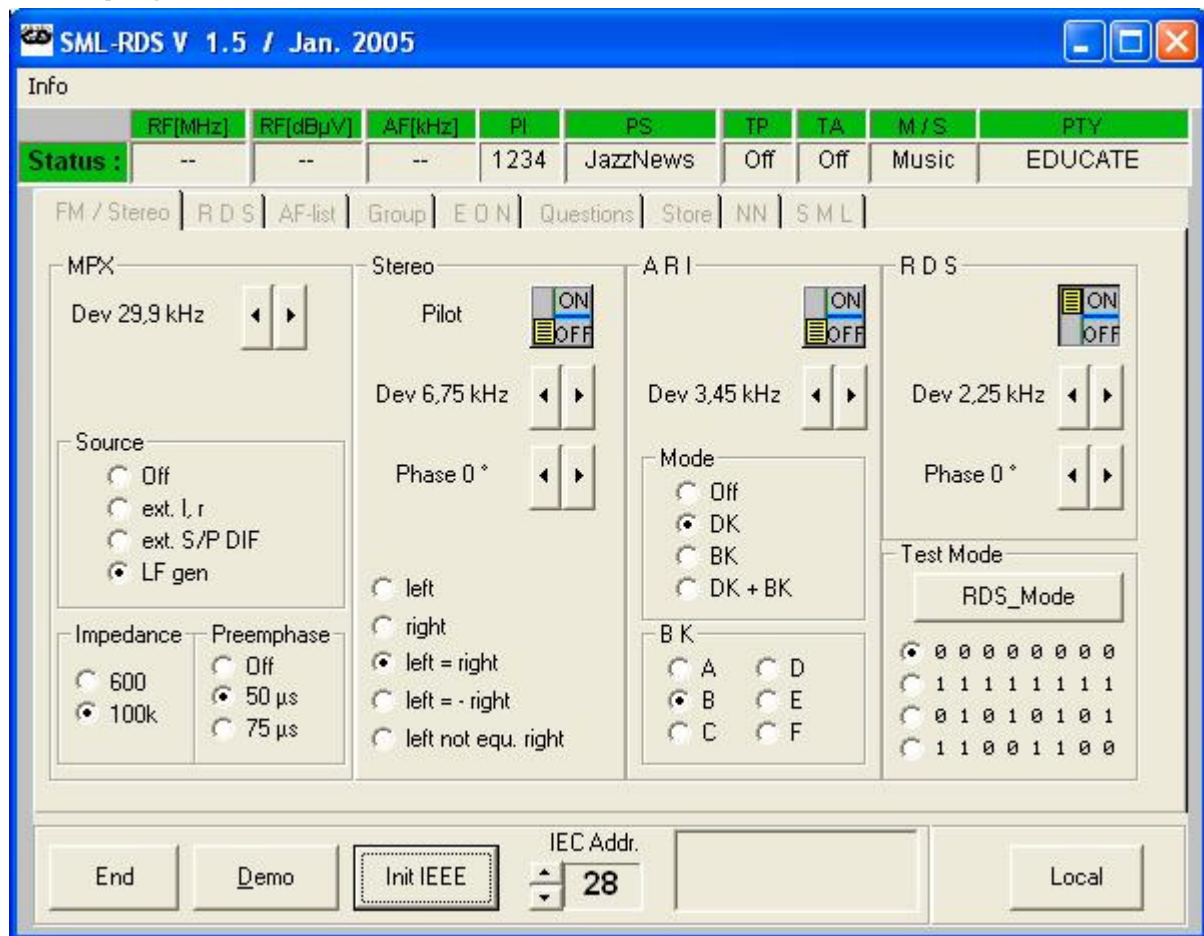
Installation

Start the setup program SML_RDS_V2.EXE on the CD and follow the instructions.

Application

This program is used to operate the RDS/Stereo Option B5 in the Signal Generator R&S SML. Operation from the R&S SML keyboard is limited to only a few functions. Additional functionality requires the use of a PC. The software creates a log file in which every command is recorded, thus allowing easy integration into the user's own software.

Start page



After the program is started, only the lower frame is active. Here, you can choose whether to operate the program with or without the instrument. If you choose not to use the instrument, continue by pressing the *Demo* button. Thus, actual operation is started by pressing the *Init IEEE* button. First, the IEC bus address must be set to the correct number. The correct address is shown in the R&S SML display. Please follow the R&S SML operating instructions for this purpose.

The *End* button terminates the program. In the case of IEC bus operation, the IEC bus connection must be terminated properly by clicking *Local*.

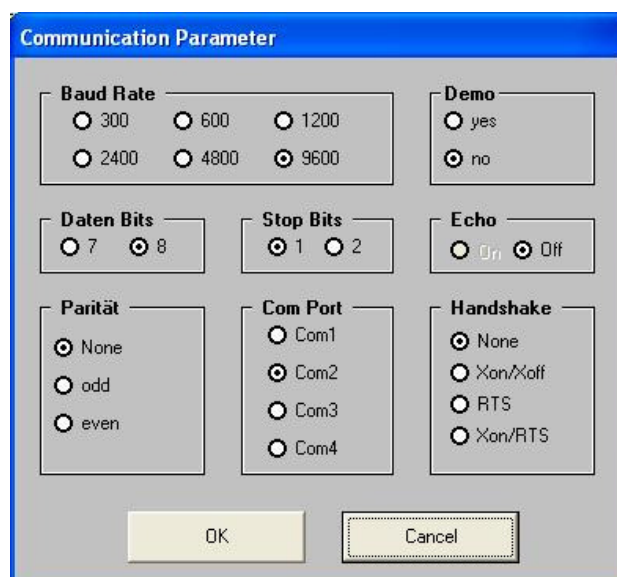
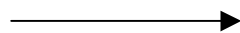
General settings



Please select *Language* in the beginning.



