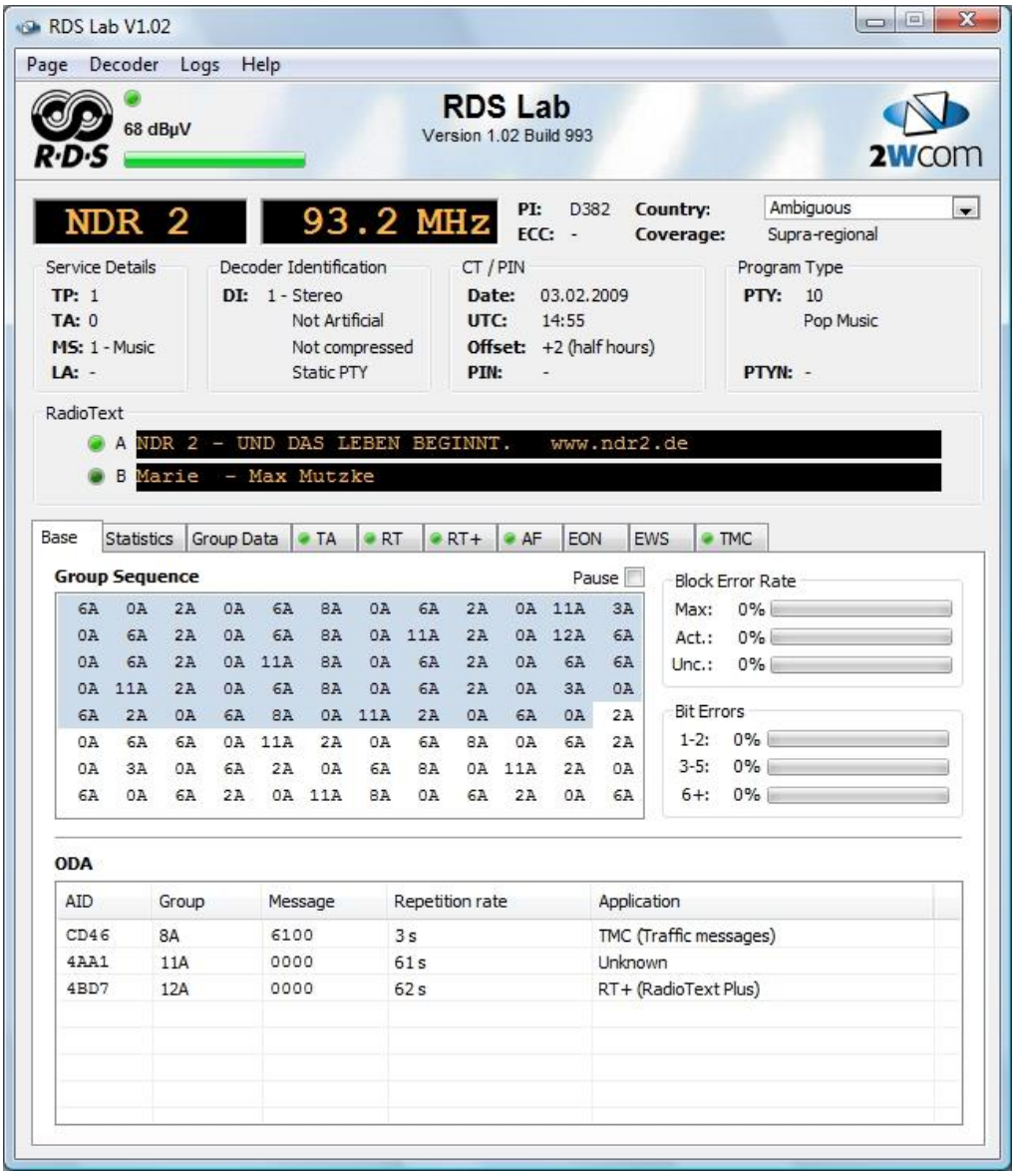
RDS Lab

The premium RDS decoder of the 2wcom-Team



User Manual

2013, April

Content

1. Introduction

RDS Lab is a PC software (Win 2000/XP/Vista) that decodes RDS data in real-time. The RDS group data can be provided by a 2wcom decoder via RS-232 or TCP/IP interface.

- 2wcom Monitoring Decoder A20
- 2wcom Decoder RD20

The software displays nearly all data that is specified in the RDS specification IEC 62106:1999 (main exception is Radio Paging RP).

Important

Please read the entire manual before you start to use the software. Keep this manual for future use. It contains important operating instructions.

To be able to understand and use all functions of the software, a basic knowledge of the RDS specification IEC 62106:1999 (or newer) is required.

Additional notes:

Some functions depend on device options. A software function is deactivated if the corresponding device option is not part of the device. Please contact us if you want to order a required device option.

The figures in the manual may differ from the actual screen display.

Configurations, functions, and specifications may change for further development without notice.

