



# SOFTWARE USER'S GUIDE

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**DemuxToy® Lite TS Anayser v1.1.0**

# 1

## Getting Started

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### Note

- The screens in this manual are from Windows® 7. Screens on your PC may vary depending on your operating system.
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## System Requirements

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DemuxToy Lite minimum system requirements:

- Microsoft Windows® XP, Windows Vista, Windows 7 or Windows 8
- Microsoft .NET Framework: 2.0 or above
- 500 MB RAM minimum ~ Recommended: 2 GB or more
- 20 MB of hard-disk space for program installation
- Screen dimensions of 1024 x 768 or greater
- Recommendation is at least 2 GB of hard-disk space for decoded output from the scanning process



### Note

- The amount of RAM required depends upon the individual transport streams scanned. Streams with a high number of carousels could require 2GB+ RAM during scan.
  - Each transport stream is fully decoded to a user selected output folder on the hard-disk during a scan. The folder contents are kept between scans, thus this folder size may grow significantly after continued use. The user is urged to purge no longer required scan results over time.
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## Installation Process

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DemuxToy Lite for windows is supplied as a zipped Windows Installer Package (.msi) file that prompts the installation process.

Copy the **DemuxToyLiteInstaller.msi** to a temporary directory on the Windows PC the double click to run.

The installation wizard screen should appear as shown below.

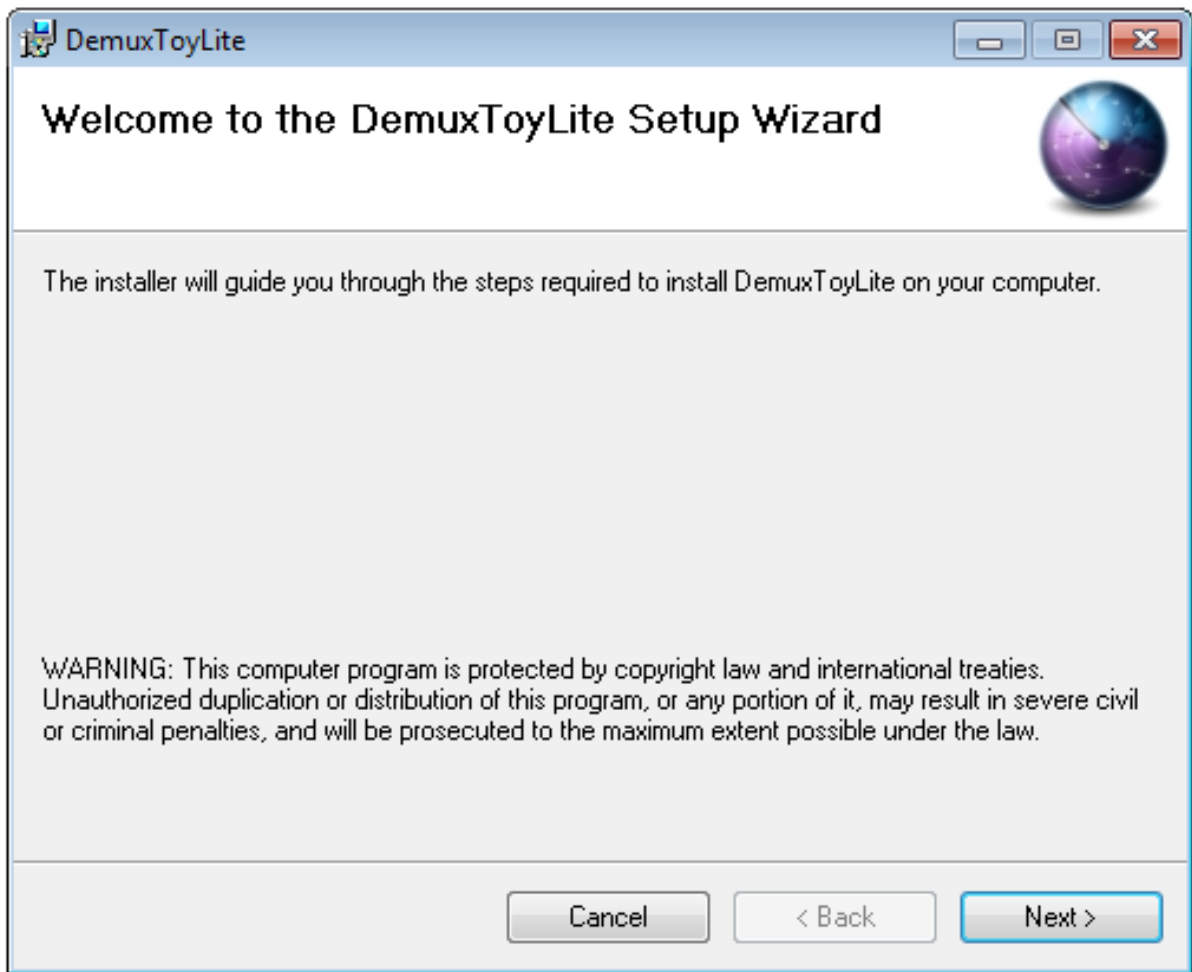
Press the **Next** button and follow the instructions and prompts on-screen to complete the installation process.



### Note

You have to be logged in as an administrator to install the software on a Windows ® platform.

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#### Note

DemuxToy Lite TS Analyser application is NOT signed as a publisher. Windows may prompt to run an unknown publisher. Click ok to proceed.

Follow the installer on-screen prompts and after a few clicks the program should be installed.

After successful installation run the newly installed DemuxToy application from the Windows® programs or applications menu.

**DemuxToy Lite is now ready for running scans.**

There is no license file required.

## 2

# Settings (optional)

DemuxToy Lite is installed with factory default settings and can be used without any further changes.

However settings control what components of the DVB transport stream are scanned and reported. It also determines the location on a hard-disk where DemuxToy will generate reports and demultiplexed data during a scan.

It is not necessary to change the default settings but it is recommended.

