ISO 9001:2000
Cert. N°4500/1

Software User Manual
ARK6

External Document

Document name: SDT_ARK6_User_Manual_ENG_vATSC
Document code: ARK6-UM-000
Author: C. Di Biase
Date: September 23rd, 2011
Version: 1.1

SCREEN SERVICE BROADCASTING TECHNOLOGIES S.p.A.
Via G. Di Vittorio, 17 - 25125 Brescia - Italy - Phone: + 39 030 57831 - Fax: +39 030 5783888 - E-mail: info@screen.it
C.F. e P. IVA IT 02235770241 - R.E.A. BS 458947 - Cap. Soc. € 13.190.476,00 int. vers. - screen.it

Table of Contents

1 Document structure

This ARK6 User Manual has the following chapters and appendices:

- **Chapter 1 – Document structure.**
- **Chapter 2 – Scope of the document.**
- **Chapter 3 – Introduction**
  This chapter contains an overview of ARK6 and its features.
- **Chapter 4 – Specifications**
  This chapter lists the ARK6 specifications.
- **Chapter 5 – Java remote graphic user interface.**
  This chapter describes the Java interface provided for board managing.
- **Chapter 6 – Local user interface.**
  This chapter describes the local user interface provided for board managing.
- **Chapter 7 – SNMP - Simple Network Management Protocol**
  This chapter describes the SNMP interface provided for board managing.
- **Appendix A – Java Virtual Machine.**
  Appendix with all instruction needed to manage Java Virtual Machine.
- **Appendix B – Application Note.**
  Appendix with all instructions needed to update ARK6 devices.
- **Appendix C – Document versions.**
  Appendix with additional information, the present document versions.
- **Appendix D – List of Tables.**
- **Appendix E – List of Figures.**

2 Scope of the document

Purpose of this document is to provide a comprehensive description of the functionalities of the **SDT Series ARK-6** and to provide operating information on the software elements of the ARK6 system.

SDT ARK6 User Manual provides software setup information and includes an overview of Java, SNMP and Local user interfaces.

3 Introduction

The SDT ARK-6 Series has been designed as a brand new model of software defined transmitters which incorporate all the technical and functional capabilities of the previous models of the ARK-1 family (ARK-1, ARK-R, ARK-T, ARK-ATSC, ECHO-2) together with a complete set of new functionalities that bring the transmitter at the forefront of the technology edge.

The New SDT ARK-6 Series is the result of years of research and represents the state of the art of the worldwide transmitter technology. We call it UNIVERSAL DRIVER because of its incredible capability to modulate in all schemes, just uploading a proper software package. It is perfect for both international broadcasters which have business in several countries to increase manageability of investment through reduction of transmitter types and national broadcasters, due for its versatility in operation modes and configuration. In fact it can be used as a Transmitter, an Heterodyne Transposer, a Regenerative Transposer and Single Frequency Echo Canceller (proper to Single Frequency Networks), all in a single hardware.

ARK-6 UNIVERSAL DRIVER is resilient to future evolutions of technology and standardization: this platform guarantees a perfect upgrade path for new modulation schemes that the researchers will delivery. Besides ARK-6 UNIVERSAL DRIVER already implements DVB-T/T2, PAL, ATSC/MH, NTSC, ISDB-T modulations. The SDT ARK-6 allows selection of transmission modes in various ways: remotely, using a dry contact; via SNMP commands; via TCP/IP, using the Web graphic interface; or even via a dedicated command inserted into the transport stream. Functional interfaces are available for total remote control of the apparatus by means of serial protocols or TCP/IP ports. Thanks to the internal Web server the apparatus can be easily monitored and configured and updated using a LAN connection and a standard Web browser. Moreover, the built-in SNMP agent allows full automated remote control.

Based on Software Defined Technology, ARK-6 allows the definition of different operative modes on the same hardware platform. A single software controller allows the ARK-6 to be loaded with up to five working modes simultaneously and to switch between them preserving each mode-specific configuration.

The SDT ARK-6 Series specifications can be found in chapter 4.

A brief description of the main features and potentialities of each operative mode follows in next paragraphs.

The following table shows all the allowed hardware configurations.

Table 1. Hardware options

Front-End	Modulation				
	DVB-T/H	***DVB-T2***	***ISDBT***	***ATSC***	***ITU***
None	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
DVB-S/S2	Transmitter with DVB-S/S2 RF input	Transmitter with DVB-S/S2 RF input	Transmitter with DVB-S/S2 RF input	Transmitter with DVB-S/S2 RF input	X
DVB-S/S2 + CAM	Transmitter with DVB-S/S2 RF input (with CAM)	Transmitter with DVB-S/S2 RF input (with CAM)	Transmitter with DVB-S/S2 RF input (with CAM)	Transmitter with DVB-S/S2 RF input (with CAM)	Transmitter with decoded DVBS2 RX input
DVB-T/T2	Regenerative Transposer Heterodyne Transposer Echo Canceller	Regenerative Transposer Heterodyne Transposer Echo Canceller	X	X	X
ISDBT	X	X	Regenerative Transposer Heterodyne Transposer Echo Canceller	X	X
ATSC	X	X	X	Regenerative Transposer Heterodyne Transposer Echo Canceller	X
DIGITALIZER	X	X	X	X	Transmitter with A/V analog inputs

3.1 Digitizer features

Supports the A/D conversion and decoding of NTSC and PAL CVBS inputs

Supports 2 CVBS video and 2 L/R audio inputs

Adaptive 2-D, 5-line, adaptive comb filter

Automatic video standard detection (NTSC/PAL)

Automatic video standard switching

Luma-peaking with programmable gain

3.2 Satellite receivers features

3.2.1 DVB-S/S2

Input DVB-S and DVB-S2 demodulator that conforms to ETSI EN 300 421 and ETSI TR 102 376 respectively.

Dual multi standard demodulation:

- Legacy DVBS and DirecTVTM QPSK
- DVBS2 QPSK, 8PSK, 16 and 32APSK
- Multi-tap equalizer for RF reflection removal
- Wide range carrier frequency tracking loop for offset recovery

Dual multi standard decoding:

- DVBS or DirecTVTM legacy
- DVBS2 FEC and framing
- Up to 190 Mbit/s channel bit rate

Bit error rate monitoring

3.2.2 DVB-S/S2 plus CAM

Input DVB-S and DVB-S2 demodulator that conforms to ETSI EN 300 421 and ETSI TR 102 376 respectively.

Dual multi standard demodulation:

- Legacy DVBS and DirecTVTM QPSK
- DVBS2 QPSK, 8PSK, 16 and 32APSK
- Multi-tap equalizer for RF reflection removal
- Wide range carrier frequency tracking loop for offset recovery

Dual multi standard decoding:

- DVBS or DirecTVTM legacy
- DVBS2 FEC and framing
- Up to 190 Mbit/s channel bit rate

Bit error rate monitoring

DVB common interface compliant

H.264/AVC Level 4.1 high profile video decoder

MPEG-2 HD/SD video decoder MP@HL

Programmable audio decoder supporting: MPEG1 layer 1, 2 and 3 (MP3), Dolby Digital, AAC LC

4 transport stream decoders and DVB descramblers

Teletext / WSS / PDC / CC / VBID insertion

Cross Colour / Cross Luminance Filters

PAL/NTSC/SECAM digital encoder

ITU-R 656 video input & output

Analog HD output via YPrPb

S/P-DIF output for PCM / MPEG / Dolby Digital 5.1

3.3 Terrestrial receivers features

3.3.1 ATSC

Agile VHF/UHF input Down-conversion (from 50.5 MHz up to 862 MHz)
Input adjustable offset frequencies: from -200 kHz to +200 kHz (1 Hz step)
Input ATSC demodulator that conforms to the ATSC A/53 standard
8VSB demodulator including a highly efficient adaptive equalizer
Excellent performance under static and dynamic multi-path environment
Fully A-74 and NTIA/CECB compliant
Dual AGC for optimal RF versus IF gain control
Fully-integrated digital channel filter reduces external IF circuitry to single SAW filter and VGA
Incorporates SNR monitor and BER monitor
Input RF signal level monitoring

3.4 ITU Transmitter features

The ARK-6 ITU is an ITU-R BT.470-6 compliant Transmitter. The key features of the ARK-6 ITU are:

- Standard SDI inputs (SMPTE 259M-C – Component 4:2:2);
- Agile UHF output Up-converter (from 470 MHz up to 862 MHz). The VHF option is also available.
- Output adjustable offset frequencies: from -200 kHz to +200 kHz (1 Hz step).