2. Manufacturer

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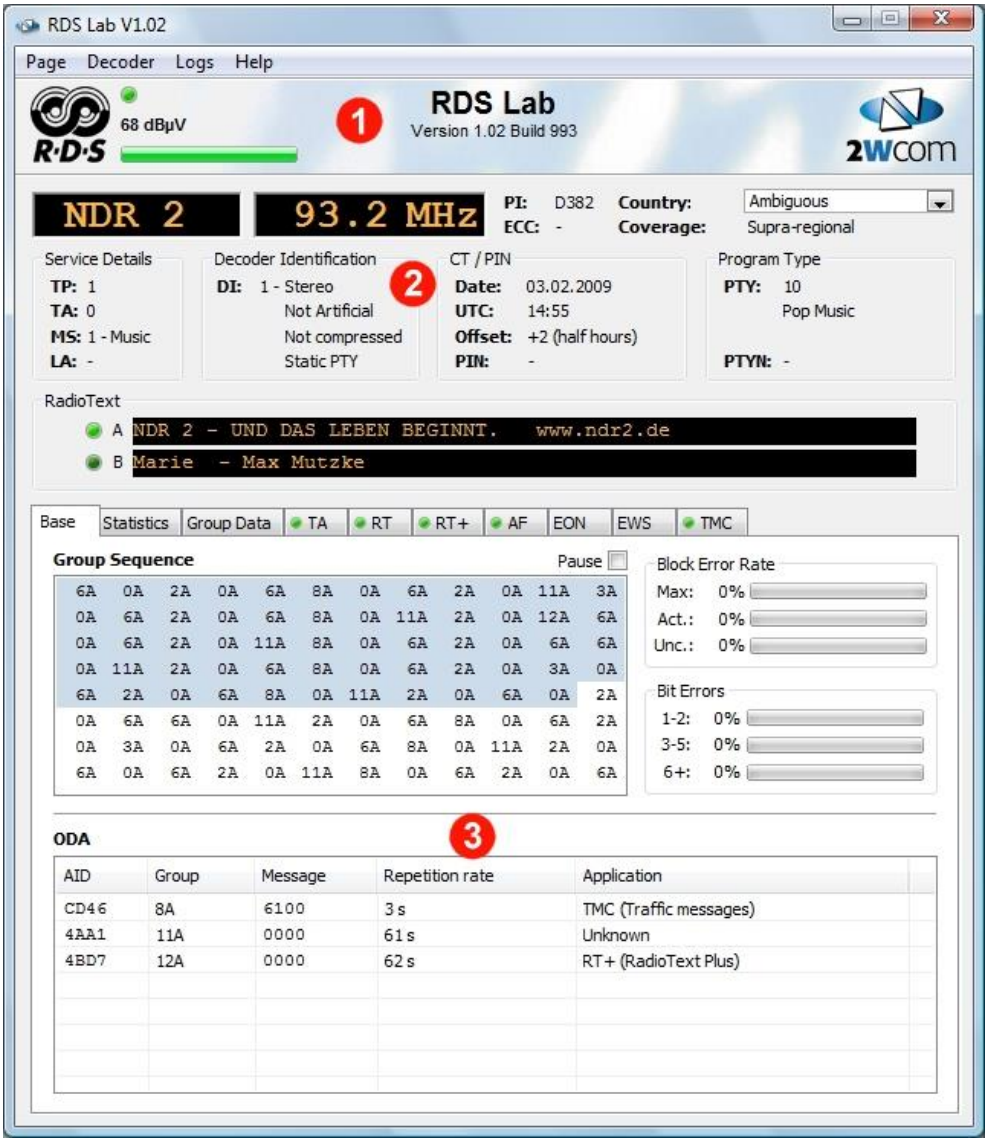
3. Installation

RDS Lab is part of the A20Lab / RD20Control software. All necessary software files are installed during the installation of the A20Lab / RD20Control software. So a separate installation is not necessary.

Please use the main application (A20Lab / RD20Control) to start RDS Lab.

4. Software Window

The software window of RDS Lab has three sections:



The first section is the graphical area at the top of the window. It is permanently visible and shows the name and the version information of the software, as well as three displays at the left side:

- An LED shows the RDS synchronization status; green: synchronized; red: not synchronized.
- The RF level in dBµV if the tuner input, not the MPX input, is used for reception.
- A bar graph that displays the RDS reception quality (full bar graph = optimum quality).

The second section is also permanently visible and displays the most important RDS data at a glance:

- *PS - **P**rogramme **S**ervice name*
  in the left display of the two displays with black background. As a non-proportional character font is used, it is possible to clearly see e.g. leading white spaces.

- *Tuner frequency or selected MPX input (only A20)*
  in the right display of the two displays with black background.

- *PI - **P**rogramme **I**dentification*

- *ECC - **E**xtended **C**ountry **C**ode*

- *Country (not shown in RBDS decoding mode)*
  decodes the country code from the PI and the ECC to determine the specific country. If the ECC is not received, "Ambiguous" is shown. Then the opened drop down menu shows all countries that match to the received country code (presently all countries from tables D.2 and N.4 of IEC 62106:2008 are contained).

- *Coverage (not shown in RBDS decoding mode)*
  decodes the station coverage area from the PI

- *TP - **T**raffic **P**rogramme flag*

- *TA - **T**raffic **A**nnouncement flag*

- *MS* - **M**usic **S**peech switch

- *LA - **L**inkage **A**ctuator*
  decoded from group 1A and 14A, and only displayed if in group 14A via EON, for the presently received station, an LSN not equal to 0 is received (=Linkage for this station is active).
  If Linkage is active, the further linkage information like e.g. the LSN is shown on tab EON. In this case a shaded row shows the corresponding data for the presently received station.

- *DI - **D**ecoder **I**dentification*
  shows the decimal number, as well as the decoded meaning of the four individual bits.

- *CT - **C**lock **T**ime and date*
  shows the received date and time in UTC (Universal Time Coordinated), as well as the offset to the local time in steps of 30 minutes (corresponds to the format as received from the 4A group).

- *PIN - **P**rogramme **I**tem **N**umber*

- *PTY - **P**rogramme **Ty**pe*
  shows the decimal number, as well as the corresponding text definition (RBDS decoding mode considered).

- *PTYN - **P**rogramme **TY**pe **N**ame*

- *RadioText*
  shows the previous and the present radio text. The LED marks the present radio text. The LED corresponds to the A/B flag in the RadioText transmission.

The third section is split into individual tabs, which show different parts of the RDS data. The tabs TA, RT, RT+, AF, EON, and TMC can show a green LED. These LEDs indicate active services:

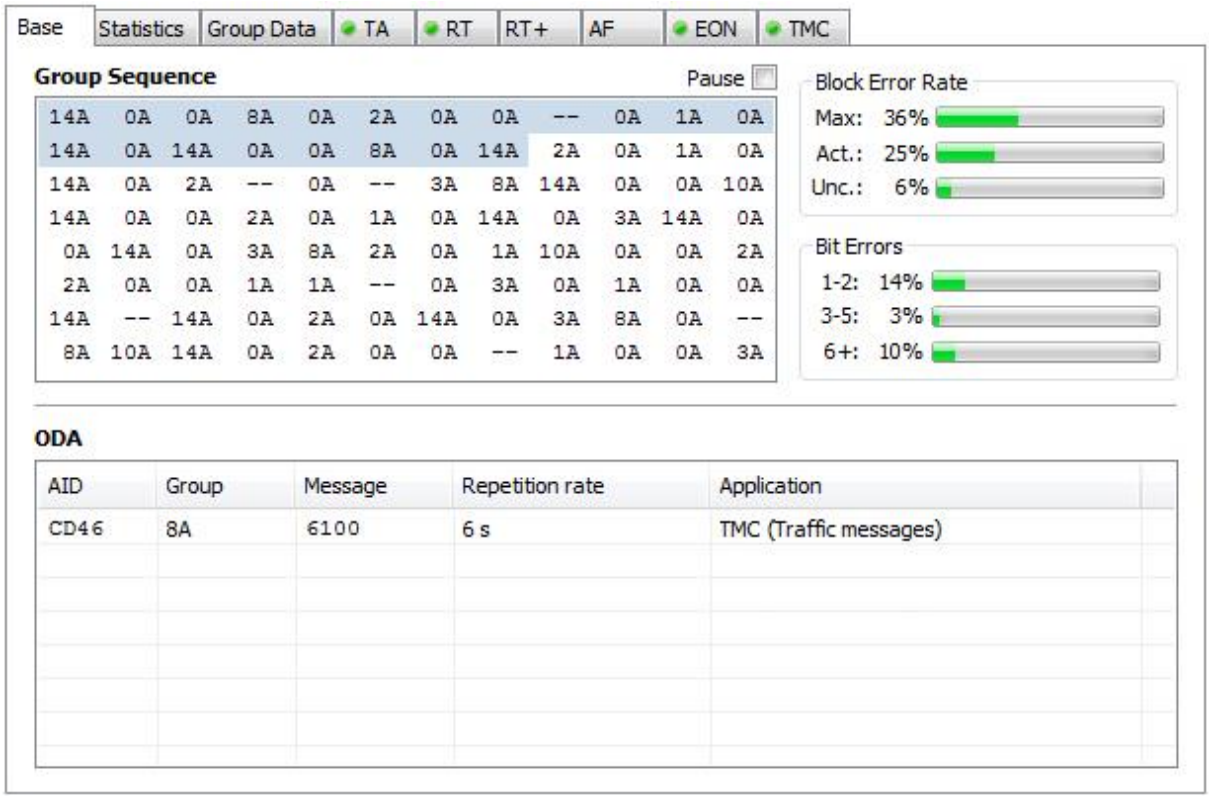
Service	**Condition for green LED**
TA	TP = 1 or (TP = 0 and TA = 1) (EON-TA)
RT	Received 2A Groups
RT+	Received 3A Groups with the AID for RT+ (0x4BD7)
AF	Received at least one AF frequency in the 0A group
EON	Received 2A Groups 14A groups
TMC	Received a 3A group with the AID for TMC (0xCD46)