Select COM or IEEE Interface. The Software supports the National Instruments IEEE Interface. For COM please choose the right communication parameter



FM

Useful deviation	Selectable between 0 and 80 kHz in 0.1 kHz steps using the spinwheel.
Modulation source	In this case, "off" means that internal FM modulation is enabled.
Input impedance for external input	If the modulation source is set to external, the input impedance can be selected between 600 Ω and 100 k Ω .
Preemphasis	The available preemphasis settings are "off", 50 μ s and 75 μ s.

Stereo

Pilot tone	The pilot tone (19 kHz) can be on or off. Stereo transmission is possible only when the pilot tone is on.
Pilot tone deviation	The pilot tone deviation can be varied between 0 and 15 kHz in 50 Hz steps. 9% of max. deviation (6.75 kHz) is normal.
Pilot tone phase	The phase position of the pilot tone can be varied between -50° and $+50^\circ$.
Stereo mode	Left, right, left and right, left = -right, left \neq right.

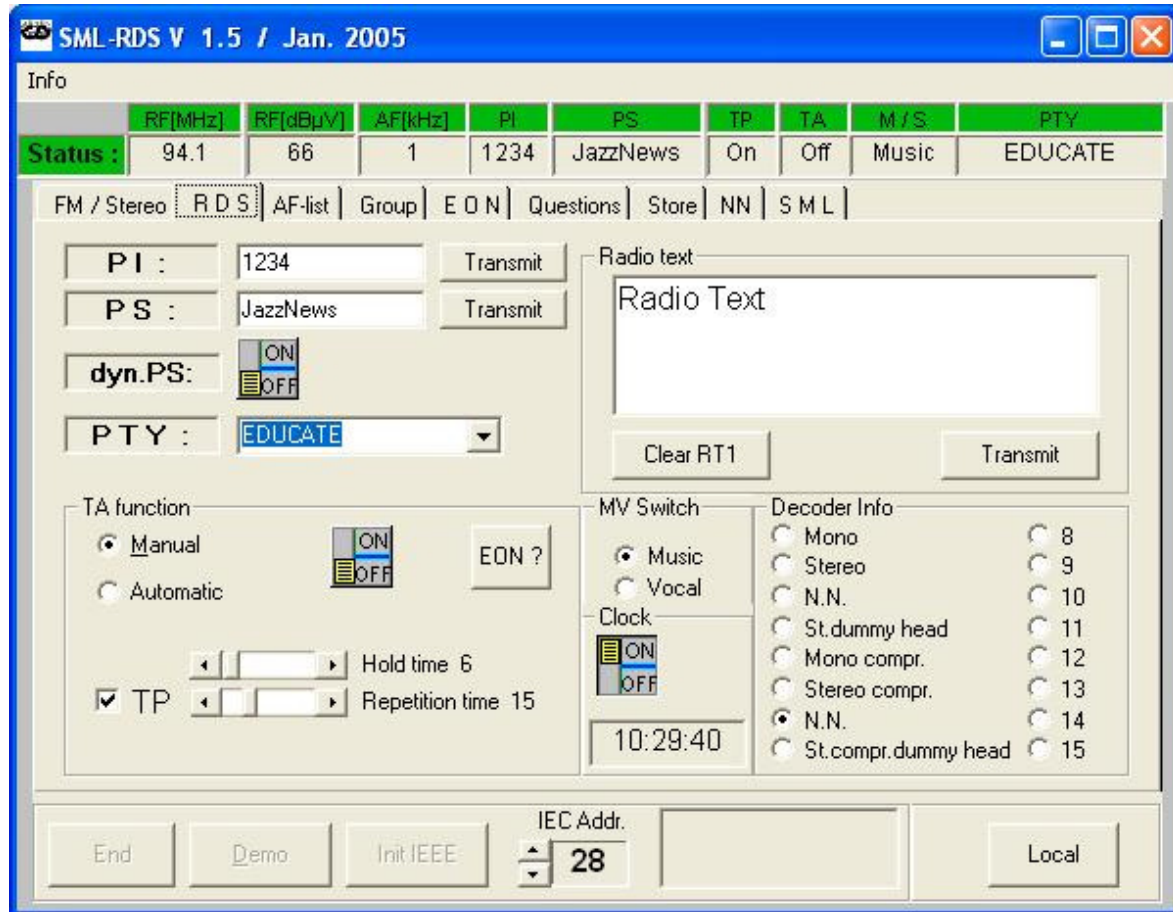
ARI

ARI carrier	The 57 kHz ARI carrier can be on or off.
Deviation	The carrier deviation can be changed between 0 and 8 kHz. The recommended value is 3.75 kHz.
Mode	Possible states: off: The receiver recognizes the frequency merely as being ARI-capable. BK (=area identification): The carrier is modulated with low-frequency 30% AM that signals regional areas. DK (=traffic announcement identification): 60% AM signals a current announcement. BK + DK: Both signalling modes are active.
Area identification	The area identification recognizes six different frequencies that indicate the various regions.

RDS

RDS carrier	The RDS carrier is on or off.
Deviation	The deviation by which the data is modulated. Selectable between 0 and 4 kHz. Recommended: 2 kHz
Phase	The phase can be changed between 0 and 359° .
Mode	If this field is dimmed, normal mode is active. For special purposes, transmitting only bit patterns can be useful. A choice of four patterns is available. Switchover is performed with the <i>RDS_Mode</i> button, which changes the labelling and displays the currently active operating state.