3.4.1 ITU Features

Inputs	4 SDI, 2 CVBS (optional) and 2 L/R (optional)
Supported SDI Standard	SMPTE 259M-C – Component 4:2:2 270Mb/s for 525 and 625 lines, 13.5 MHz sampling, 4x3 and 16x9 aspect ratios.
Outputs	1 RF, 1 RF Monitor 2 SDI for inputs bypass
Test modes	CW, CW AV, Mute Audio Carrier, Mute Audio, Audio Test Tone, Video In, SMPTE Bars, Horizontal Bars, Red Field, ITS0, ITS1, ITS2, ITS3 and ITS4.
Pre-correction	Linear Compensation Non-Linear Compensation
Redundancy	Input autoswitch algorithm supported

3.4.2 ITU Signal Processing

Digital audio channels presence and level monitoring.

Analog audio sampling rate fixed to 48 kHz.

Input redundancy provided by an input autoswitch algorithm based on primary feed presence (SDI and CVBS).

Selectable Group Delay curve.

Selectable Audio Type.

Selectable Sound System.

Selectable Emphasis.

Adjustable Audio Deviation and Carriers Level.

Adjustable White Level, Synchronism Amplitude and Pedes Level.

Non-Linear Precorrection.

Linear Precorrection.

3.5 ATSC Transmitter features

The ARK-6 ATSC is an A/53 and A/153 compliant Transmitter. The key features of the ARK-6 ATSC are:

- SMPTE-310M with 19.39 Mbps, DVB-ASI (EN-50083/9) and Gigabit Ethernet (PRO-MPEG COP3 R2) inputs;
- Agile UHF output Up-converter (from 470 MHz up to 862 MHz). The VHF option is also available.
- Output adjustable offset frequencies: from -200 kHz to +200 kHz (1 Hz step).

3.5.1 ATSC Features

Inputs	4 ASI, 2 TSoIP channels and 1 RF(optional)
Outputs	1 RF, 1 RF Monitor 2 ASI and 2 TSoIP channels for inputs bypass
Test modes	CW, Force Null Packets
Monitoring	Output signal level and quality monitoring
Pre-correction	Adaptive Linear Compensation Adaptive Non-Linear Compensation
Redundancy	Input autoswitch algorithm supported

3.5.2 ATSC Signal Processing

Input stream monitoring
On-The-Fly substitution of Major and Minor channel numbers in the TVCT for user selectable ones.
PCR restamping
Null packets deletion
Bit rate adaptation through Null packets insertion
M/H mode supported
M/H Regenerative mode up to 8 M/H number of groups supported
User selectable input autoswitch criteria based on primary feed quality (RF, ASI and TSoIP)
Linear and Non-Linear Adaptive Precorrections

3.6 System Features

Synchronization	External or GPS
Internal clock	Oven Controlled OCXO oscillator (10 MHz and 1 PPS)
Output clock	1 PPS and 10 MHz
Management	Embedded SNMP v1 server Embedded Web server
GbE Ports	GbE 1: 10/100/1000 Base T Management port GbE 2: 10/100/1000 Base T Data port
Security	Authentication for GUI access supported.

3.7 Synchronization

The ARK6 includes a holdover function provided by a higher grade Oven-Controlled Crystal Oscillator.

The ARK6 is equipped with an internal OCXO for improved phase noise and stability. The system is provided with internal 10MHz and 1PPS signals which are disciplined to the GPS time signal or to the 10MHz and 1PPS external references. The stability of internal frequency and phase is assured by the highly stable OCXO. If the satellites signal, from the GPS receiver, or the external reference sources are completely lost, the Holdover mode enables the unit to keep working with internal 10MHz and 1PPS for the duration of the Holdover Timeout, with very low drift over time.

4 Specifications

4.1 Input Interfaces

ASI/SSI/SDI	
Number of inputs	4
Connector	BNC
Zin	75 Ohm
Input voltage	800 mVpp (500 to 1200 mVpp)
Supported standards	CEI EN 50083-9 SMPTE 310M SMPTE 259M

TSoIP	
Number of channels	2
Connector	RJ45
Speed	10/100/1000

RF	
Number of inputs	1
Connector	N female
Frequency	UHF (VHF optional)
Level	-76 dB to -16 dB
Zin	50 Ohm
Supported standards	It depends on the FE Type.

CVBS	
Number of inputs	2
Connector	BNC
Zin	75 Ohm
Input Voltage	1 Vpp
Supported standards	PAL NTSC

Analog Audio	
Number of inputs	2 L/R
Connector	XLR3 (Cannon f)
Zin	600 Ohm balanced
Input level	+6dBm +/- 6 dB
Supported standards	EIA RF-297-A

GPS	
Number of inputs	1
Connector	TNC
Zin	50 Ohm
Sensitivity	-185dBW

10 MHz	
Number of inputs	1
Connector	BNC
Zin	50 Ohm
Input voltage	2 Vpp

1PPS	
Number of inputs	1
Connector	BNC
Zin	50 Ohm
Input voltage	TTL (min 1,7 V)
Pulse width	100 us

Linear Precorrection	
Number of inputs	1
Connector	SMA
Zin	50 Ohm
Input level	-20 to +11,5 dBm

4.2 Output Interfaces

RF	
Number of outputs	1
Connector	N Female
Frequency	UHF (VHF optional)
Zout	50 Ohm
Spectrum polarity	Non-inverted (inverted optional)
Harmonic and spurious	<-50dBm below 1 GHz
	Digital
Level	SDTx200: 18 to 38 dBm SDTx500: 21 to 41 dBm SDTx201: SDTx501: 36 to 56 dBm SDTx501-ATSC: 38 to 58 dBm
Spectrum outside band	+/-3,8 MHz: 0 dB +/-4,25 MHz: < 46 dB +/-5,25 MHz: < 56 dB
MER	SDTx500/200/201: > 38 dB SDTx501: >36 dB
	Analog
Level	SDTx200: 24 to 44 dBm SDTx500: 28 to 48 dBm SDTx201: SDTx501: 40 to 60 dBm
RF Output Reverberate Loss	≥13dB
Video Modulation Degree	87.5%
Video Flatness	±1.0dB

TSoIP	
Number of channels	2
Connector	RJ45
Speed	10/100/1000
Standard	PRO-MPEG COP3 R2

ASI Out Monitor	
Number of outputs	2
Connector	BNC
Zout	75 Ohm
Output voltage	800 mVpp (500 to 1200 mVpp)
Supported standards	CEI EN 50083-9 SMPTE 310M SMPTE 259M

RF Mon	
Number of outputs	1
Connector	SMA
Frequency	UHF (VHF optional)
Level	-40 dBm RF Out
Zout	50 Ohm

10 MHz	
Number of outputs	1
Connector	SMB
Zout	50 Ohm
Output voltage	2 Vpp

1PPS	
Number of outputs	1
Connector	SMB
Zout	50 Ohm
Output voltage	TTL (min 2,4 V)
Pulse width	100 us

4.3 Control Interfaces

GbE 1		**RS485**	
Number of interfaces	1	Number of interfaces	1
Connector	RJ45	Connector	DB9
Speed	10/100/1000	Type	CAM BUS (Not available)

OPTO		**Relays**	
Number of outputs	4	Number of outputs	4
Connector	SUB-D 15p Female	Connector	SUB-D 25p Female
Max current	-5 mA	Max voltage	125VAC / 60VDC @ 0,3A – 30VDC @ 1A

RS232	
Number of interfaces	1
Connector	DB9
Speed	Up to 230400 bps
Data	8-bit data
Parity	No parity bits
Flow control	None
Stop	1 stop bit

4.3.1 RS232 pinout

Usually personal computers use a standard RS 232 DE-9 connector.