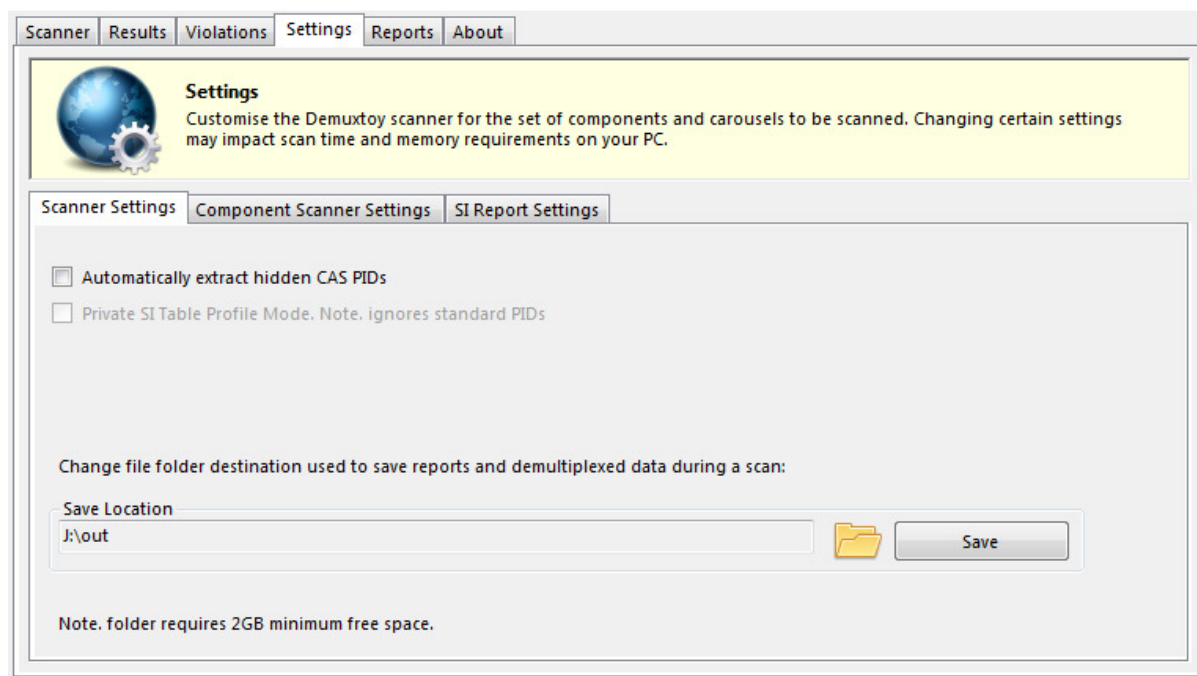
Turning off some scanner settings that are not of interest to your application will speed up scan times, save hard-disk space and reduce peak memory requirements.

## Scanner Settings

### Output folder

After installation it is recommended to change the factory default output folder that DemuxToy Lite will generate reports and decoded data during the scan process.

Click on the **Settings** tab.



Click the **Save** button and create a new folder on the hard-disk or browse to an existing.

All reports and demultiplexed data will be generated into this folder.



### Note

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- It is recommended to choose a non-network output folder destination with fast access times, since it will affect the time required to generate and produce scan reports at the end of the scan.
  - DemuxToy **will never automatically delete** previous scan results in this folder. Hence it is possible to retain scan results for as long as required between scans for troubleshooting.
  - DemuxToy can generate a **large volume of data over time**. Therefore it is recommended to periodically delete files you no longer require in the selected output folder and to monitor the available space on the drive / volume selected.
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## Scan Hidden PIDs

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Click the **Automatically extract Hidden CAS PIDs** box to aid troubleshooting of CAS systems to DVB receivers.



Automatically extract hidden CAS PIDs

When enabled, DemuxToy will automatically identify hidden PIDs that are not referenced within the SI tables. Each hidden PID type is then further classified as carrying section or PES data and the activity within that PID analysed and reported.

The content found within the PID is saved to the hard-disk under a folder name of **HIDDEN**.

1<sup>st</sup> and 2<sup>nd</sup> level hidden PID activity including private tables e.g. for ECM/EMMs, table repetition and violations are reported.



### Note

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The hidden PID function identification is on a best effort basis. It has no prior knowledge of individual private data. It is recommended to keep this setting unclicked unless you specifically debugging CAS private data

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## Component Scanner settings


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These settings control the automatic scanning of program components, codecs and carousels present within the transport stream.

Ticking a box does 2 things.

It provides a high level Analyser View of that component in the GUI.

It will also enable compliance checking and saving of any demultiplexed / decoded data and various reports to the output folder selected under the **Settings Tab**.



**Settings**  
Customise the Demuxtoy scanner for the set of components and carousels to be scanned. Changing certain settings may impact scan time and memory requirements on your PC.

Scanner Settings | Component Scanner Settings | **SI Report Settings**


- ☒ Scan DVB Subtitles
- ☐ Scan ITU Teletext System B pages
- ☐ Scan VBI Data Streams
- ☐ Scan Software Update Carousels
- ☐ Scan Interactive Application Carousels
- ☒ Scan Digital TV Recorder (DTR) Signalling
- ☐ Scan TV-Anytime Metadata Carousels
- ☒ Scan Audio Codec
- ☐ Scan Video Codec

Note. Carousel scanning may slow overall scan times and consume large amounts of CPU RAM and disk space. Disable if not required.

## SI Report Settings

This configures what MPEG/DVB SI tables and descriptors are written to the SI tables (XML) report (plus GUI) during a scan.

Scanner | Results | Violations | Settings | Reports | About



**Settings**  
Customise the Demuxtoy scanner for the set of components and carousels to be scanned. Changing certain settings may impact scan time and memory requirements on your PC.

Scanner Settings | Component Scanner Settings | **SI Report Settings**

- ☐ Show raw descriptor bytes
- ☒ Include cross carried tables e.g. SDT other, NIT other
- ☒ Include BATs
- ☒ Include EITpf
- ☒ Include EIT schedule
- ☒ Include AIT
- ☒ Include RCT

Show raw descriptor bytes will also add the raw descriptor bytes to the SI tables XML report to add further debugging.