RDS basic settings



The screenshot shows the SML-RDS V 1.5 / Jan. 2005 software interface. At the top, there is a status bar with fields for RF[MHz] (94.1), RF[dBμV] (66), AF[kHz] (1), PI (1234), PS (JazzNews), TP (On), TA (Off), M/S (Music), and PTY (EDUCATE). Below this is a menu bar with options: FM / Stereo, RDS, AF-list, Group, EON, Questions, Store, NN, SML. The main window is divided into several sections. On the left, there are input fields for PI (1234), PS (JazzNews), dyn.PS (ON/OFF), and PTY (EDUCATE), each with a Transmit button. Below these are TA function settings (Manual/Automatic), a clock display (10:29:40), and a Decoder Info section with radio buttons for Mono, Stereo, N.N., St.dummy head, Mono compr., Stereo compr., and St.compr.dummy head. At the bottom, there are buttons for End, Demo, Init IEEE, IEC Addr. (28), and Local.

The **PI** can be changed in the entry window and then becomes effective when the *Transmit* button is clicked. The same applies to PS information.

Dyn. **PS** means that switchover between the displayed PS and a character sequence (>--<--<) occurs. The receiver display should be able to follow the switchover.

The desired **PTY** identification can be selected from the pulldown list. It becomes immediately effective. If RBDS is selected, the texts for the American system are displayed here.

Traffic program

The receiver can recognize a frequency as being capable of traffic information only if the TP function is active (checkmark appears in the TP checkbox).

The TA function can be activated with the TA button. This switches the receiver from, for example, playing a CD to the receive mode so that the listener can receive the traffic announcement. The receiver is then switched back and resumes playing the CD.

This process can be repeated cyclically if you select *Automatic*. If you select *Manual*, repetition is interrupted. The hold time and repetition time can be varied with slide bars.

In the case of the EON system, TP is switched off and TA on.

Radio text

You can enter a text with up to 64 characters (see EBU standard) in the entry field. The *Transmit* button transfers the character string to RT register A. Choosing *Clear RT1* will cause four spaces to be transferred.

MV Switch

The music/vocal switch can be used, for example, to restrict the frequency range of voice transmissions in order to improve sound clarity.

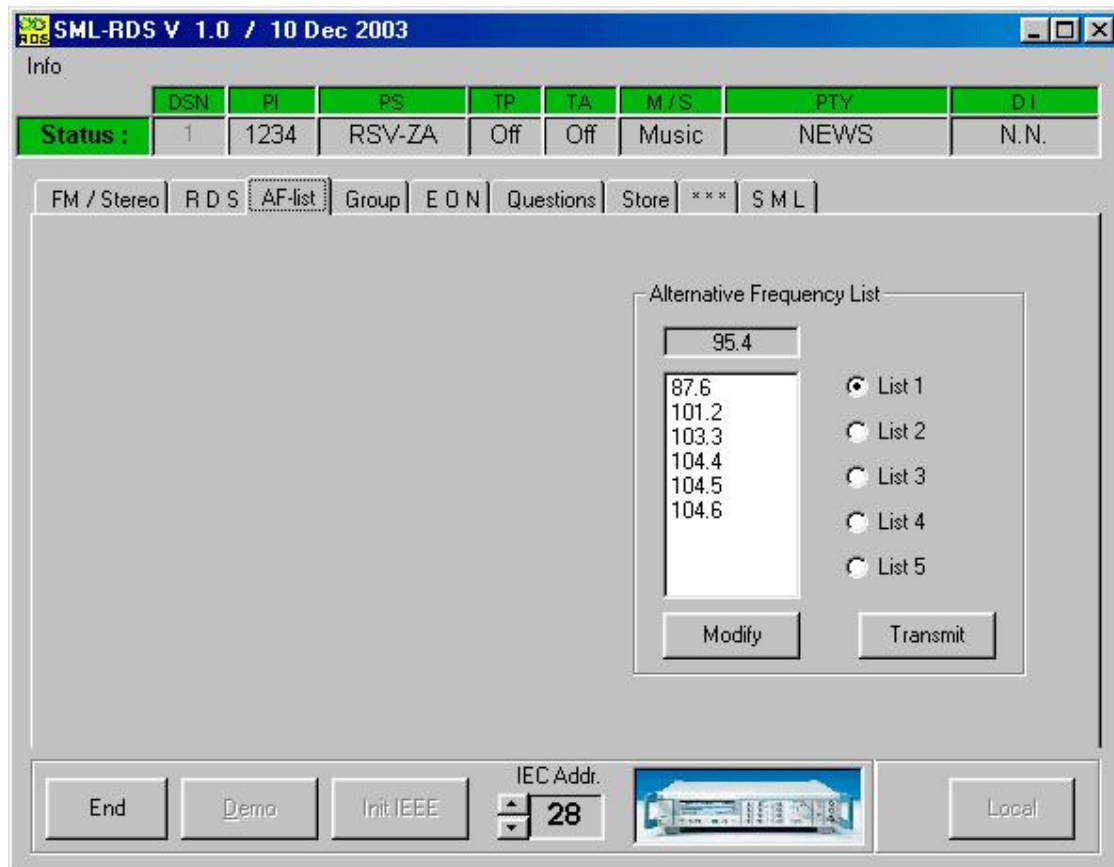
Time

The time is the current PC time. It is transferred to the receiver along with the PC date. It cannot be modified.