Language Setting

The window menu can be used to set the text language (Menu: Help > Language). Possible languages are German, English, and French.

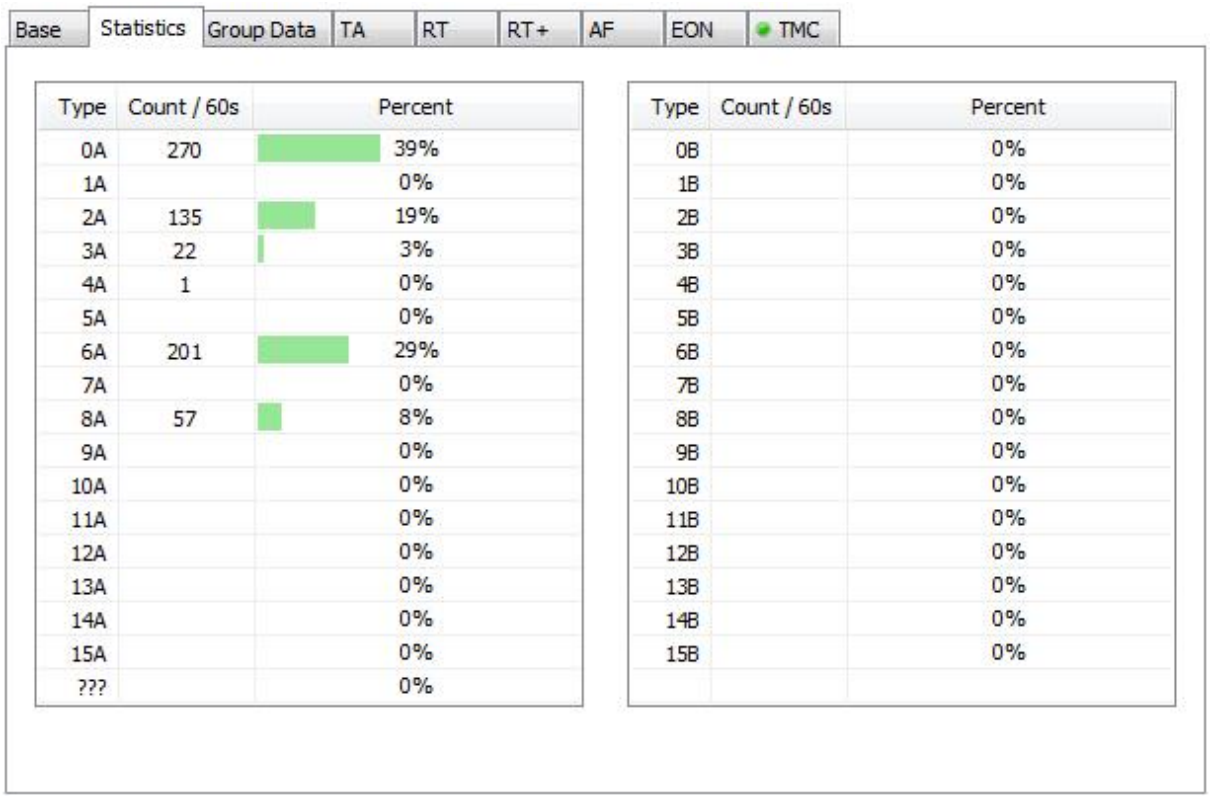
Tab [Base]

The tab [Base] shows additional basic data:



- Group Sequence
  The group sequence shows the 144 latest received group types. If the list is full, the display is overwritten with new data. If the type of a group cannot be exactly determined, "--" is shown. The running display can be paused/restarted by checking/unchecking the "Pause" checkbox.
- Block Error Rate
  A number and a bar graph shows: The maximum block error rate since the start of the decoding, the present block error rate (blocks with at least one bit error, incl. correctable errors, since the last 100 groups), and the rate of the non-correctable bit errors (since the last 100 groups).
- Bit Errors
  A number and a bar graph shows: The number of the last groups with 1-2, 3-5, or 6 or more non-correctable bit errors.
- ODA
  The ODA list shows the applications with their AID, as received via the 3A group. For each AID, a row with the following data is shown:
  - Group
    the group that contains the data for the AID
  - Message
    the 2 byte short message, that is transmitted in the 3A group together with the AID. If different short messages for one AID are received, the corresponding entry is refreshed.
  - Repetition rate
    the time in seconds between the two last received 3A groups of the AID.
  - Application
    the name of the ODA application (if known to RDS Lab)

Tab [Statistics]



Type	Count / 60s	Percent
0A	270	39%
1A		0%
2A	135	19%
3A	22	3%
4A	1	0%
5A		0%
6A	201	29%
7A		0%
8A	57	8%
9A		0%
10A		0%
11A		0%
12A		0%
13A		0%
14A		0%
15A		0%
???		0%

Type	Count / 60s	Percent
0B		0%
1B		0%
2B		0%
3B		0%
4B		0%
5B		0%
6B		0%
7B		0%
8B		0%
9B		0%
10B		0%
11B		0%
12B		0%
13B		0%
14B		0%
15B		0%