Figure 1. DE-9 Male connector

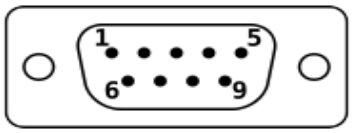


Table 2. RS232 DE-9 pinout

DE-9 Pin	Name	Direction	Description
2	RXD	←	Receive Data
3	TXD	→	Transmit Data
5	GND	-	System Ground

4.3.2 TLC pinout

ARK6 has a SUB-D 15p Female connector for OPTOs with customized pin assignments.

Figure 2. TLC connector

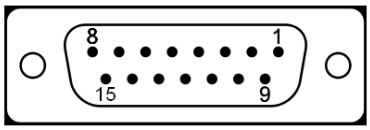


Table 3. TLC pinout

Pin	Signal	Pin	Signal
1	IN_OPTO_0	9	O_GND_0
2	IN_OPTO_1	10	O_GND_1
3	IN_OPTO_2	11	O_GND_2
4	IN_OPTO_3	12	O_GND_3
5	OPTO_GND	13	OPTO_GND
6	VCC_P	14	VCC_P
7	GND	15	GND
8	NC	-	-

4.3.3 TLS pinout

ARK6 has a SUB-D 25p Female connector for Relays with customized pin assignments.

Figure 3. TLS connector

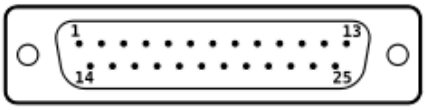


Table 4. TLS pinout

Pin	Signal	Pin	Signal
1	RL_NC0	14	RL0_NC0
2	RL_COM0	15	RL0_COM0
3	RL_NO0	16	RL0_NO0
4	RL_NC1	17	RL1_NC1
5	RL_COM1	18	RL1_COM1
6	RL_NO1	19	RL1_NO1
7	RL_NC2	20	RL2_NC2
8	RL_COM2	21	RL2_COM2
9	RL_NO2	22	RL2_NO2
10	RL_NC3	23	RL3_NC3
11	RL_COM3	24	RL3_COM3
12	RL_NO3	25	RL3_NO3
13	NC	-	-

4.4 Power Supply

IEC	1
Voltage	80 – 264 VAC
Frequency	50 – 60 Hz

ARK6 1U Mains Consumption [Test on ch. 21]

MODE	PWR [dBm]	Vac [Volt]	Iac[Amp]	Consumption [W]
ST-BY	-	225	0,35	78,8
Power OFF	-	225	0,40	90,0
Power ON	21	225	0,62	139,5
Power ON	31	225	0,64	144,0
Power ON	37	225	0,71	159,8
Power ON	41	225	0,80	180,0

ARK6 2U Mains Consumption [Test on ch. 21]

MODE	PWR [dBm]	Vac [Volt]	Iac[Amp]	Consumption [W]
ST-BY	-	225	0,35	78,8
Power OFF	-	225	0,40	90,0
Power ON	40	225	1.9	425
Power ON	47	225	2.9	650
Power ON	50	225	3.7	830
Power ON	52	225	4.4	990
Power ON	53 (1)	225	4.9	1100

Note to the table:

(1) If required.

ARK6 3U Mains Consumption [Test on ch. 45]				
MODE	PWR [dBm]	Vac [Volt]	Iac[Amp]	Consumption [W]
ST-BY	-	225	0,35	78,8
Power OFF	-	225	0,40	90,0
Power ON	43	225	2.8	630
Power ON	50	225	4.5	1010
Power ON	53	225	5.7	1280
Power ON	55	225	6.8	1530
Power ON	56 (1)	225	7.4	1660

Note to the table:

(1) If required.

4.5 Environmental Specification

Climatic Temperature range operating	0 °C to +40 °C (+32 °F to +104 °F)
Temperature range within specs	+5 °C to +45 °C (41 °F to +113 °F)
Temperature range storage	-30 °C to +70 °C (-22 °F to +158 °F)
Humidity operating	max 90% RH
EMC	Compliant to EN50022 (emission) and EN55024 (immunity)
Safety	Compliant to EN60950-1
RoHs	Compliant with directive 2002/95/EC

4.6 Mechanical Specification

Cabinet	19” wide, 1RU high
Width	19” (483 mm)
Height	1U: 44 mm (1.75”) 2U: 88 mm (3.5”) 3U: 132mm (5.25”)
Cooling	Long life fans to assist natural convection
Transport and storage	Vibration acc. to IEC Publ.68

5 Java Graphic User Interface

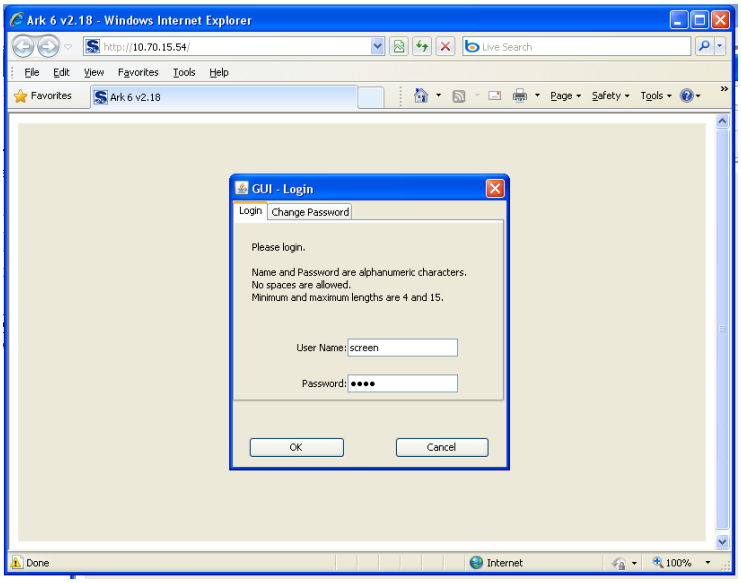
The Java Graphic User Interface, stored in the board File System, is downloaded to the local PC every time the user connects to the board with a Web Browser. A proper Java Virtual Machine is needed; refer to the Appendix B for a description of supported Java and Internet Browsers.

5.1 Authentication Option

In order to prevent unauthorized users from accessing ARK6 devices via Java Graphic User Interface, an authentication mechanism can be enabled by means of a factory setting. The name/password credentials provide control only over who can open the GUI, and requires that all users know a single name/password to access it.

If the authentication mechanism is set for the GUI access, operators will be prompted to enter User Name and Password before they can have read/write access. The following figure shows the window that appears as soon as an operator tries to access the Java GUI.

Figure 4. GUI - Login



Enter your User Name and Password and then click “OK” in order to log in.

The default factory login credentials are:

User name: “**screen**”	Password: “**0000**”

Use the Change Password tab to change your credentials.