Decoder Info (DI)

The decoder information refers to the various transmission methods, where 0 to 7 (15) are possible.

Alternative frequencies



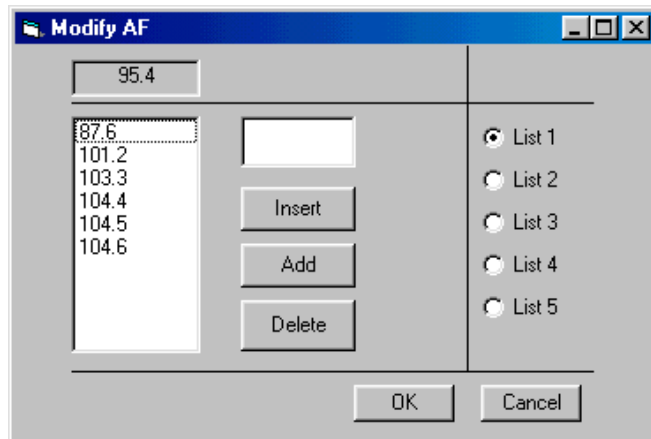
You can select alternative frequency lists here. Up to five lists with a maximum of 25 frequencies each are possible. The frequency in the gray field is the one currently active (tuned). If level loss occurs, the receiver attempts to set one of the other frequencies as the tuning frequency.

You can select other frequency lists by means of the radio buttons. The number of lists available (maximum of 5) is the same as in the data set.

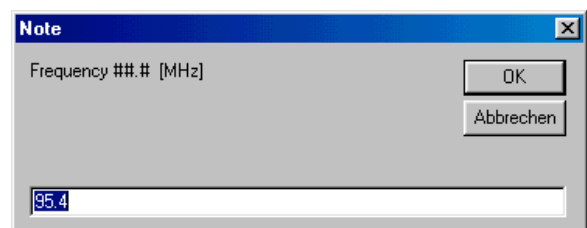
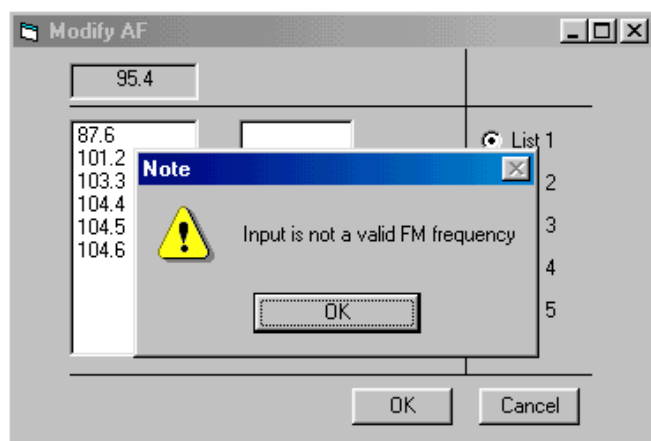
The *Transmit* button activates the alternative frequency lists. This is mandatory after changes are made.

Modifying AF lists

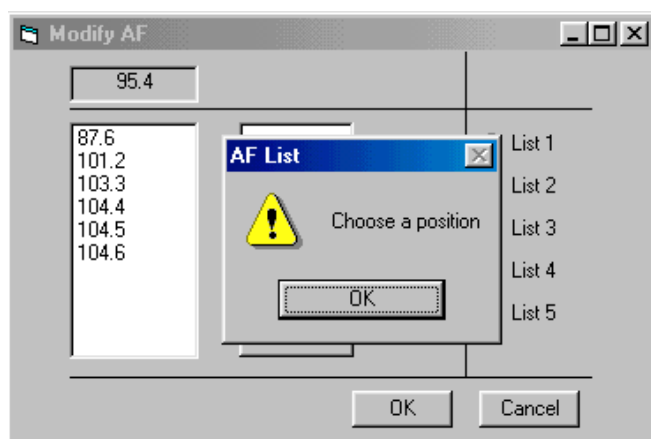
The existing lists can be modified online.



The tuning frequency can be modified in the above window. Only valid FM frequencies are accepted (format: ##.#).



To enter a frequency value in the list, you first have to mark an insertion position in the list by *clicking* it. The value will then be inserted before the marked position.