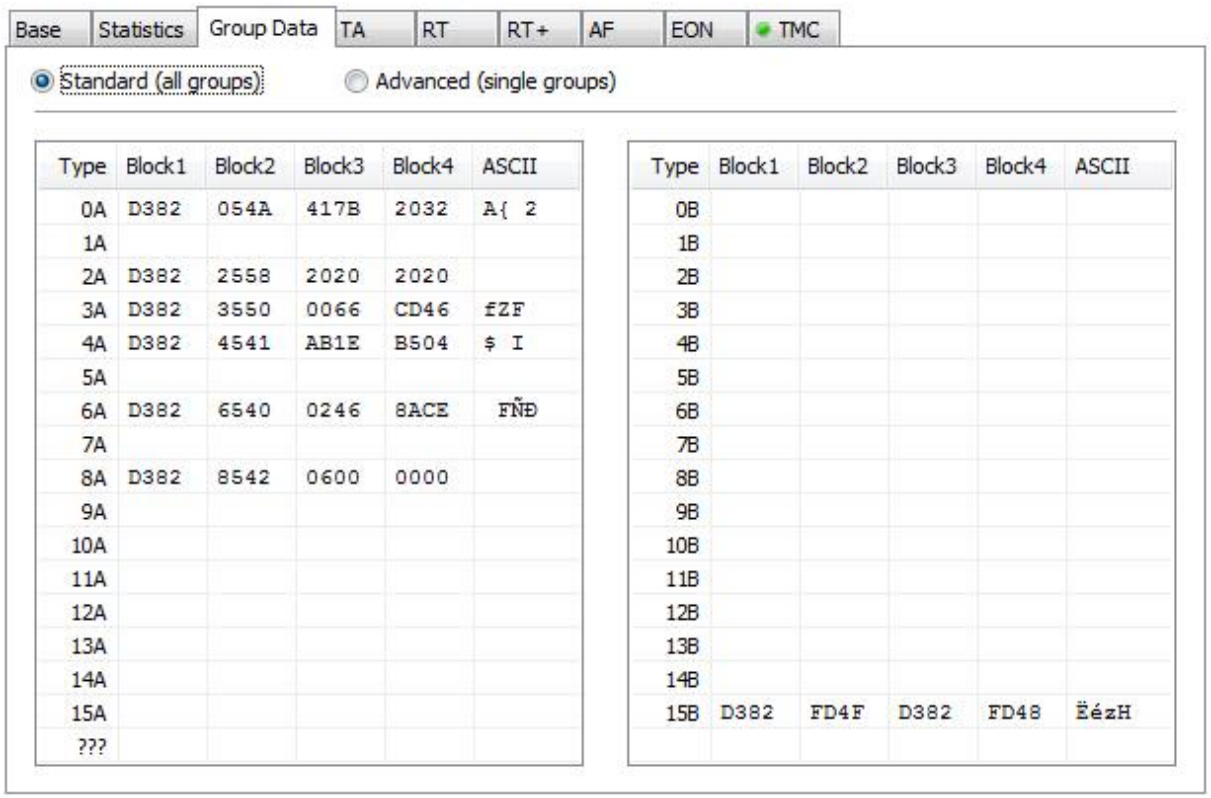
The tab [Statistics] shows the graphical percentage distribution of the received RDS group data, separately for type A and B groups. Additionally the group count for the last 60 seconds is shown.

The group type "??" represents al groups that could not be reliably decoded (due to bit errors in block 2).

Tab [Group Data]

The tab [Group Data] can show the group data in two different ways: Standard or Advanced.

Group Data – Standard

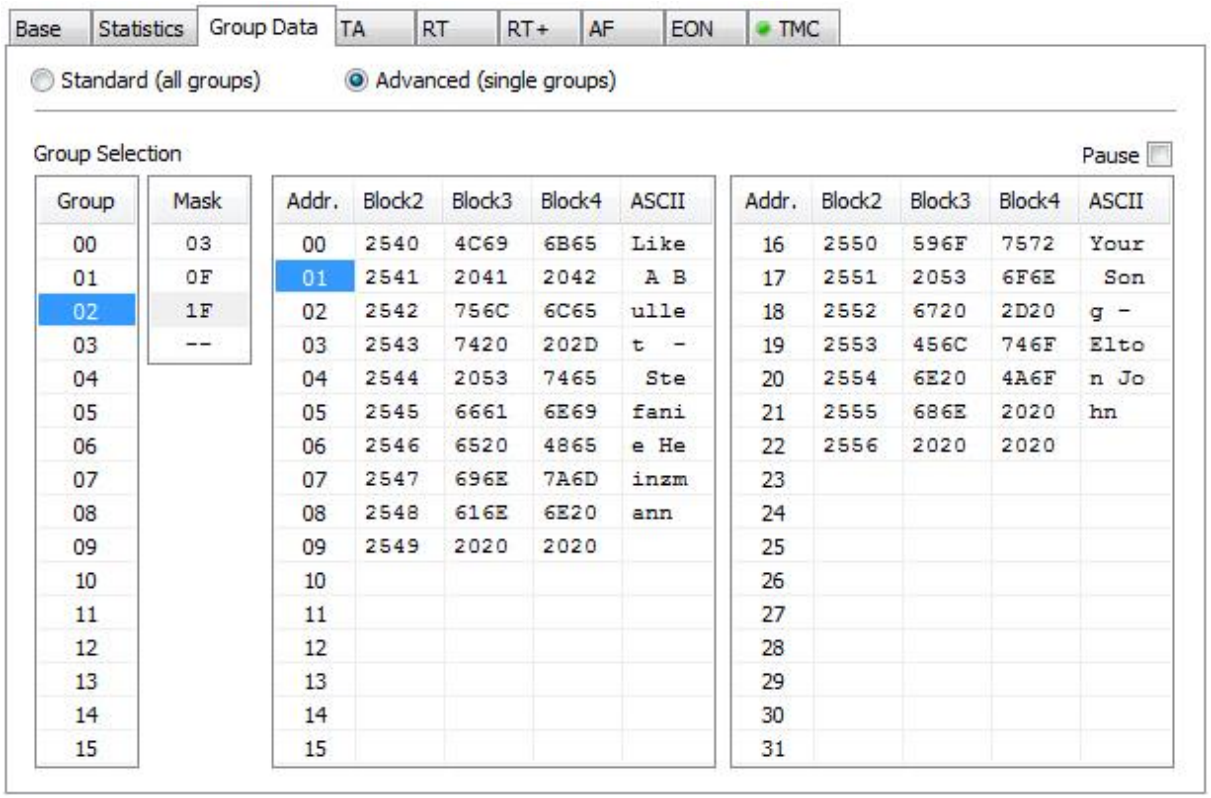


Type	Block1	Block2	Block3	Block4	ASCII
0A	D382	054A	417B	2032	A{ 2
1A					
2A	D382	2558	2020	2020	
3A	D382	3550	0066	CD46	fZF
4A	D382	4541	AB1E	B504	$ I
5A					
6A	D382	6540	0246	8ACE	FÑÐ
7A					
8A	D382	8542	0600	0000	
9A					
10A					
11A					
12A					
13A					
14A					
15A					
???					