5.2 Java Menu Bar

The following figure shows the menu bar of the Java Graphic User Interface. It allows the switching between control pages that will be described in detail in next chapters.

Figure 5. Java menu bar

The following controls are provided:

System commands bar allows to enable of the following commands:

- **Connect:** releases/acquires the connection to the device.
- **Save:** saves the device configuration.
- **Load:** loads the last saved configuration.

Figure 6. System commands bar

Operation pages bar allows to switch between the following windows:

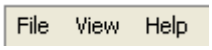
- **Home Page**: shows the firmware updating status, allows to reset the device, to locally download the *.jar file, to enable the Stand-by mode and to switch between operative modes.
- **Input**: shows ASI, GbE and Tuner input statistics.
- **Tuner**: allows to monitor input channel, frequency offset, signal level and quality and to monitor the Front-End demodulation parameters.
- **ITU:** allows to monitor and to set the ITU specific parameters.
- **ISDB-T**: allows to monitor and to set the ISDB-T specific parameters.
- **DVB-T**: allows to monitor and to set the DVB-T specific parameters.
- **ATSC:** allows to monitor and to set the ATSC specific parameters.
- **DVB-T2:** allows to monitor and to set the DVB-T2 specific parameters.
- **Mod. Pha.:** allows to manage the linear compensation curves.
- **AM PM:** allows to manage the non-linear compensation curves.
- **Adaptive Linear Precorrection:** allows to manage the adaptive linear compensation.
- **Adaptive Non Linear Precorrection:** allows to manage the adaptive non linear compensation.
- **Outputs:** allows to set clock and output parameters and to monitor the hardware status.

- **Network:** allows to monitor the Network settings of both GbE port 1 and GbE port 2 and to set in/out Ethernet channels parameters.
- **GPS:** shows received GPS statistics and provides commands to manage the Holdover functionality.
- **Alarms:** provides a grid where to set LCD, Graphic User Interface, Events, Relays, Traps, Input Switch and RF Off alarm masks.
- **Events:** shows the board events log and allows the manual setting of date and time.

Figure 7. Operation pages bar

System menu allows to access the same commands and windows as System commands and Operation pages bars do, plus management options, help and version information (refer to System menu paragraph).

Figure 8. System menu

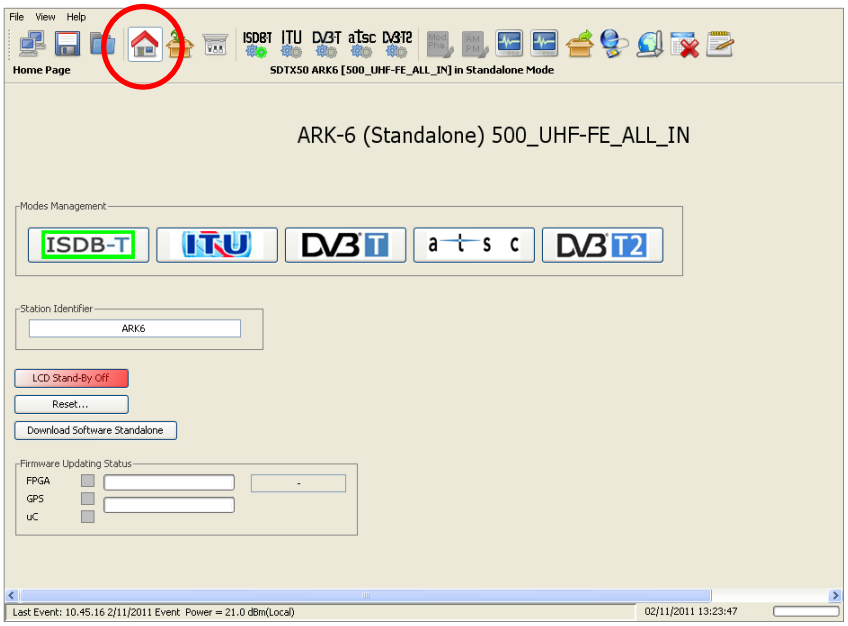


A brief description of all the provided information and controls follows in the next paragraphs.

5.3 Home Page

Click on Home Page button, highlighted in the next figure, to access the Home Page.

Figure 9. Home Page window



The Home Page provides a general description of the equipment, the firmware updating status and a subset of commands here below described:

- **Modes Management**: shows the list of all the available modes, identified by their transmission standard, and allows to switch between them.
- **Station Identifier**: shows and sets the station name.
- **LCD Standby**: enables the LCD Stand-by button.
- **Reset**: resets the equipment.
- **Download Software Standalone**: performs a local download of the *.jar file (refer to Download Software Standaloneparagraph).
- **Firmware Updating Status:** the three indicators turn into:
    - Yellow during FPGA, uC and GPS updating;
    - Green when the updating process is finished (FPGA and uC);
    - Grey when new code has been loaded (after next system reset).

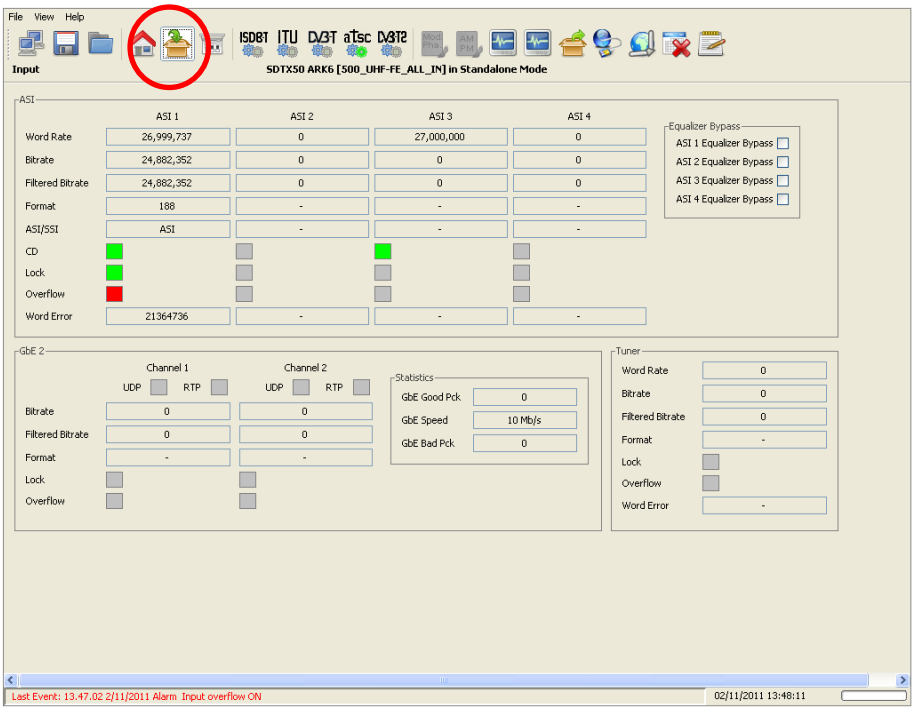
  The progress bars, at the right side of the FPGA and GPS indicators, show the status of firmware loading process into FLASH. The FPGA and GPS indicators remain yellow until the new firmware is loaded. When either FPGA or uC indicators turn into green, the transmitter shall be reset in order to load the new software.

In the Home Page is also specified the installer version the device has been loaded with.

5.4 Input

Click on Input button, highlighted in the next figure, to monitor the input statistics window.

Figure 10. ATSC / DVB-T/T2 Input window



The Input window allows to monitor Transport Stream and SDI input statistics and to enable the cable equalizer bypass of each one of them.