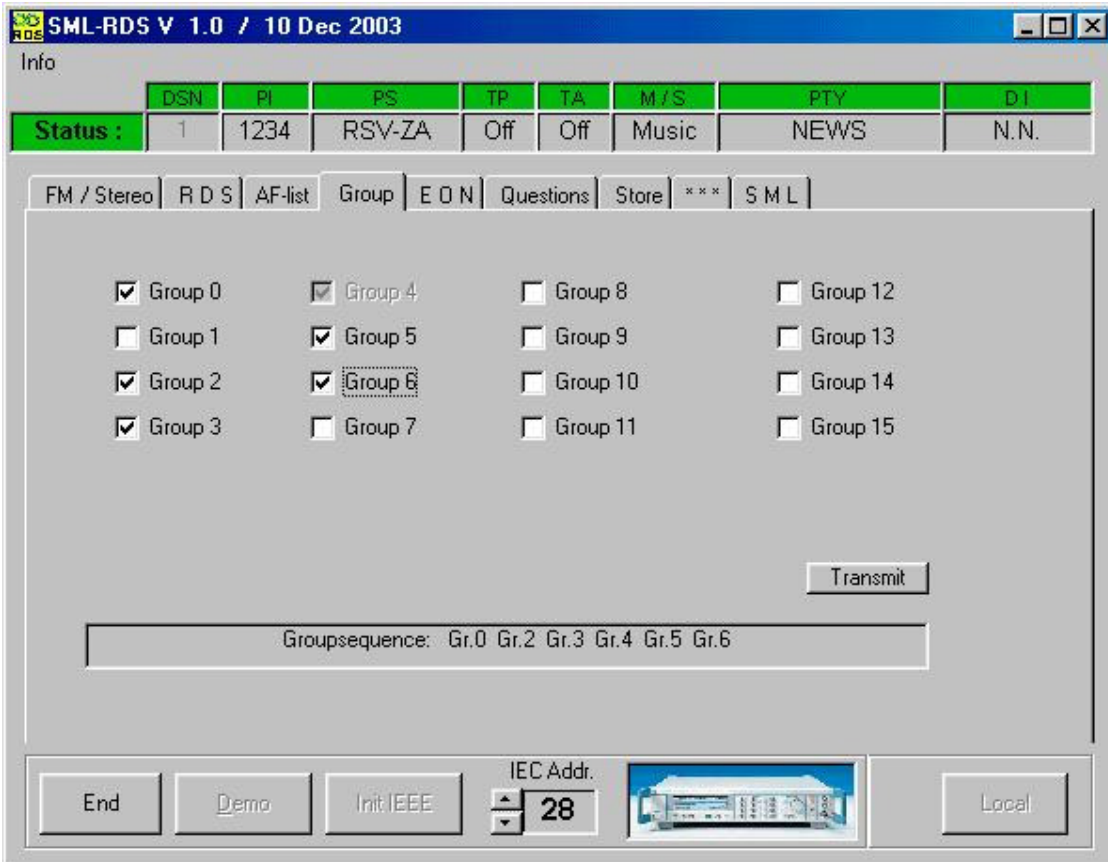
The correct position is the value before which the new value should be located. Appending values at the end is always allowed.

At present, up to five lists with a maximum of 25 frequencies each are allowed.

The value at the selected position can be removed from the list by clicking *Delete*.
You cannot delete the entire list. At least one value must be retained as a placeholder.

The changes are accepted once you click *OK* to exit the window.

Group



SML-RDS V 1.0 / 10 Dec 2003

Info

	DSN	PI	PS	TP	TA	M/S	PTY	DI
Status :	1	1234	RSV-ZA	Off	Off	Music	NEWS	N.N.

FM / Stereo | R D S | AF-list | **Group** | E O N | Questions | Store | * * * | S M L