Type	Block1	Block2	Block3	Block4	ASCII
0B					
1B					
2B					
3B					
4B					
5B					
6B					
7B					
8B					
9B					
10B					
11B					
12B					
13B					
14B					
15B	D382	FD4F	D382	FD48	ËézH

The standard display shows always the latest group data for the specific A and B groups. Four groups of hexadecimal group data, as well as the data of block 3 and 4 as ASCII text are shown.

Group Data – Advanced



The advanced display shows the data of a specific A or B group. Block 2, 3, and 4 with its hexadecimal group data, as well as the data of block 3 and 4 as ASCII text are shown.

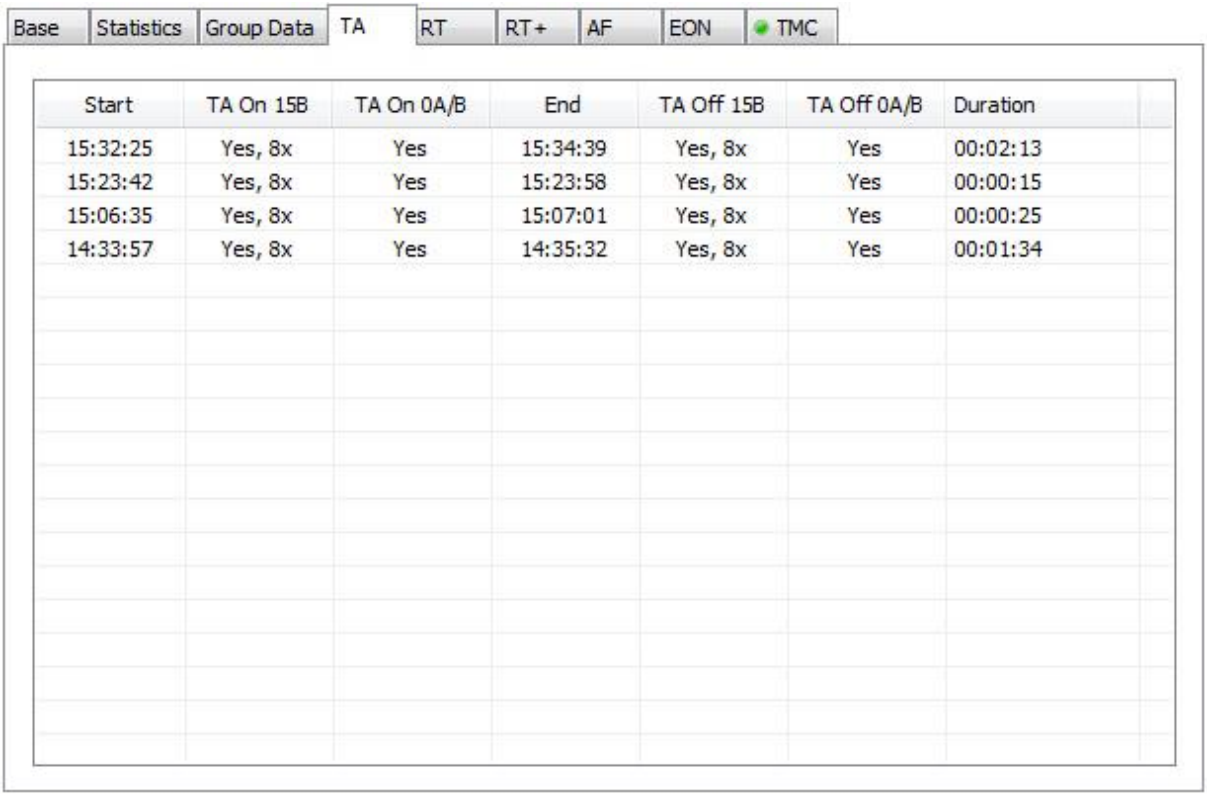
Select a group and select a mask if the default mask does not fit. The mask is a hexadecimal number that is bitwise AND-combined with the last five bits from block 2. The resulting number from 0 to 31 is used as an address that sorts the list.

The default mask depends on the selected group. Examples: For group 2 it is the mask 1F, because group 2 contains the radio text with the RT segment address in the last five bits of block 2. For group 0 it is the mask 03, because only the last two bits of block two are used for the address.

Instead of using the address of the mask for sorting the list, it is possible to select "--". Then the list is (re)filled with the selected group data from the top. The presently received group data has a marked address.

The running display can be paused/restarted by checking/unchecking the "Pause" checkbox.

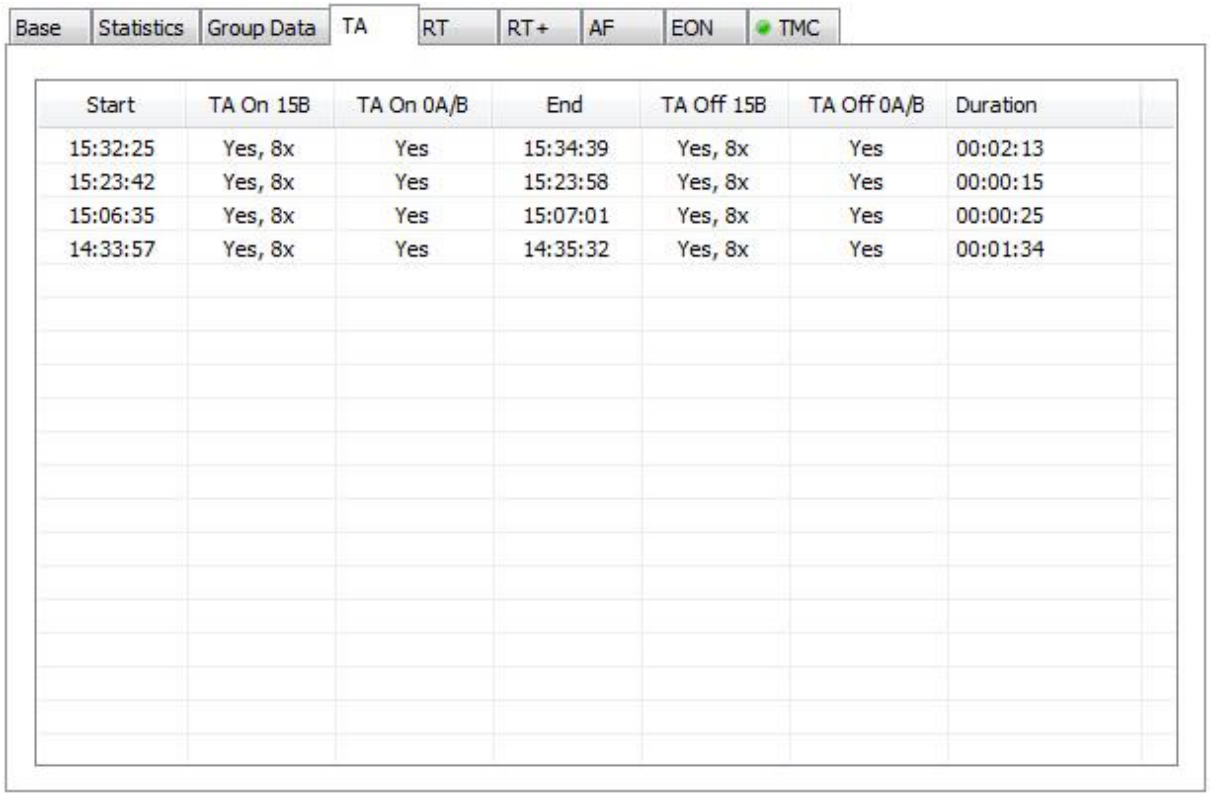
Tab [TA]