Table 5. Input window

Box	Parameter / Control	Description	Admitted Ranges / Values
ASI	Word rate	Input word rate.	Approximately 27 Mword/s
Tuner	Word rate	Input byte rate.	
ASI - Tuner	Bitrate	Input bitrate.	
ASI - Tuner	Filtered bitrate	Bitrate actually used by the modulator.	• Zero when the input has not been selected • Equal to the total bitrate, when Delete Null Packets disabled • Less than total bitrate, when Delete Null Packets enabled
ASI - Tuner	Format	Format of received TS Packets.	• 188 Bytes • 204 Bytes
ASI	CD	ASI Carrier detect.	• Green: Detected • Grey: Not detected
ASI - Tuner	Lock	The actual synchronization of the Transport Stream. It depends on the number of correct sync bytes necessary for the device to synchronize and on the number of destroyed sync bytes witch the device cannot cope with. Five consecutive correct sync bytes are sufficient for sync acquisition, and two or more consecutive corrupted sync bytes indicate sync loss (Ref. to ETSI TR 101 290)	• Green: Locked • Grey: Not locked

Box	Parameter / Control	Description	Admitted Ranges / Values
ASI - Tuner	Overflow	TS input overflow indicator. This alarm condition occurs when the input bit-rate exceeds the capability of the modulation (Ref. to ETSI EN 302 755).	• Red: Alarm On • Grey: Alarm Off
ASI	Word Errors	Input error rate: word errors per second.	
Tuner	Word Errors	Input error rate: Byte errors per second.	
Equalizer Bypass	ASI 1/2/3/4 Equalizer Bypass Equalizer Bypass 1/2/3/4	Enables/disables the bypassing of cable equalizers at ASI/SDI inputs.	• Checked: Cable equalizer is bypassed • Not checked: Cable equalizer is used
GbE 2– Channel 1/2	Protocol	Ethernet input packets protocol.	• UDP • RTP
GbE 2– Channel 1/2	Bitrate	Bitrate of TS from Ethernet input.	
GbE 2– Channel 1/2	Filtered bitrate	Bitrate actually used by the modulator.	• Zero when the input is not selected • Equal to the total bit-rate, when Delete Null Packets disabled • Less than total bit-rate, when Delete Null Packets enabled
GbE 2– Channel 1/2	Format	Format of received TS Packets.	• 188 Bytes • 204 Bytes
GbE 2– Channel 1/2	Lock	TS lock status. The input Transport Stream is unlocked when more than two consecutive Sync Byte are missed then five consecutive Sync Bytes must occur to regain the lock (Ref. to ETSI TR 101 290)	• Green: Locked • Grey: Not locked

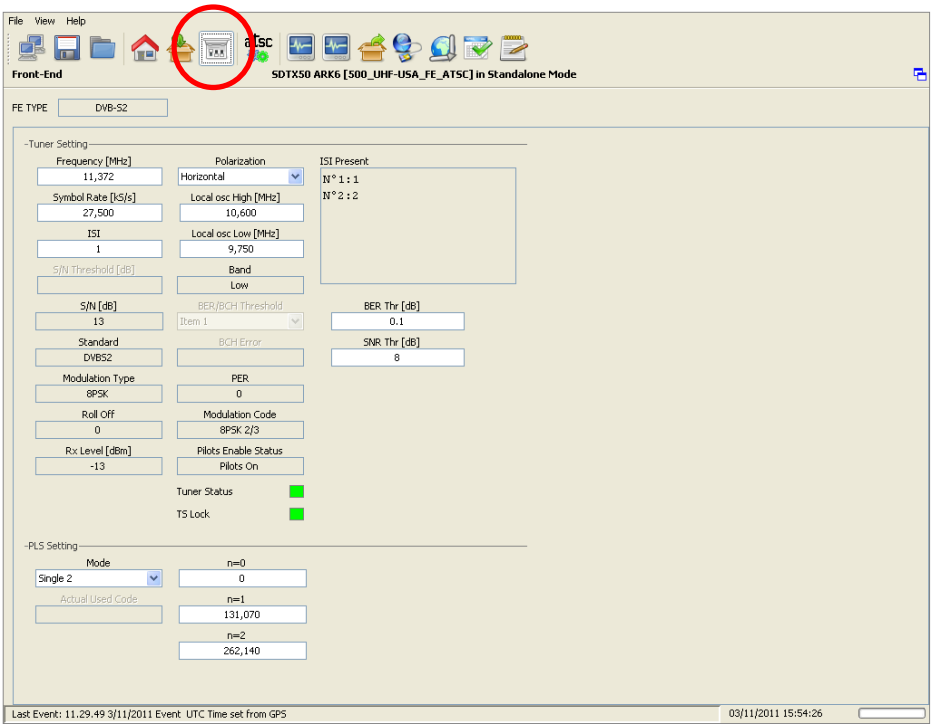
Box	Parameter / Control	Description	Admitted Ranges / Values
GbE 2– Channel1/2	Overflow	Input GbE overflow alarm status. This alarm condition occurs when the input bit-rate exceeds the capability of the modulation (Ref. to ETSI EN 302 755).	• Red: Alarm on • Grey: Alarm off
GbE 2– Statistics	GBE Good Pck	Total amount of frames delivered to the higher-level protocol.	
GbE 2– Statistics	GbE Speed	Ethernet connection speed. No duplex information is provided.	• 10 Mbit//s • 100 Mbit//s • 1 Gbit//s
GbE 2– Statistics	GBE Bad Pck	The number of inbound packets that contained errors.	
SDI 1/2/3/4	Lock	Shows the presence of a valid SDI input stream.	• Green: Locked • Grey: Not locked
SDI 1/2/3/4	CD	Shows that the SDI input signal carrier has been correctly locked.	• Green: Locked • Grey: Not locked
SDI 1/2/3/4	Ch1-2	Shows that the SDI input audio data have been correctly locked.	• Green: Locked • Grey: Not locked
SDI 1/2/3/4	Ch3-4	Shows that the SDI input audio data have been correctly locked.	• Green: Locked • Grey: Not locked
SDI 1/2/3/4	Ch 1/2/3/4 Level [dBFS]	Shows the embedded digital audio level. Measured in dB difference from the max digital level.	• 0 down to -114dB

Box	Parameter / Control	Description	Admitted Ranges / Values
SDI 1/2/3/4	Standard	Shows the video standard detected for the SDI input.	• NTSC 4:2:2 component video; • NTSC 4:2:2 16x9 component video; • NTSC 4:4:4 13,5 MHz component video; • PAL 4:2:2 component video; • PAL 4:2:2 16x9 component video; • PAL 4:4:4 13,5 MHz component video"
Layers Rates	Layer A/B/C Rate [bit/s]	Bitrate actually used by the modulator. Used in remux mode only	
Layers Rates	Layer A/B/C Overflow	Layer input overflow alarm status. This alarm condition occurs when the input bit-rate exceeds the capability of the modulation Used in remux mode only.	• Red: Alarm on • Grey: Alarm off
Layers Rates	Layer A/B/C Underflow	Layer input underflow alarm status. Used in remux mode only.	• Red: Alarm on • Grey: Alarm off

5.5 Front-End

Click on Front-End button, highlighted in the next figure, to access the tuner window.

Figure 11. Front-End window



Use the Tuner window to monitor input channel, frequency offset, signal level and quality, and to monitor the RF input demodulation parameters.

The Tuner window is composed by the following sections:

- RF power level monitor;
- Demodulation parameters;
- Constellation (DVB-T/T2).

Tuner window changes on the basis of the Front-End type. The available FE types are:

- DVB-T/T2
- ISDB-T
- Digitizer
- ATSC
- DVB-S2
- DVB-S2 CAM

A brief description of the features of each Tuner panel follows in next paragraphs.