☒ Group 0
 ☒ Group 4
 ☐ Group 8
 ☐ Group 12

☐ Group 1
 ☒ Group 5
 ☐ Group 9
 ☐ Group 13

☒ Group 2
 ☒ **Group 6**
☐ Group 10
 ☐ Group 14


☒ Group 3
 ☐ Group 7
 ☐ Group 11
 ☐ Group 15

Transmit

Groupsequence: Gr.0 Gr.2 Gr.3 Gr.4 Gr.5 Gr.6

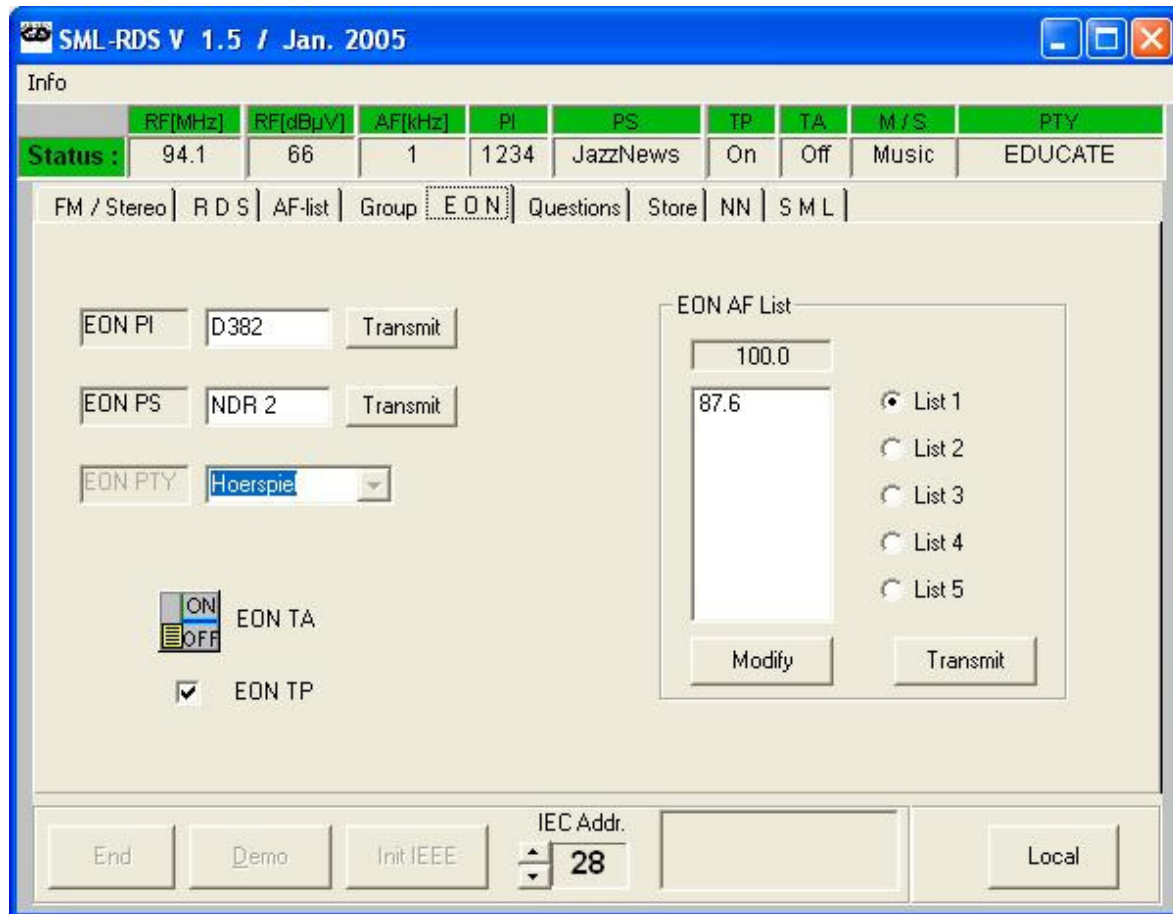
End
Demo
Init IEEE

IEC Addr.
 28


Local

RDS information is transmitted in groups. Thus, information will be transmitted only if the corresponding group is included in the selected group sequence.

EON



SML-RDS V 1.5 / Jan. 2005

Info

	RF[MHz]	RF[dBμV]	AF[kHz]	PI	PS	TP	TA	M/S	PTY
Status :	94.1	66	1	1234	JazzNews	On	Off	Music	EDUCATE

FM / Stereo | R D S | AF-list | Group **E O N** | Questions | Store | NN | S M L

EON PI: D382 Transmit

EON PS: NDR 2 Transmit

EON PTY: Hoerspie

☒ EON TA

☒ EON TP

EON AF List

100.0

87.6

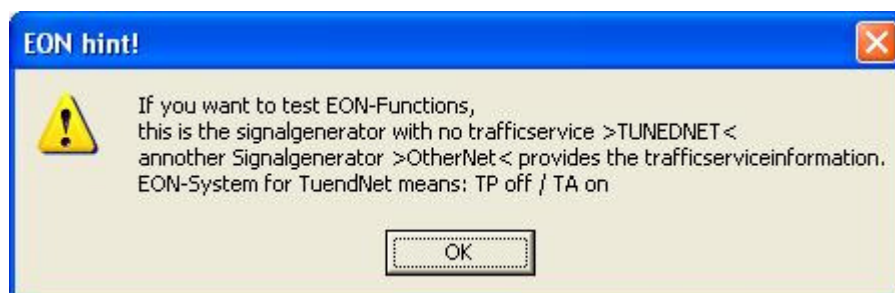
☒ List 1
☐ List 2
☐ List 3
☐ List 4
☐ List 5

Modify Transmit


End Demo Init IEEE IEC Addr. 28 Local

EON PI and EON PS are identifications of the radio station (OtherNet) at which a traffic announcement occurs. The radio switches from the radio station that is set (TunedNet) to the radio station with the current traffic announcement. If the identification for the traffic program announcement is cancelled, the radio resets the original radio station (TunedNet).