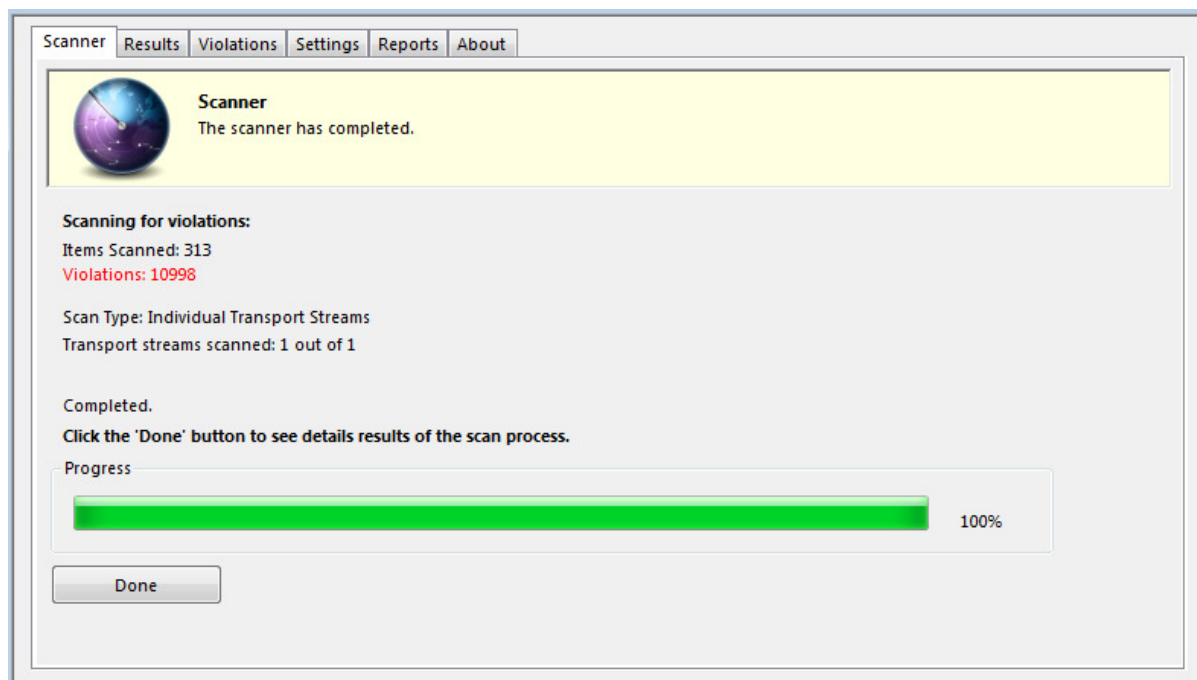
### Note

BAT tables can be quite large so disabling can reduce the XML file size and speed up viewing the file on most browsers

DemuxToy Lite interface supports 1-button scan operation for scanning Transport stream recordings.

Press the **Open** button and choose a transport stream recording.

Click on the **Scan** button.



DemuxToy Lite will automatically scan the Transport stream file and generate a set of Analyser Views to the GUI.

It will also write reports and various demultiplexed data to the output folder you have chosen under the Settings Tab.

The progress information includes a count of all items scanned within the transport stream.

Any violations against appropriate standards and STB profiles will be counted and shown on the UI in red.

Once the scan completes, press the **Done** button to view the scan results.

Clicking the Abort button during a scan will terminate it at the current point in the stream, presenting any intermediate results up to that position.



## Note

The scan process is approximately X10 real-time using a 32-bit operating system and a locally connected hard-disk source.

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## Results

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This presents the various analyser views of the last scan result.

Click on the **Results** tab to review the scan result.

There are many sub-tabs available under the Results tab, each presenting a different view of the result for easy browsing.

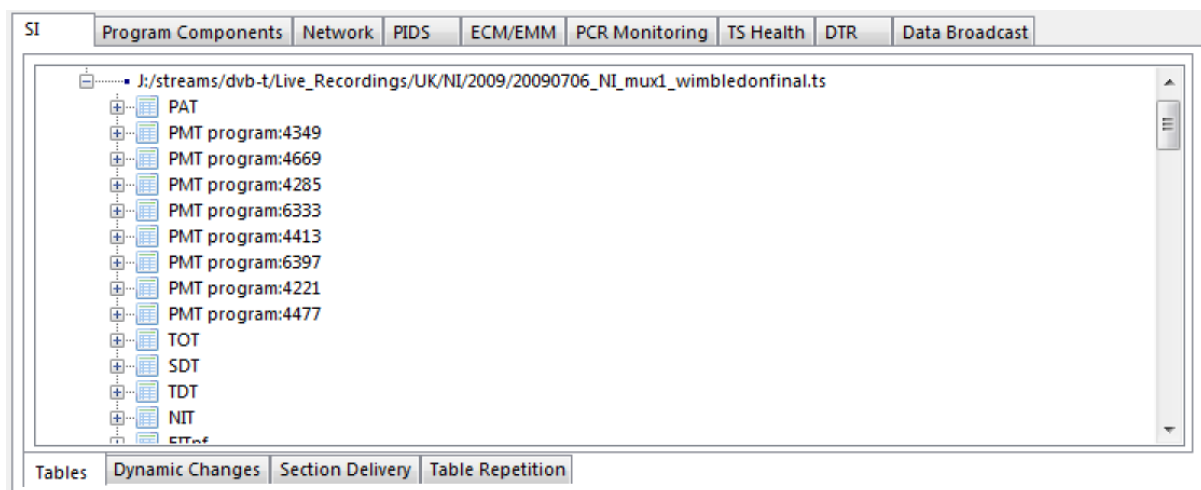
### SI Tab

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Presents different views of the raw SI information contained with the transport stream.

#### Tables

Shows the SI tables found within the stream and version changes. All tables, descriptors and streams are fully decoded for reference.



#### Note

- The SI information is also available as a hard-disk based XML report. Click the **Reports** top level tab to view.
  - EIT schedule tables are not shown on the GUI. They are only available as a hard-disk based report saved under a subfolder named **EIT**.
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### Dynamic Changes

The dynamic changes detected within the SI tables are displayed into plain text for easy troubleshooting.

This view quickly highlights the dynamic changes within the stream, without having to manually compare SI tables.



Dynamic changes supported include PMT PID movement, PID swapping, service started, stopped, moved, relocated and also various network reconfiguration events.