5.5.1 Tuner window: RF power level monitor

Figure 12. Tuner window: RF power level monitor

Table 6. Tuner window: RF power level monitor

Box	Parameter / Control	Description	Admitted Ranges / Values	
General	Rx Level [dBm] / Progress Bar	Input RF power level monitor expressed in dBm.	• Min: -84 • Max: -21	• Low Power • High Power
General	Low Power Rx Signal	This alarm is raised when Max ADC Value is beneath the Low AGC Threshold and, consequently, both DAT 1 and DAT 2 are at their minimum values.	• Red: Alarm On • Grey: Alarm Off	
General	High Power Rx Signal	This alarm is raised when Max ADC Value is beyond the High AGC Threshold and, consequently, both DAT 1 and DAT 2 are at their maximum values.	• Red: Alarm On • Grey: Alarm Off	
General	Channel	This indicator shows the input RF channel.	VHF: • Min: E2 • Max: E12	UHF: • Min: 21 • Max: 69
General	Offset [Hz]	This indicator shows the input frequency offset.	• Min: - 200 kHz • Max: + 200 kHz	
General	Bandwidth [MHz]	Input channel bandwidth.	It depends on the FE Type.	

5.5.2 DIGITIZER FE Type

This page shows the available statistics for the analog input video.

Figure 13. CVBS Inputs: Statistics

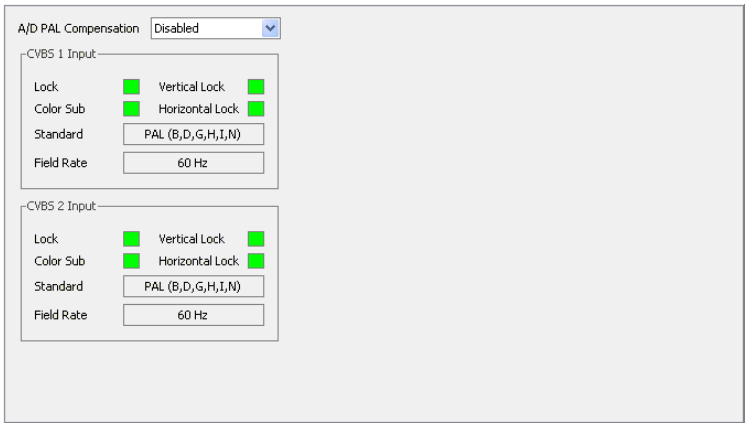


Table 7. CVBS Inputs: Statistics

Box	Parameter / Control	Description	Admitted Ranges / Values
General	A/D PAL Compensation	Enable the PAL compensation on digitized video. This features should be enabled only for particular application e.g. the external ITS insertion in a PAL-M system.	• Enabled • Disabled
CVBS 1/2 input	Lock	General input video signal lock, this is on when the following three signals are locked.	• Green: Locked • Grey: Not locked
CVBS 1/2 input	Vertical lock	Shows the locking of the vertical synchronization signal.	• Green: Locked • Grey: Not locked
CVBS 1/2 input	Color sub	Show the locking of the color subcarrier signal.	• Green: Locked • Grey: Not locked
CVBS 1/2 input	Horizontal lock	Show the locking of the horizontal synchronization signal.	• Green: Locked • Grey: Not locked
CVBS 1/2 input	Standard	Shows the detected input video standard. The video standard detected must be compatible with the modulation defined for the device, otherwise a “wrong input standard” alarm is raised.	• NTSC (M, J), • PAL (B, D, G, H, I, N), • PAL (M), • PAL (Combination-N), • NTSC, • SECAM, • PAL (60)
CVBS 1/2 input	Field rate	Show the rate of video field refresh	• 50Hz • 60Hz

5.5.3 ATSC FE Type

The Tuner panel for the ATSC Front-End shows the status of the demodulator, the input modulation parameters and the received signal quality.

Figure 14. ATSC RF Input: Status and demodulation parameters

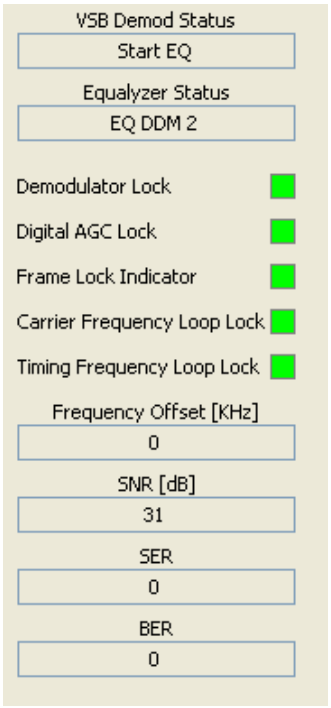


Table 8. ATSC RF Input: Status and demodulation parameters

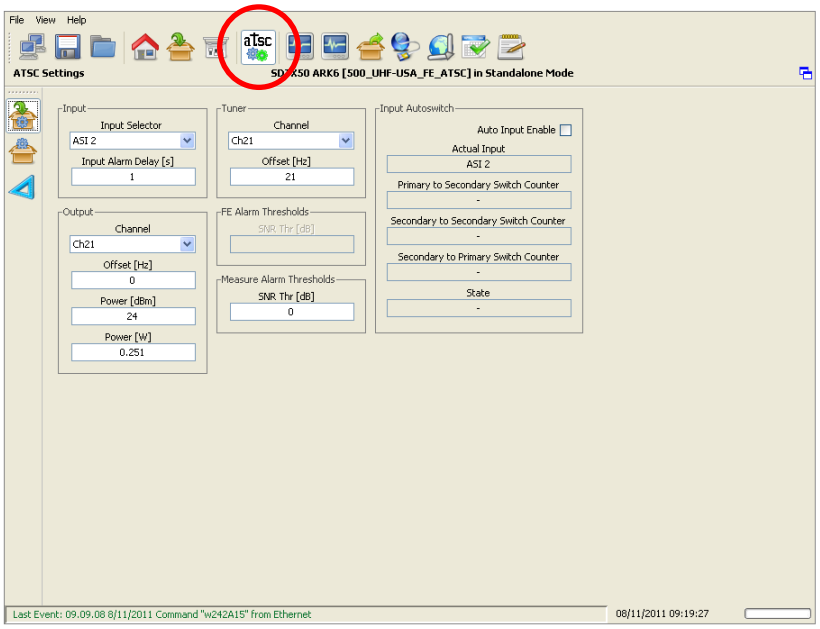
Box	Parameter / Control	Description	Admitted Ranges / Values
General	VSB Demod Status	VSB demodulation status.	• Reset • Reset Wait • AGC Wait 1 • AGC Wait 2 • Carrier Synchro • NCO Loop • VCXO Wait • Segment Synchro • Tap Computation • Eq Training Mode • Start Eq • Error
General	Equalyzer Status	Equalizer status.	• EQ Reset • EQ FFE Train • EQ Blind 1 • EQ Blind 2 • EQ DDM 1 • EQ DDM 2 • Error

Box	Parameter / Control	Description	Admitted Ranges / Values
General	Demodulator Lock	Demodulator lock status	• Green: Locked • Grey: Unlocked
General	Digital AGC Lock	Digital AGC lock status.	• Green: Locked • Grey: Unlocked
General	Frame Lock Indicator	Frame lock status.	• Green: Locked • Grey: Unlocked
General	Carrier Frequency Loop Lock	Carrier frequency loop lock status.	• Green: Locked • Grey: Unlocked
General	Timing Frequency Loop Lock	Timing frequency loop lock status.	• Green: Locked • Grey: Unlocked
General	Frequency Offset [kHz]	Output carrier offset.	
General	SNR [dB]	Signal to Noise Ratio [dB]	
General	SER	Segment Error Rate.	
General	BER	Bit Error Rate.	