Set the right EON Setup on page ,RDS basic settings‘

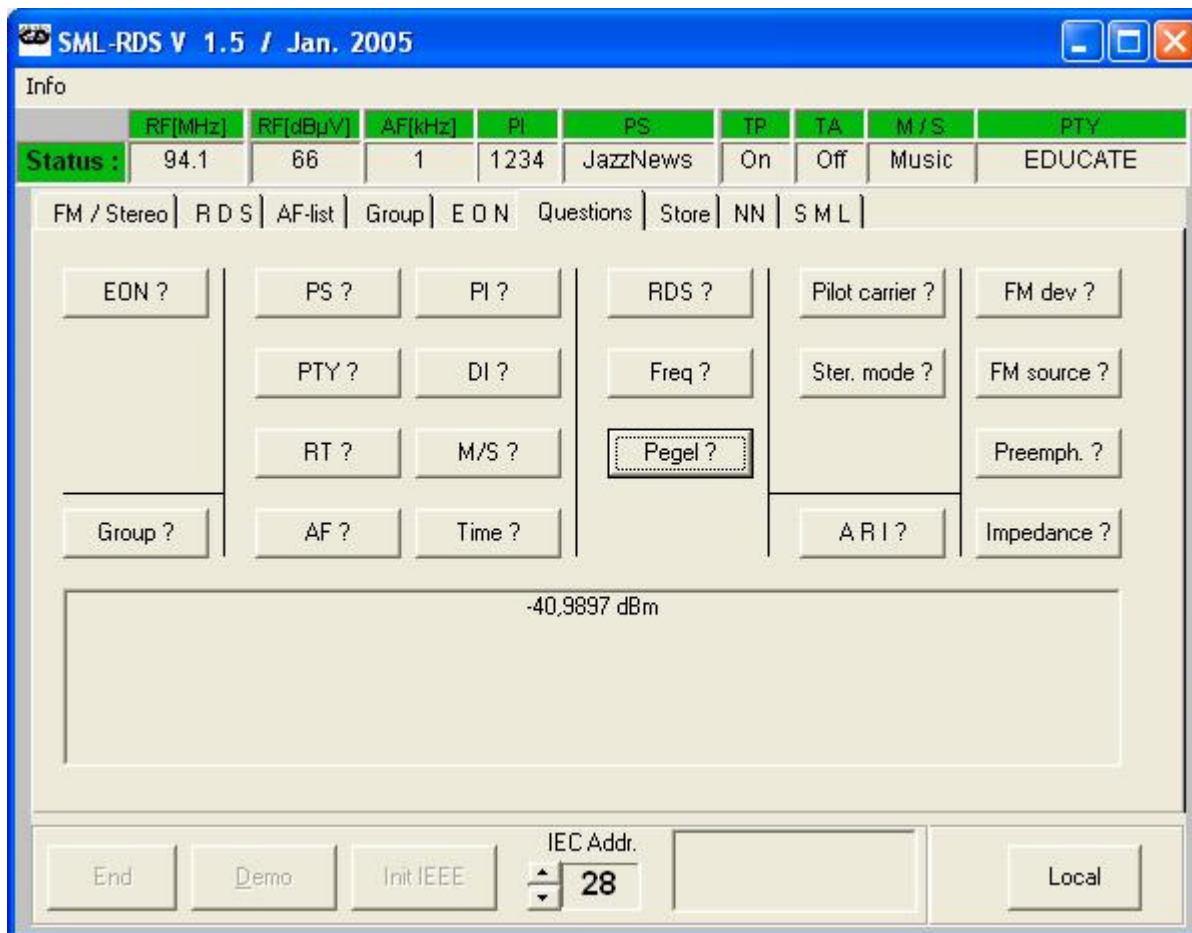


EON hint!

 If you want to test EON-Functions, this is the signalgenerator with no trafficservice >TUNEDNET< another Signalgenerator >OtherNet< provides the trafficserviceinformation. EON-System for TuendNet means: TP off / TA on

OK

Questions



SML-RDS V 1.5 / Jan. 2005

Info

	RF[MHz]	RF[dBuV]	AF[kHz]	PI	PS	TP	TA	M/S	PTY
Status :	94.1	66	1	1234	JazzNews	On	Off	Music	EDUCATE

FM / Stereo | R D S | AF-list | Group | E O N | Questions | Store | NN | S M L

Buttons: EON ? | PS ? | PI ? | RDS ? | Pilot carrier ? | FM dev ?

Buttons: PTY ? | DI ? | Freq ? | Ster. mode ? | FM source ?

Buttons: RT ? | M/S ? | Pegel ? | Preemph. ?

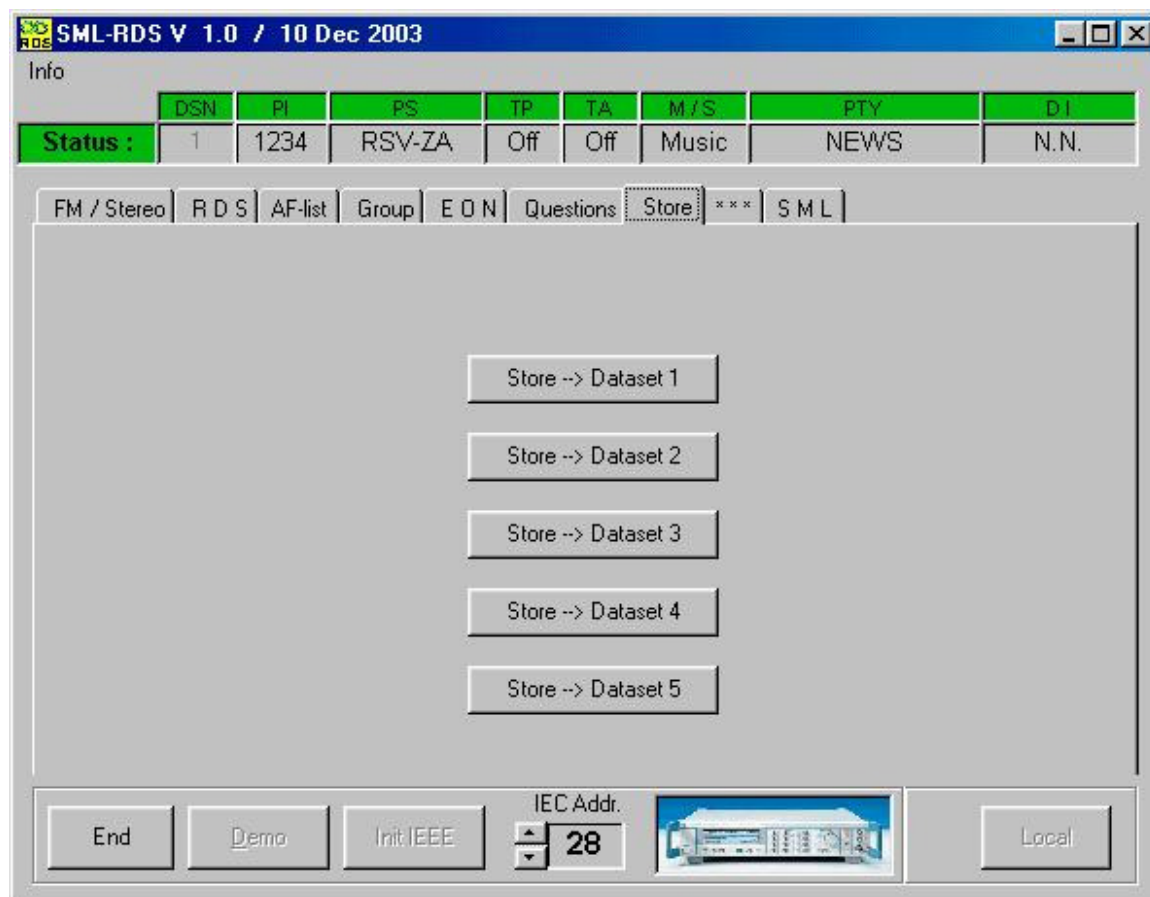
Buttons: Group ? | AF ? | Time ? | ARI ? | Impedance ?