SI

Program Components	Network	PIDS	ECM/EMM	PCR Monitoring	TS Health	DTR	Data Broadcast
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Rule	Description
NIT.VersionChange	NIT 0x3018 update to version 1
NIT.NameChange	NIT 0x3005 (ver1) changes network Name to Northern Ireland#2
TOT.VersionChange	TOT changed time or zone
PMT.VersionChange	PMT program 768 update to version 4 (contents unchanged)
PMT.ComponentsAddition	PMT program 768 (ver4) 2nd Loop adds 2 components
SDT.VersionChange	SDT 0x17CD update to version 5
SDT.NameChange	SDT 0x2000 (ver5) changes service 256 name to BBC One HD
SDT.NameChange	SDT 0x2000 (ver5) changes service 256 provider name to BBC
PMT.VersionChange	PMT program 768 update to version 5 (contents unchanged)
PMT.ComponentsRemoval	PMT program 768 (ver5) 2nd Loop adds 2 components
SDT.VersionChange	SDT 0x17CD update to version 6
SDT.NameChange	SDT 0x2000 (ver6) changes service 256 name to BBC One HD

Tables	Dynamic Changes	Section Delivery	Table Repetition
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## Section Delivery

Shows SI table section delivery history for SI table sections.

Once a table is captured the section will only appear again in the case of a version change, dynamic change or violation at the section level.

Any violations at a section level will be highlighted in red e.g. partial table delivery or other section related errors.

## Table Repetition

Presents the SI and private table repetition times are presented in this view.

Any repetition violations are highlighted in red.

SI

Program Components	Network	PIDS	ECM/EMM	PCR Monitoring	TS Health	DTR	Data Broadcast
Table	PID	Sections	CRC_error	Avg Interval	Max Interval	Comments	
NIT (0x40)	0x0010	43	0	10.01s	10.01s	21 times > 10sec	
PAT (0x00)	0x0000	1122	0	189ms	418ms		
EITsch (0x51)	0x0012	1702	0	28.18s	28.49s		
EITpf (0x4E)	0x0012	1668	0	2.04s	2.23s	104 times > 2sec	
SDT (0x42)	0x0011	106	0	2.00s	2.10s	105 times > 2sec	
SDT (0x46)	0x0011	105	0	9.99s	9.99s		
EITsch (0x50)	0x0012	2604	0	27.50s	27.60s		
EITpf (0x4F)	0x0012	6687	0	5.01s	5.09s		
EITsch (0x60)	0x0012	3971	0	54.43s	54.84s		
EITsch (0x61)	0x0012	1987	0	0ms	0ms		
PMT (0x02) Program 4349	0x10FD	1119	0	190ms	450ms		
PMT (0x02) Program 4285	0x10BD	1118	0	190ms	451ms		

TablesDynamic ChangesSection DeliveryTable Repetition

If present, private tables from ECM/EMM delivery will also appear in this view plus DSM-CC sections for carousel delivery.

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**Figure 1** | **Flowchart illustrating the study design.**

[illegible]

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1



## EBU Teletext

## VBI Data

## Audio

SI	Program Components	Network	PIDS	ECM/EMM	PCR Monitoring	TS Health	DTR	Data Broadcast
	Stream	PID	Frames	Profile	Sample	Rate(Kbps)	Comments	
	Program 4671 MPEG-1 Audio Stream (eng)	0x026D	336	layer II	48.0KHz	256	Late Arrival Frames(100%)	
	Program 4671 MPEG-1 Audio Stream AD (eng)	0x026E	320	layer II	48.0KHz	64		
	Program 4164 MPEG-1 Audio Stream (eng)	0x0259	320	layer II	48.0KHz	256	Late Arrival Frames(100%)	
	Program 4164 MPEG-1 Audio Stream AD (eng)	0x025A	0	-	-	-	PID not transmitted	
	Program 4228 MPEG-1 Audio Stream (eng)	0x0263	288	layer II	48.0KHz	256	Late Arrival Frames(100%)	
	Program 4228 MPEG-1 Audio Stream AD (eng)	0x0264	0	-	-	-	PID not transmitted	
	Program 4415 MPEG-1 Audio Stream (eng)	0x0281	264	layer II	48.0KHz	192		

Program List	DVB Subtitling	EBU Teletext	VBI data	Audio
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## Note

An audio TXT report and a reconstructed audio bitstream (AUs) is also written to the output folder configured under the **settings** tab.

## Network Tab

## Multiplexes

Where available, the Multiplex type and modulation parameters are displayed.

SI	Program Components	Network	PIDS	ECM/EMM	PCR Monitoring	TS Health	DTR	Data Broadcast
Network		Multiplex	Type	Modulation	Services	Comments		
Digita Finland 0x3301 (ver10)		0x1001	DVB-T	562.0MHz (32c)	11			
		0x2001	DVB-T	658.0MHz (44c)	6			
		0x3001	DVB-T	674.0MHz (46c)	16			
					----- 33			

SI	Program Components	Network	PIDS	ECM/EMM	PCR Monitoring	TS Health	DTR	Data Broadcast
Multiplex	Service	LCN	Service-Id	Type	Running	freeCA	CMS	Comments
0x1049	BBC ONE	1	4169	TV	running	0	-	1 Regional Variants
	BBC TWO	2	4287	TV	running	0	-	1 Regional Variants
	BBC THREE	7	4288	TV	running	0	-	1 duplicates
	BBC FOUR	9	4544	TV	running	0	-	1 duplicates
	CBBC Channel	70	4608	TV	running	0	-	1 duplicates
	CBeebies	71	4672	TV	running	0	-	1 duplicates
	BBC NEWS	80	4352	TV	running	0	-	1 duplicates
	BBC Parliament	81	4736	TV	running	0	-	1 duplicates
	BBC Red Button	105	4416	TV	running	0	-	1 duplicates
	BBC Radio 1	700	6720	Radio	running	0	-	1 duplicates
	BBC RLX	701	5888	Radio	running	0	-	1 duplicates
	BBC Radio 2	702	6784	Radio	running	0	-	1 duplicates
	BBC Radio 3	703	6848	Radio	running	0	-	1 duplicates
Multiplexes	Bouquets	Actual Ts	Other Ts	Linkages	Target Regions	Network Change	Simulcasts	

The view also includes the Content Management Signalling (CMS) state of the service, if any.