5.6 ATSC

Click on ATSC button, highlighted in the next figure, to access the ATSC window.

Figure 15. ATSC window

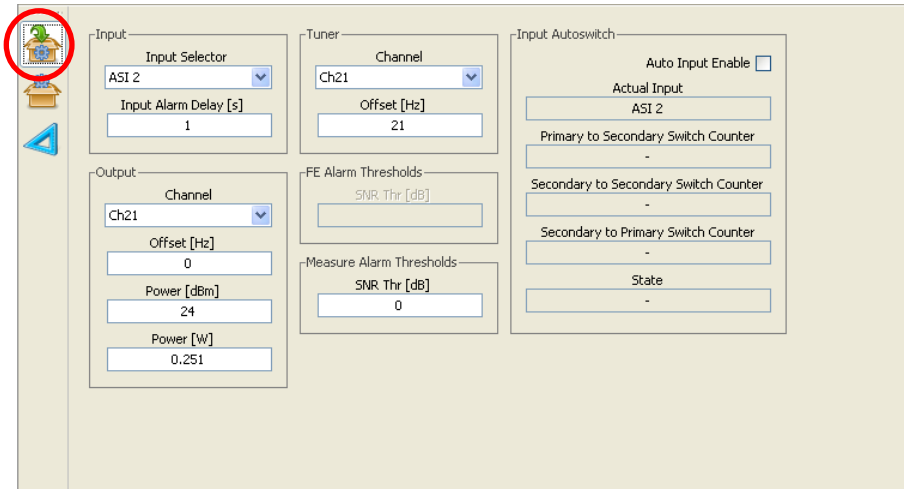


Use the ATSC Processing page to manage ATSC specific configuration parameters and to monitor output signal level and quality.

5.6.1 ATSC Settings

Click on the ATSC Settings button, highlighted in the next figure, to access the ATSC general settings.

Figure 16. ATSC Processing: ATSC Settings



Use the ATSC Settings page to select inputs, to set input/output RF channels, offset frequencies, Frontend and Measure alarm thresholds and to manage Input Autoswitch functionality (refer to Appendix A for further information).

Settings within this page will be used only in ATSC mode but will be saved and stored as mode specific controls.

Table 9. ATSC Processing: ATSC Settings

Box	Parameter / Control	Description	Admitted Ranges / Values
Input	Input Selector	Input selector. It is not allowed to change input until the Input Autoswitch is enabled. In order to change the primary input, disable the Input Autoswitch functionality, select a different input through the input selector and then enable the Input Autoswitch functionality.	• ASI 1 • ASI 2 • ASI 3 • ASI 4 • Tuner • GbE 2 ch1 • GbE 2 ch2
Input	Input Alarm Delay [s]	Time to wait for No Input alarm rising expressed in seconds (refer to Alarms paragraph). Note: It is highly recommended to set an Input Alarm Delay value different from zero so as to allow the input signal locking.	• Min: 1 s • Max: 25.5 s
Input Autoswitch	Auto Input Enable	Enables the use of Input Autoswitch finite-state machine. Refer to Appendix A. for further information.	• Enabled • Disabled
Input Autoswitch	Actual Input	Shows the currently used input.	• ASI 1 • ASI 2 • ASI 3 • ASI 4 • Tuner • GbE 2 ch1 • GbE 2 ch2

Box	Parameter / Control	Description	Admitted Ranges / Values
Input Autoswitch	Primary to Secondary Switch Counter	Primary to secondary input switch countdown expressed in seconds.	• Min: 0 s • Max: *.def file dependant • Default: 25 s
Input Autoswitch	Secondary to Secondary Switch Counter	Secondary to secondary input switch countdown expressed in seconds.	• Min: 0 s • Max: *.def file dependant • Default: 25 s
Input Autoswitch	Secondary to Primary Switch Counter	Secondary to primary input switch countdown expressed in seconds.	• Min: 0 s • Max: *.def file dependant • Default: 300 s
Input Autoswitch	State	Current state of the finite-state machine	• Priority Input Locked • Priority Input Not Locked • Searching First Input Locked • Check Priority Input
Tuner	Channel	Input RF channel selector.	• Min: 14 • Max: 77
Tuner	Offset [Hz]	The receiver frequency will accept offset frequencies in the range +/- 200 kHz (1 Hz steps).	• Min: - 200 kHz • Max: + 200 kHz
FE Alarm Thresholds	SNR Thr [dB]	FE Signal to Noise alarm threshold.	• Min: 10 dB • Max: 50 dB

Box	Parameter / Control	Description	Admitted Ranges / Values
MEAS Alarm Thresholds	SNR Thr [dB]	Meas Signal to Noise alarm threshold.	• Min: 10 • Max: 50
Output	Channel	Output channel.	Channel ranges are device's definition dependant.
Output	Offset [Hz]	Output frequency offset (expressed in Hz).	• Min: -200 kHz • Max: +200 kHz
Output	Power [dBm]	Output power (expressed in dBm).	Output power ranges are device's definition dependant.
Output	Power [W]	Output power (expressed in W).	

5.6.2 ATSC Modulation

The ATSC Modulation window allows to select test signals and to manage the M/H mode.

Figure 17. ATSC Processing: ATSC Modulation

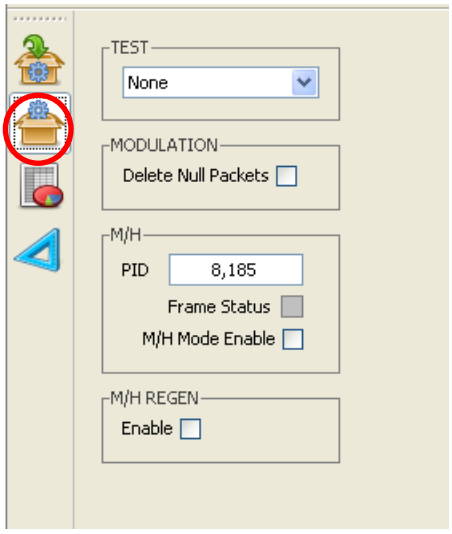


Table 10. ATSC Processing: ATSC Modulation

Box	Parameter / Control	Description	Admitted Ranges / Values
MODULATION	Delete Null Packets	Delete null packets enabling check box.	• Checked: Enabled • Not checked: Disabled
TEST		The selector of test signal.	• None • CW • Force Null Packets
M/H	PID	Sets the PID of M/H packets.	• Min: 0 • Max: 8191
M/H	Frame Status	M/H frame alarm.	• Grey: M/H mode disabled • Green: Alarm OFF. • Red: Alarm ON
M/H	M/H Mode Enable	Enables/disables the M/H mode.	• Checked: Enabled • Not checked: Disabled
M/H REGEN	Enable	Enables/disables the M/H Regeneration mode. The maximum M/H total number of groups supported by the M/H Regeneration mode is 8.	• Checked: Enabled • Not checked: Disabled