-40,9897 dBm

End | Demo | Init IEEE | IEC Addr. 28 | Local

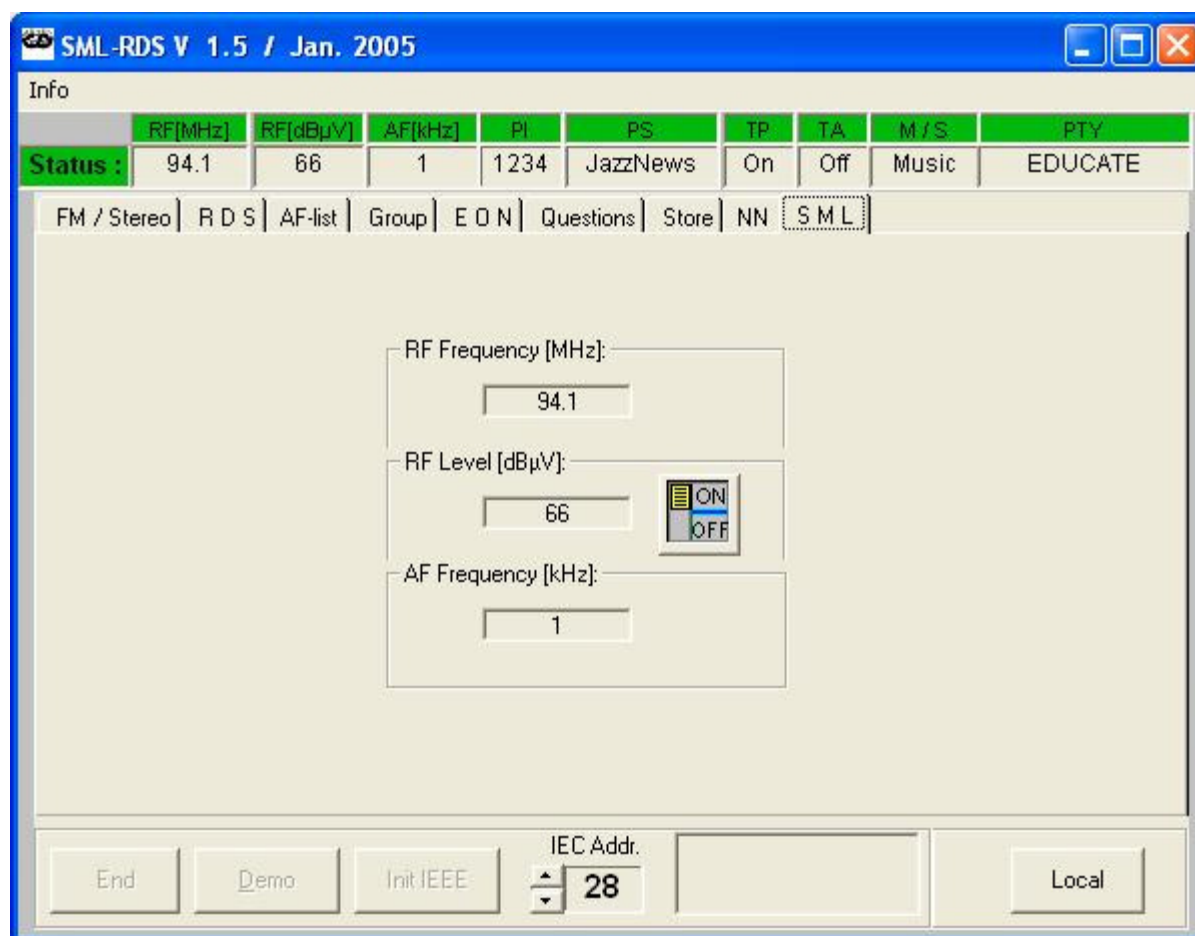
A click on a questionbutton returns the corresponding SML setting

Store



The current settings can be stored as a data set in the R&S SML. These sets can then be called in the manual mode. Thus, up to five fixed settings can be stored and then called without using a PC.

SML Basics



SML-RDS V 1.5 / Jan. 2005

Info

	RF[MHz]	RF[dBμV]	AF[kHz]	PI	PS	TP	TA	M/S	PTY
Status :	94.1	66	1	1234	JazzNews	On	Off	Music	EDUCATE

FM / Stereo | R D S | AF-list | Group | E O N | Questions | Store | NN | S M L

RF Frequency [MHz]:
94.1

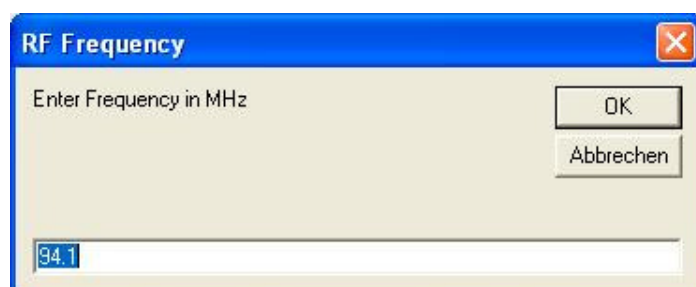
RF Level [dBμV]:
66

AF Frequency [kHz]:
1

ON
OFF

End Demo Init IEEE IEC Addr. 28 Local

To change RF, RF level or audio frequency, click on one of the three labels.



RF Frequency

Enter Frequency in MHz

94.1

OK
Abbrechen