For most networks, CMS is only signalled by the network for High Definition services.

0x40BD	UTV HD	103	20096	TV(HD)	running	0	Managed
	Channel 4 HD	104	17664	TV(HD)	running	0	Managed
	BBC HD	102	17472	TV(HD)	running	0	Managed
	BBC One NI HD	101	17597	TV(HD)	running	0	Managed
	303	303	19648	TV(HD)	running	0	Managed
	The Space	232	20288	Data	running	0	-

The comments field will show any violations in red e.g. LCN conflicts or assignment problems.

For DTT networks any regional or duplicated services are also automatically identified and commented e.g. in the above off-air recording BBC ONE and TWO both have regional variants available, whilst all the other BBC services have duplicate instances available, likely on different multiplexes.

## Other TS

Shows the list of DVB services defined by the network operator for other multiplexes (other TS).

The other multiplexes are defined fully by NIT or SDT definitions picked up within the currently scanned transport stream.

## Linkages

Shows any network, service or bouquets linkage defined within the transport stream.

## Target Regions

Presents network or bouquet level target region signalling for a DVB service.

DemuxToy contains a DVB standard target region decoder. It identifies the target regional hierarchy for a given service and decodes each using the target region name to ease debugging.

For non DTT streams, the country availability descriptor is substituted where applicable.



SI	Program Components	Network	PIDS	ECM/EMM	PCR Monitoring	TS Health	DTR	Data Broadcast
Multiplex	Service	LCN	Service-Id	Target Regions	Comments			
0x3008	The Space	232	20288	GBR/Northern Ireland				
	ITV3	10	16048	GBR/Northern Ireland				
				GBR/				
	QVC	16	13120	GBR/Northern Ireland				
				GBR/				
	G.O.L.D.	20	15552	GBR/Northern Ireland				
				GBR/				
	bid	23	14272	GBR/Northern Ireland				
				GBR/				
	Home	26	14976	GBR/Northern Ireland				
				GBR/				
	ITV2 +1	27	15952	GBR/Northern Ireland				
				GBR/				

SI	Program Components	Network	PIDS	ECM/EMM	PCR Monitoring	TS Health	DTR	Data Broadcast
Multiplex	Service	LCN	Service-Id	Target Regions	Comments			
0x1049	BBC ONE	1	4169	GBR/				
				GBR/England/Borders				
	BBC TWO	2	4287	GBR/				
				GBR/England				
	BBC THREE	7	4288	GBR/				
	BBC FOUR	9	4544	GBR/				
	CBBC Channel	70	4608	GBR/				
	Cbeebies	71	4672	GBR/				
	BBC NEWS	80	4352	GBR/				
	BBC Parliament	81	4736	GBR/				
0x107C	BBC Red Button	105	4416	GBR/				
	BBC ONE Scot	1	4220	GBR/				
				GBR/Scotland/Borders				

## Network Change

Identifies any scheduled network changes or reconfiguration planned by the network operator.

SI	Program Components	Network	PIDS	ECM/EMM	PCR Monitoring	TS Health	DTR	Data Broadcast
Network	Cell	Details	Comments					
Northern Ireland 0x3058 (ver29)	Cell 12353	ID: 7						
		Receivers: All						
		Type: Major - Default						
		MessageId: 2						
	Cell 12353	2012/10/23 23:00:00						
		(7 days, 19 hrs in past)						
		ID: 8						
		Receivers: All						
		Type: Major - Default						
		MessageId: 2						
	Cell 12353	2012/10/24 10:00:00						
		(7 days, 08 hrs in past)						
	Cell 12354	ID: 9						

Any violations are shown in red e.g. message Id not found, illegal types.

For every planned network change, the delta time between the arrival of the SI table first identifying the change and the actual schedule change time is shown. This is useful to quickly identify if the network change has already happened, is currently happening or is a future change.

## Simulcasts

Identifies any simulcast services

## PIDS Tab

Shows the PID multiplexing usage within the transport stream.

Each PID type is assigned a fully decoded plain text name.

SI	Program Components	Network	PIDS	ECM/EMM	PCR Monitoring	TS Health	DTR	Data Broadcast
PID	Reference	Usage	CC_Error	Notes				
0x0195	Program 14944 PMT	0.02%						
0x0196	Program 16144 PMT	0.02%						
0x0197	Program 14864 PMT	0.02%						
0x0198	Program 15504 PMT	0.02%						
0x019A	Program 15056 PMT	0.02%	1 errors					
0x019B	Program 15072 PMT	0.02%						
0x019C	Program 15088 PMT	0.02%						
0x0B40	Shared (3) ECM Kudelski SA (0x180A)	0.05%	1 errors					
0x1033	EMM Canal Plus (0x0100)	0.23%	9 errors					
0x1034	EMM Kudelski SA (0x180A)	0.03%						
0x17A1	Program 13120 MPEG-2 Video Stream (PCR)	4.21%	27 errors					
0x17A2	Program 13120 MPEG-2 Audio Stream (eng)	0.50%	11 errors	10 Dropped PES packets				
0x17A8	Program 13120 MHEG-5 UK Carousel (0x0002)	0.91%	21 errors					
0x17C2	Program 14688 MPEG-2 Audio Stream (eng)	0.50%	14 errors	12 Dropped PES packets				
0x17C8	Program 14688 MHEG-5 UK Carousel (0x0010)	0.01%						

Shared PIDs are identified.

Transport level violations are highlighted in red e.g. Continuity errors, dropped PES packets, PIDs not transmitted (multiplex errors).

## ECM/EMM Tab

Displays high level summary of CAS related Entitlement Control Messages (ECM) and Entitlement Management Messages (EMM) found in the stream.

For each CAS message found the 1<sup>st</sup> and 2<sup>nd</sup> level down activity is presented. For example, the total number of sections and what private sub-tables are carried within the PID.

Any violations are shown in red.



### Note

A CAS TXT report showing sections is also written to the output folder configured under the **settings tab**.