The tab [TA] shows a protocol of the recent traffic announcements (TA switching) of real TA stations (TP=1), as well as EON-TA stations (TP=0, TA=1).

The start, end and duration time, as well as the type of signalling (15B and additional 0A/0B for real TA stations / 14B and additional 14A for EON stations) with the count of the corresponding groups are shown.

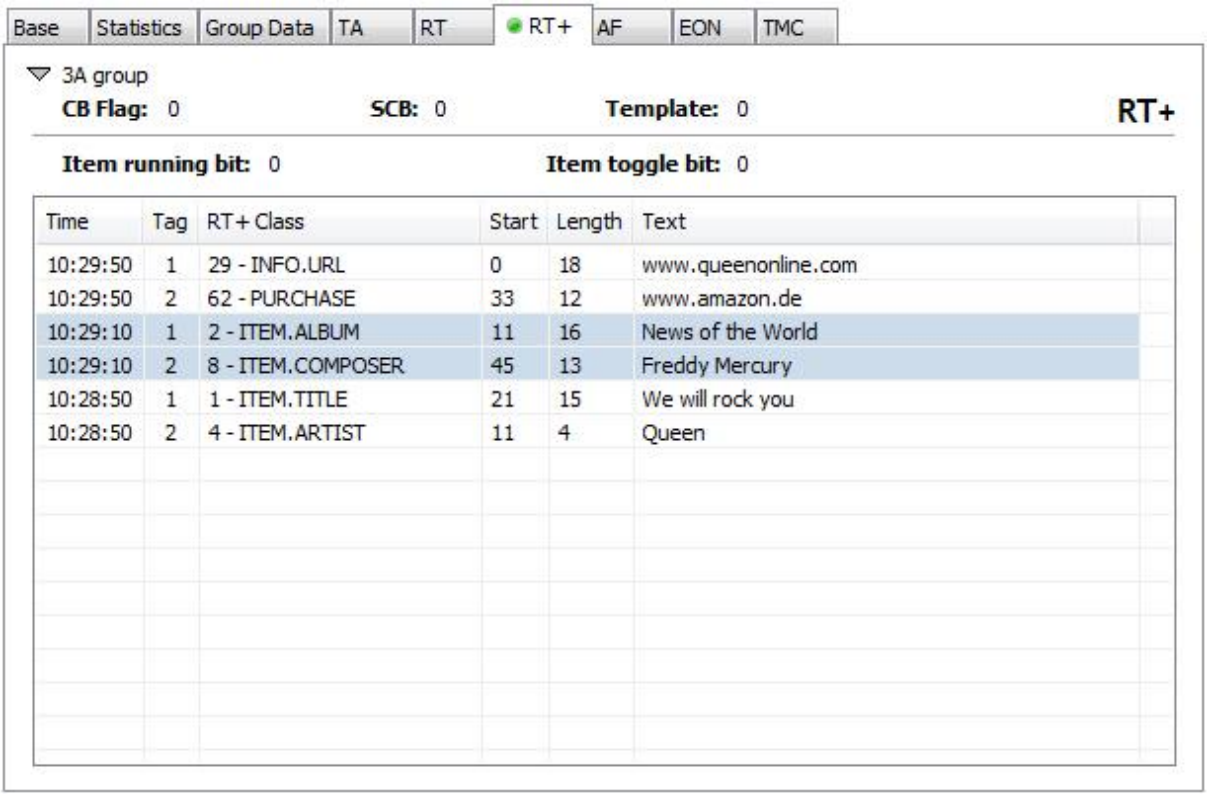
TA [RT]



The tab [RT] shows a protocol of the received RadioText transmissions. Each change of the A/B flag triggers the addition of a new row in the list. The displayed time represents the time of triggering. The displayed number shows the number of text repetitions.

Tab [RT+]

Only with the decoder option ‘RT+’ available.