SI	Program Components	Network	PIDS	ECM/EMM	PCR Monitoring	TS Health	DTR	Data Broadcast
EMM/ECM		PID	Sections	TableId(s)	Comments			
EMM Canal Plus (0x0100)		0x1033	3613	0x82,0x84				
EMM Kudelski SA (0x180A)		0x1034	574	0x84				
EMM Kudelski SA (0x180A)		0x1036	0	-	No Sections Found			
EMM Kudelski SA (0x180A)		0x1038	0	-	No Sections Found			
Program 16096 ECM Canal Plus (0x0100)		0x0B40	813	0x80,0x81				

## PCR Monitoring Tab

Displays all PCR based timing sources available within the transport stream.

SI	Program Components	Network	PIDS	ECM/EMM	PCR Monitoring	TS Health	DTR	Data Broadcast
Program			PCR PID	PCRs	Interval	PCR_error	Comments	
Program 14272 MPEG-2 Video Stream (PCR)			0x1881	2477	1-71ms		Normal Broadcast	
Program 15952 MPEG-2 Video Stream (PCR)			0x1981	2468	1-72ms		Normal Broadcast	
Program 12928 MPEG-2 Video Stream (PCR)			0x1A11	2463	1-70ms		Normal Broadcast	
Program 12992 MPEG-2 Video Stream (PCR)			0x1A21	2458	1-75ms		Normal Broadcast	
Program 14372 MPEG-2 Video Stream (PCR)			0x1A81	2482	1-71ms		Normal Broadcast	
Program 16096 MPEG-2 Video Stream (PCR)			0x1A91	2483	1-71ms		Normal Broadcast	
Program 14532 MPEG-2 Video Stream (PCR)			0x1AA1	2591	1-75ms		Normal Broadcast	
Program 13024 MPEG-2 Video Stream (PCR)			0x1AD1	2458	1-71ms		Normal Broadcast	
Program 16048 MPEG-2 Video Stream (PCR)			0x1AE1	2454	1-72ms		Normal Broadcast	
Program 14498 MPEG-2 Video Stream (PCR)			0x1B11	2490	1-75ms		Normal Broadcast	
Program 14976 PCR PID			0x1911	-	-	-	PCRs not sent	
Program 15552 PCR PID			0x1961	-	-	-	PCRs not sent	

Show Histogram

An individual PCR source may be a dedicated PCR or carrying within adaptation fields of another PID.

The same PCR source may be reused for different programs.

Summary level information about each PCR is shown, including the total PCR values found and the interval between each insertion.

A PCR arrival histogram is available by clicking the **Show Histogram** button.



### Note

A PCR TXT file containing raw PCR values is also written to the output folder configured under the **settings tab**.



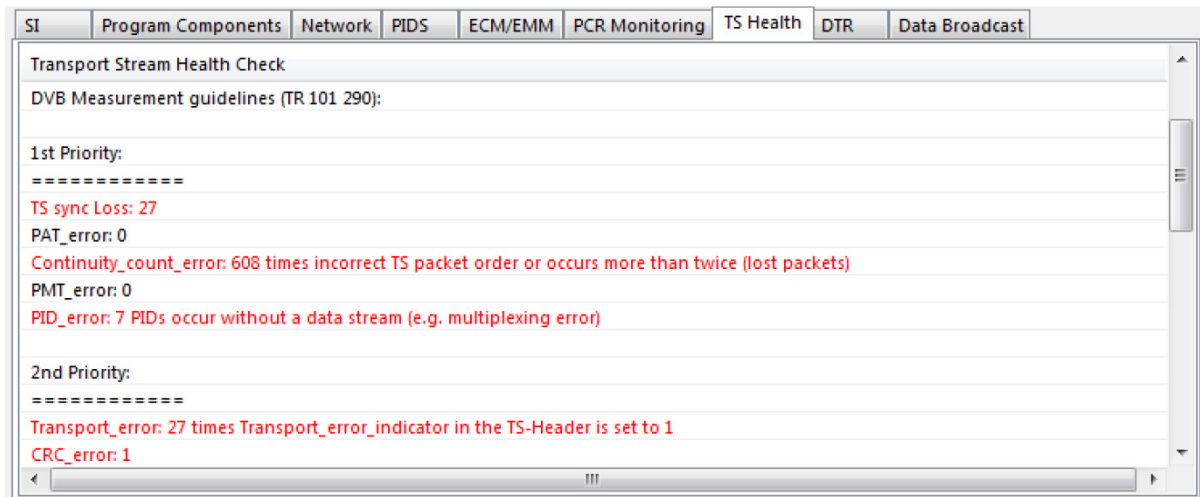
## TS Health Tab

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Displays information about the overall health of the transport stream scanned.

The calculated MPEG2 transport rate is shown, TS packet size and overall recording duration.

The display includes the main 1<sup>st</sup>/2<sup>nd</sup>/3<sup>rd</sup> priority DVB measurement guidelines according to TR 101 290.



## Digital TV Recorder (DTR) Tab

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This displays SI signalling from the transport stream scan that is relied upon by receivers with DTR capabilities.

### EITpf

Displays EITpf triggers present and dynamic changes to the EITpf signalling over the stream.

EITpf state of the service is shown, where EITpf means the service is expected to have EITpf events.

Any violations found within the EIT are shown in red.



### Note

EITpf is also available as part of the standard SI hard-disk report, if enabled by settings. Click on the **Reports** tab and the SI tab to view.

SI	Program Components	Network	PIDS	ECM/EMM	PCR Monitoring	TS Health	DTR	Data Broadcast
Service	LCN	EITpf	Events	Comments				
GOD TV	235	1	0 events					
SONY SAB	236	1	0 events					
Marketplace	50	1	0 events					
E4+1	29	1	How I Met Your Mother v13 (running)					
			The Big Bang Theory v13 (not running)					
talkSPORT	723	1	Drivetime v3 (running)					
			Kick Off v3 (not running)					
Sky Text	206	1	Sky Text v2 (running)					
			Sky Text v2 (not running)					
Dave	12	1	Man v. Food v12 (running)					
			QI v12 (not running)					
Sky News	82	1	Sky News v18 (running)					
			Jeff Randall Live v18 (not running)					

## EIT Schedule

Displays EIT schedule summary information per service.