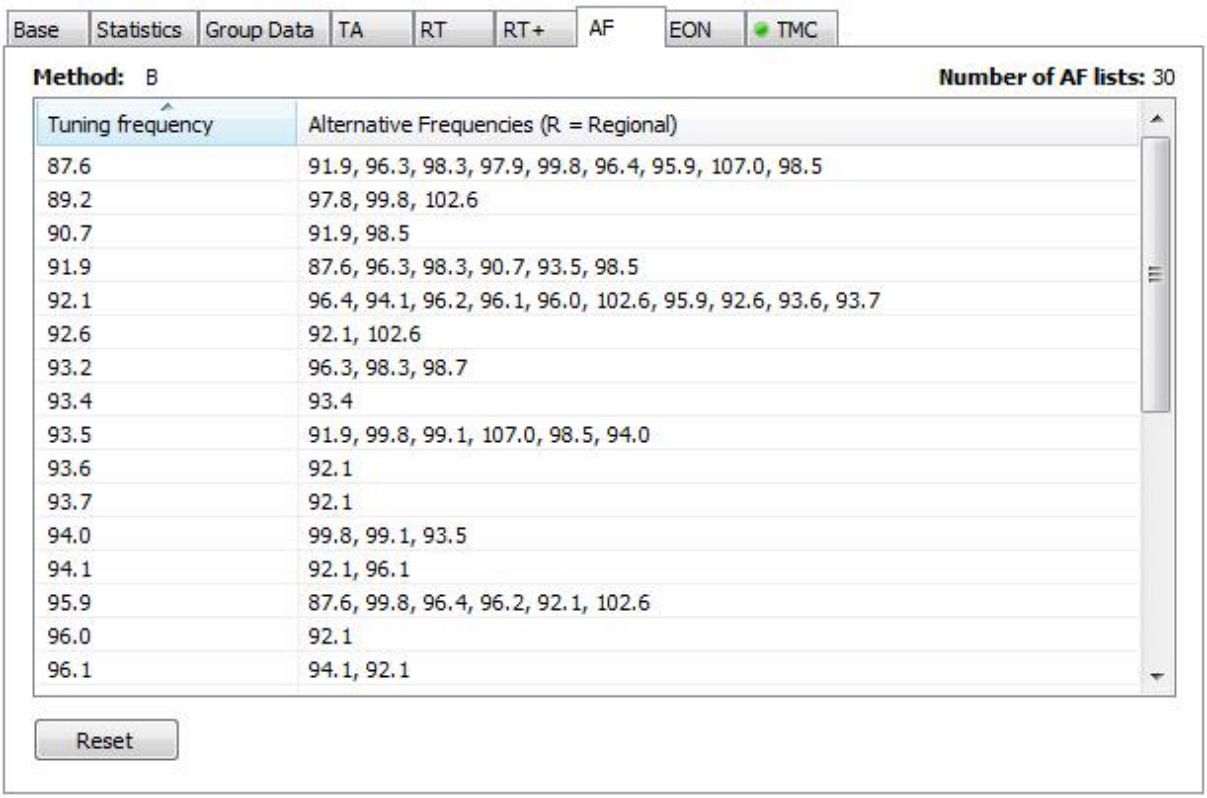


The tab [RT+] shows the data contained in the 3A group and a protocol of the received ‘RT+’ elements. Additionally the status of the ‘Item running bits’ and the ‘Item toggle bits’ are shown.

Each change of the A/B flag triggers the addition of two new rows in the list, one for the first ‘RT+’ flag, one for the second ‘RT+’ flag. The displayed time represents the time of triggering.

The protocol shows the ‘RT+’ class of a tag (with its number and name, according to the ‘RT+’ specification 2.1), the start position in the RadioText, the length, and the resulting ‘RT+’ text.

Tab [AF]



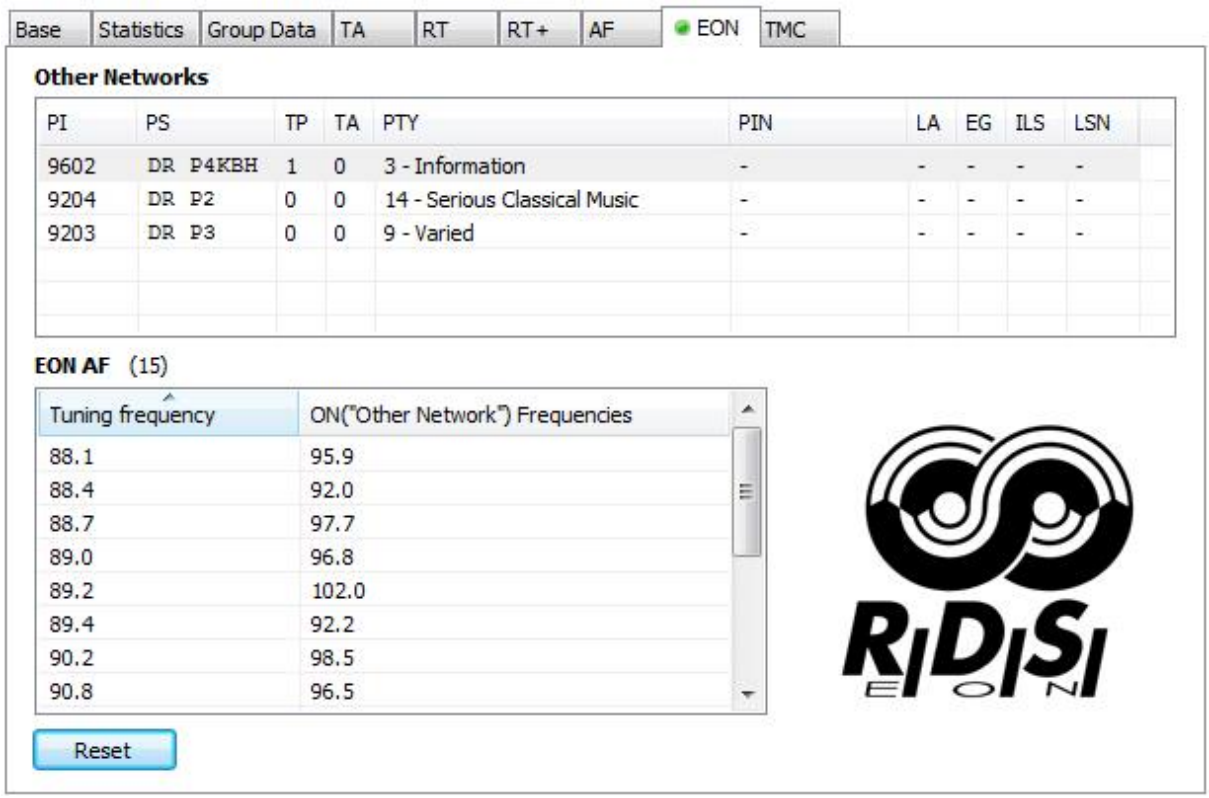
The tab [AF] shows the received AF lists with the method statement (A or B) and the number of received AF lists at the top of the tab.

The list can be sorted by a click on the column header ("Alternative Frequencies" sorts in the order of reception, Method B: "Tuning frequency" sorts the frequency by its value). By a second click on the header, the sorting order can be reversed (sorting order is indicated by an arrow symbol).

AF method B: If a tuning frequency appears multiple times, the list contains a corresponding number of rows (displayed as received, so the lists are not merged).

If the station has regionalized coverage areas (only the region part of the PI changes - b_{11} to b_8), the list will not be cleared, but the affected parts will be refreshed. By a click on [Reset], the list can be cleared for new data.

Tab [EON]



The tab [EON] shows a list of the networks/stations that are referenced by 'Enhanced Other Networks'. For each entry, the following RDS contents are shown: PI, PS, TP, TA, PTY, PIN, and the Linkage-Information LA (**L**inkage **A**ctuator), EG (**E**xtended **G**eneric indicator), ILS (**I**nternational **L**inkage **S**et indicator), and LSN (**L**inkage **S**et **N**umber).