Violations are shown in red e.g. if the schedule has gaps, overlaps and other problems that may affect the TV guide display on a receiver.

A count of the total number of the events per service is presented, plus the total events in the EIT schedule.

SI	Program Components	Network	PIDS	ECM/EMM	PCR Monitoring	TS Health	DTR	Data Broadcast
Service	LCN	EITsch	Events	Comments				
BBC ONE NI	1	1	79 events	3 gaps in schedule				
BBC TWO NI	2	1	101 events	3 gaps in schedule				
BBC NEWS	80	1	91 events	1 gaps in schedule				
BBC Red Button	105	0	0 events					
CBBC Channel	70	1	80 events	2 gaps in schedule				
BBC Radio Ulster	719	1	62 events	3 gaps in schedule				
BBC Radio Foyle	720	1	64 events	1 gaps in schedule				
BBC THREE	7	1	48 events	3 gaps in schedule				
UTV	3	1	228 events					
Channel 4	4	1	239 events					
E4	28	1	197 events					
Teletext	100	1	48 events					
Rabbit	102	1	56 events					

## CRIDs

Displays the TV-Anytime CRIDs present in the stream and the list of event locators per CRID.

Programme, Series and recommendation CRIDS are decoded and displayed.

Any violations in the CRIDS are shown in red.



**Note**

CRIDs are available written to individual hard-disk based reports for processing by external programs. Click on the **Reports** tab and the SI tab to view.

SI	Program Components	Network	PIDS	ECM/EMM	PCR Monitoring	TS Health	DTR	Data Broadcast
CRID	Locator	EventID	Event Name	Comments				
/12448401	0x233a/0x2014/8376	14137	All Star Family Fortunes					
/1278913	0x233a/0x3008/16048	19264	Stiff Upper Lips					
/13157346	0x233a/0x3008/15952	17048	Judge Judy					
	0x233a/0x2014/8325	17015	Judge Judy					
	0x233a/0x2014/8325	17048	Judge Judy					
	0x233a/0x3008/15952	17015	Judge Judy					
/13159844	0x233a/0x6041/28032	42381	World's Wildest Police Videos					
/139377	0x233a/0x3008/16048	22390	Duty Free					
/141723	0x233a/0x3008/16048	22399	Duty Free					
/142558	0x233a/0x5041/23040	54174	Barefoot Contessa	No CRID Authority				
/14651994	0x233a/0x6041/28032	40121	World's Wildest Police Videos					
/146910	0x233a/0x3008/16048	14090	Murder, She Wrote					
/147930	0x233a/0x5041/23040	54204	Barefoot Contessa - Back to Basics	No CRID Authority				

## Event Linkages

Highlights all Event linkages present within the EIT tables.

Any violations are shown in red.

## Carousels / Data Broadcast Tab

The Carousel (data broadcast tab) displays the summary level information of all DSM-CC data or object carousels within the stream.

Every carousel is automatically mounted and scanned in real-time.

## Software Update

Displays summary information for software update carousels present (SSU, DTG-OAD).

## Metadata

Displays information for TV-Anytime (TV-A) metadata transported by DSM-CC object carousels.

## MHEG-5

Displays information for MHEG-5 or MHP interactive applications transported by DSM-CC object carousels

## GUIDEPlus+

Displays information for GuidePlus+ carousels.

## HbbTV

Displays information for HbbTV carousels.

# 5

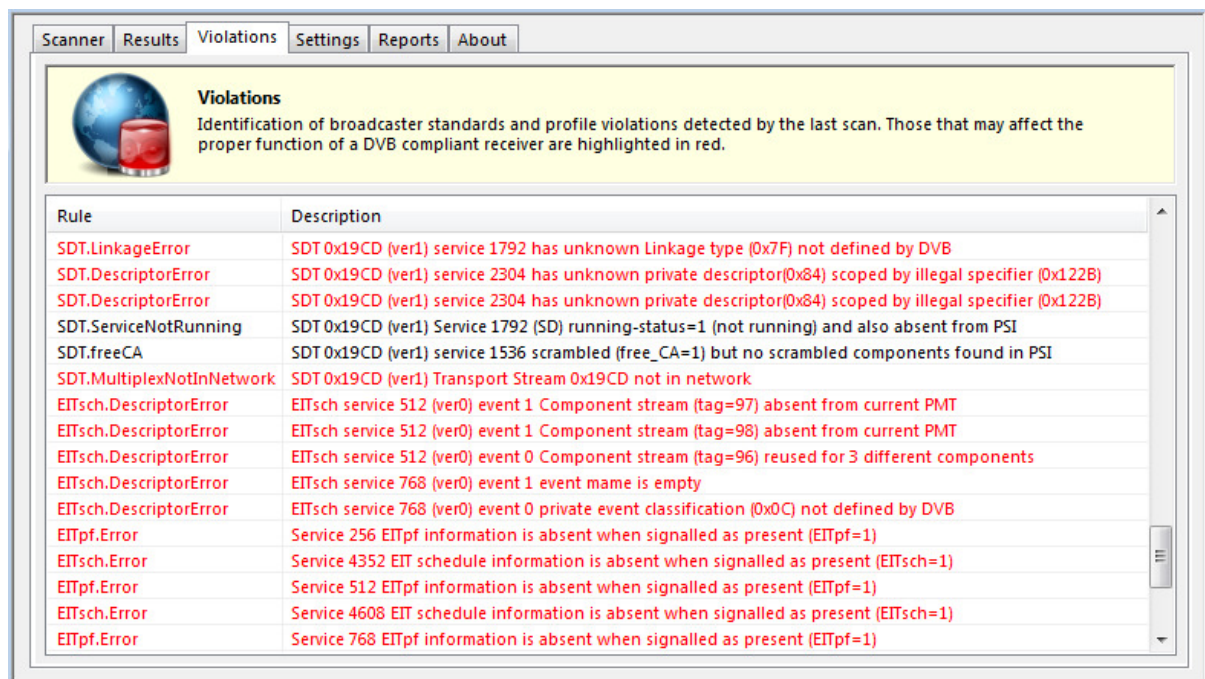
## Violations

DemuxToy Lite Analyser has contains a demo of the automatic verification functionality available in DemuxToy Verify.

DemuxToy Verify helps by automatically highlighting issues in the transport stream that may manifest as a problem in the STB, particularly within Service Information (SI) signalling, EPGs, carousels, metadata and so on.

The demo in the lite edition is limited to around 200 checking rules.

A summary of the violations found during the last scan appear under the **Violations** tab.



The screenshot shows the 'Violations' tab in the DemuxToy Verify application. It features a yellow header with a globe icon and a title 'Violations'. Below the header is a descriptive text: 'Identification of broadcaster standards and profile violations detected by the last scan. Those that may affect the proper function of a DVB compliant receiver are highlighted in red.' The main area contains a table with two columns: 'Rule' and 'Description'. The table lists 15 violations, with the first 10 highlighted in red text to indicate they affect the proper function of a DVB receiver.

Rule	Description
SDT.LinkageError	SDT 0x19CD (ver1) service 1792 has unknown Linkage type (0x7F) not defined by DVB
SDT.DescriptorError	SDT 0x19CD (ver1) service 2304 has unknown private descriptor(0x84) scoped by illegal specifier (0x122B)
SDT.DescriptorError	SDT 0x19CD (ver1) service 2304 has unknown private descriptor(0x84) scoped by illegal specifier (0x122B)
SDT.ServiceNotRunning	SDT 0x19CD (ver1) Service 1792 (SD) running-status=1 (not running) and also absent from PSI
SDT.freeCA	SDT 0x19CD (ver1) service 1536 scrambled (free_CA=1) but no scrambled components found in PSI
SDT.MultiplexNotInNetwork	SDT 0x19CD (ver1) Transport Stream 0x19CD not in network
EITsch.DescriptorError	EITsch service 512 (ver0) event 1 Component stream (tag=97) absent from current PMT
EITsch.DescriptorError	EITsch service 512 (ver0) event 1 Component stream (tag=98) absent from current PMT
EITsch.DescriptorError	EITsch service 512 (ver0) event 0 Component stream (tag=96) reused for 3 different components
EITsch.DescriptorError	EITsch service 768 (ver0) event 1 event name is empty
EITsch.DescriptorError	EITsch service 768 (ver0) event 0 private event classification (0x0C) not defined by DVB
EITpf.Error	Service 256 EITpf information is absent when signalled as present (EITpf=1)
EITsch.Error	Service 4352 EIT schedule information is absent when signalled as present (EITsch=1)
EITpf.Error	Service 512 EITpf information is absent when signalled as present (EITpf=1)
EITsch.Error	Service 4608 EIT schedule information is absent when signalled as present (EITsch=1)
EITpf.Error	Service 768 EITpf information is absent when signalled as present (EITpf=1)

Each violation has a Rule Identification referencing the origin of the violation. For example, **SDT.LinkageError** is a violation of a linkage descriptor appearing within an SDT.

The description should fully qualify the instance of that SDT and the nature of the violation.

Violations that could affect the proper function of a DVB receiver are shown in red. Others are potential violations that are either expected in some network conditions or else usually benign to a receiver.

# 6

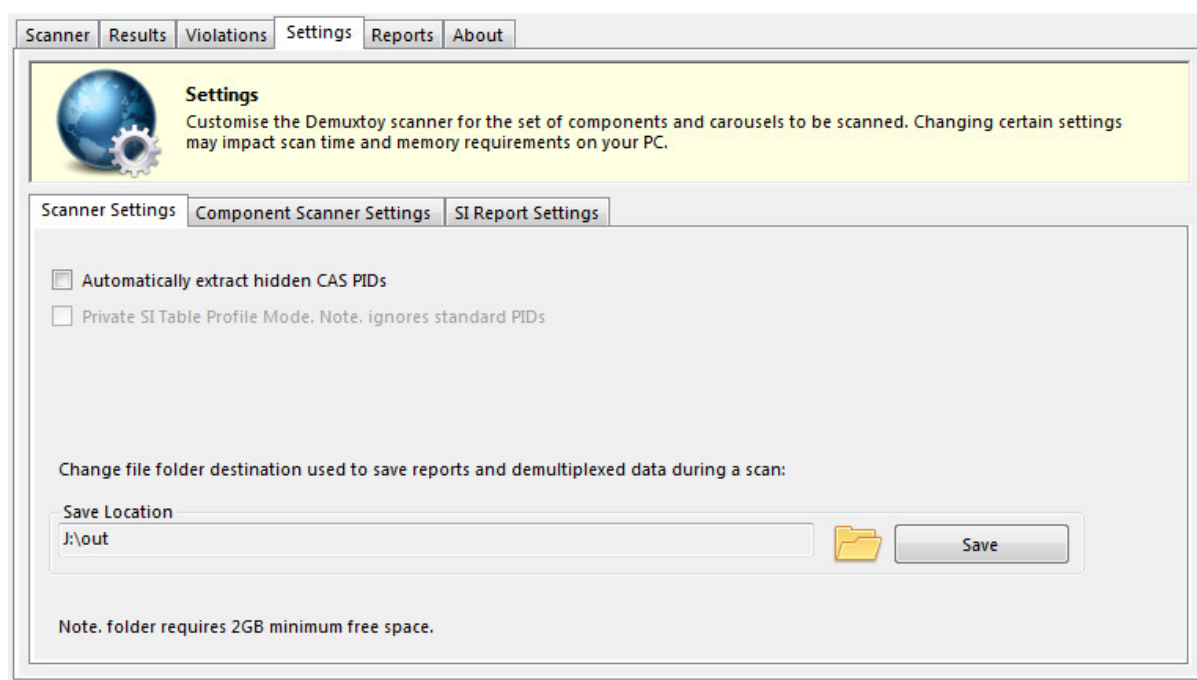
## Reports

During a scan DemuxToy Lite automatically generates a detailed set of reports and demultiplexed data per transport stream recording.

You can view the SI tables report (XML) by clicking Reports and then double clicking the XML file shown on the screen.

You can view further reports and demultiplexed data using an external file explorer (e.g Windows Explorer) and browsing to the folder currently defined under the Settings tab.

This folder holds all the output files and reports from every TS recording performed using the Analyser.



### Note

The content and detail within the SI report can be customised by choosing the **Settings** tab and **SI Report Settings**.