If Linkage is activated for the current station, the corresponding Linkage information are shown in a grey row.

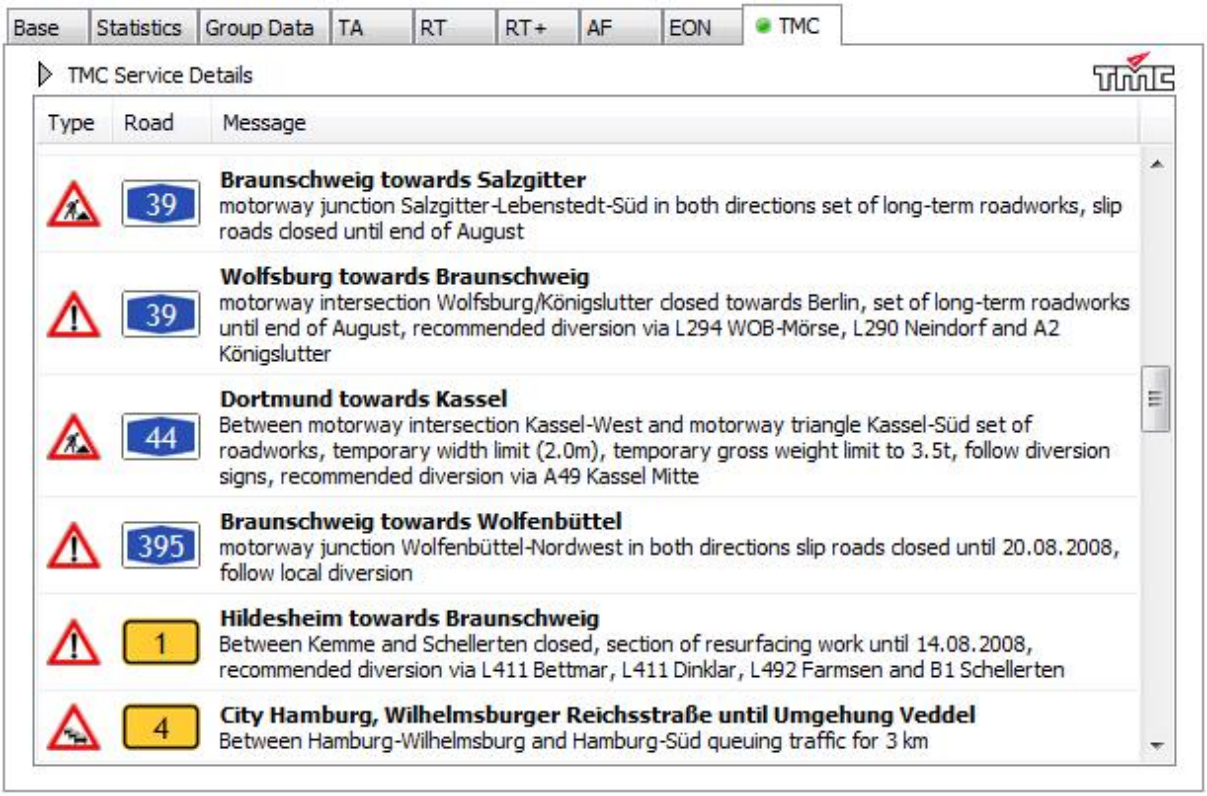
If an EON entry is selected, the corresponding EON-AF lists are shown. The number in brackets at the EON-AF title of the table shows the number of EON-AF lists.

The list can be sorted by frequency by a click on the corresponding column header. By a second click on the header, the sorting order can be reversed (sorting order is indicated by an arrow symbol).

By a click on [Reset], the list can be cleared for new data.

Tab [TMC]

Only with the decoder option 'TMC' available.



The tab [TMC] shows the received TMC messages as decoded readable text with the affected street number, as well as the traffic sign that corresponds to the type of the message/event (if the corresponding location table is available). Very important messages are marked by color.

At the top of the tab, TMC service details like SPN, LTN, SID, MGS, and the encryption parameter (ENCID, LTNBE, Test) can be shown after a click on the arrow symbol at the top of the tab.

If the necessary national "LocationTable" is not available, the list shows a corresponding text message.

The list can be sorted for time of message reception, category of the street / number of the street, and type of message by a click on the corresponding column header. By a second click on the header, the sorting order can be reversed (sorting order is indicated by an arrow symbol).

5. Menu commands

Keyboard short cuts

RDS Lab provides the following key short cuts (the menu path is also shown):

Command	Short Cut	Menu
Activate tab [Base]	Ctrl+F1	[Page]>[Base]
Activate tab [Statistics]	Ctrl+F2	[Page]>[Statistics]
Activate tab [Group Data],Standard view	Ctrl+F3	[Page]>[Group Data]>[Standard]
Activate tab [Group Data],Advanced view	Ctrl+Shift+F3	[Page]>[Group Data]>[Advanced]
Activate tab [TA]	Ctrl+F4	[Page]>[TA]
Activate tab [RT]	Ctrl+F5	[Page]>[RT]
Activate tab [RT+]	Ctrl+F6	[Page]>[RT+]
Activate tab [AF]	Ctrl+F7	[Page]>[AF]
Activate tab [EON]	Ctrl+F8	[Page]>[EON]
Activate tab [TMC]	Ctrl+F10	[Page]>[TMC]
Pause/Continue decoding	Pause	[Decoder]>[Pause Decoding] [Decoder]>[Continue Decoding]
Reset decoder	Ctrl+R	[Decoder]>[Reset]

RBDS decoding

If the user interface of the software is set to English, it is possible to switch between normal RDS decoding and RBDS decoding (Menu: Decoder → RBDS-Decoding). In the RBDS mode, the differences in operation are:

- The display for the country and the coverage area are hidden, as this content is not part of the RBDS PI.
- The annex F of the RBDS specification is used to determine the PTY corresponding text.
- The TMC decoding does not use the CountryCode to determine the LocationTable.

Units

If the user interface of the software is set to English, it is possible to use the menu (Decoder→SI Units) to switch between SI units (km, m, °C) and not-SI units (Miles, ft, °F).

Save Logs

The window menu [Logs] can be used to save RT, RT+, and TA protocols of the corresponding tabs in a file.

Port Log

The window menu can be used to activate the port log (Menu: Help > Port Log…) to see the UECP frame data.

Pause Decoding

The window menu can be used to pause / continue the decoding (Menu: Decoder > Pause Decoding / Continue Decoding or key "Pause"). If the decoding is paused, a corresponding text is shown.

Reset

The window menu can be used to reset RDS Lab (Menu: Decoder > Reset Decoder or shortcut Ctrl-R). Then the decoding restarts with erased data buffers.