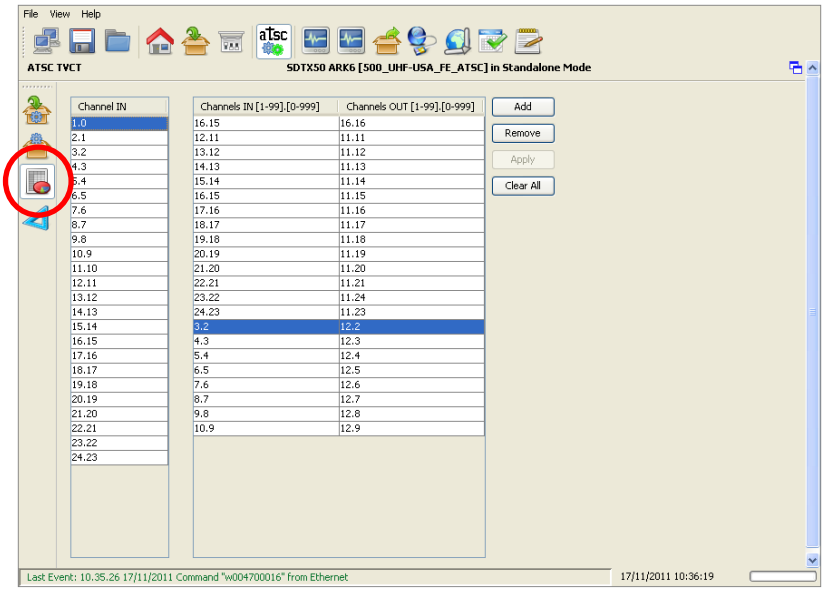
5.6.3 ATSC TVCT

The ATSC TVCT window allows to modify On-The-Fly Major and Minor channel numbers associated with the virtual channels defined in the incoming TVCT.

If the definition of the current TVCT changes, the version number of the table shall be accordingly modified otherwise the functioning of the facility is not assured.

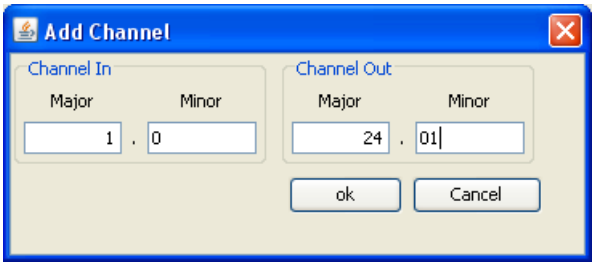
Note: On-The-Fly processing of multi-section TVCTs is not supported.

Figure 18. ATSC Processing: ATSC Modulation



Click on Add button to add an entry to the channel numbers table. The insertion of a Channel In being not defined in the incoming TVCT won't result in any change in the output TVCT.

Figure 19. ATSC TVCT: Add button



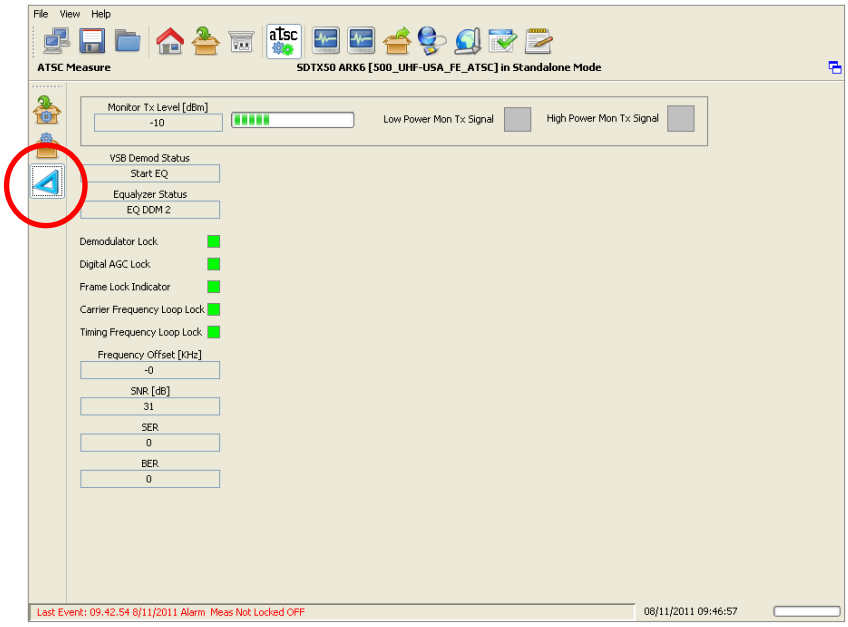
The available controls in the ATSC TVCT windows follow:

- Add: Adds an entry to the table.
- Remove: Removes an entry from the table.
- Apply: Applies the new configuration.
- Clear All: Empties the entries of the channel numbers table.

5.6.4 ATSC Measure

Click on Measure button, highlighted in the next figure, to access the measure window.

Figure 20. ATSC Processing: ATSC Measure



Use the Measure window to monitor output signal level and quality.

Refer to ATSC FE Type paragraph for a detailed description of each field within this window.

5.6.4.1 ATSC Measure window: RF power level monitor

Figure 21. ATSC Measure: RF power level monitor

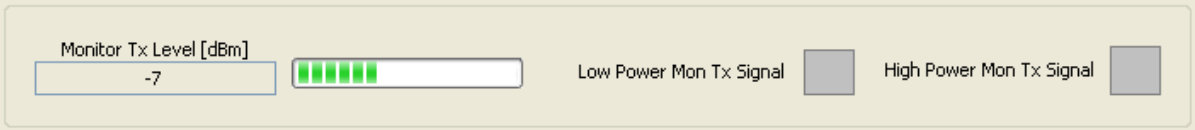


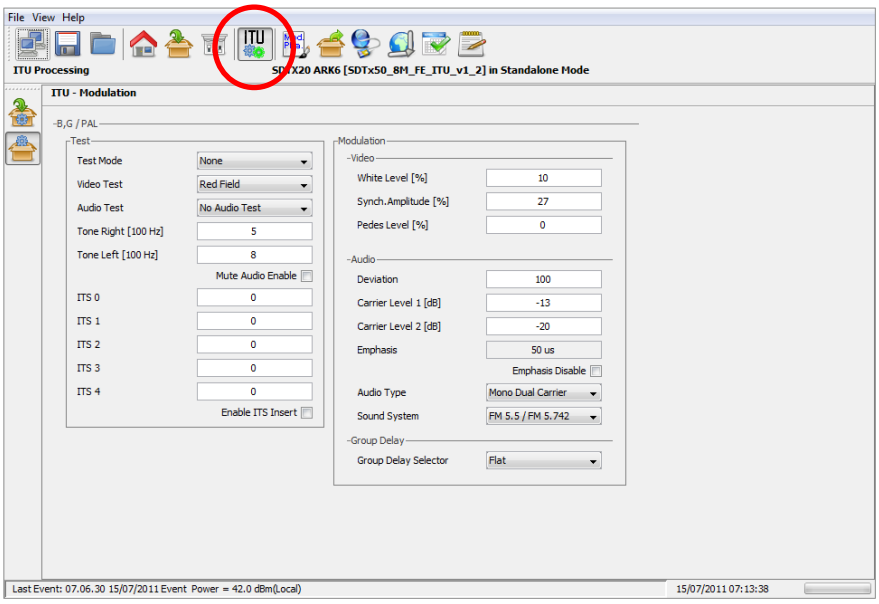
Table 11. ATSC Measure: RF power level monitor

Box	Parameter / Control	Description	Admitted Ranges / Values	
General	Monitor Tx Level [dBm] / Progress Bar	This value is the level of the signal, passing through the transmission section and re-entering the system after the channel filter, that will be used for the adaptive compensation. The tolerance of the read value is ±1 dB.	• Min: - 20 • Max: 11,5	• Low Power • High Power
General	Low Power Tx Signal	This alarm is raised when Max ADC Value is beneath the Low AGC Threshold and, consequently, input attenuation is at its minimum level.	• Red: Alarm On • Grey: Alarm Off	
General	High Power Tx Signal	This alarm is raised when Max ADC Value is beyond the High AGC Threshold and, consequently, input attenuation is at its maximum level.	• Red: Alarm On • Grey: Alarm Off	

5.7 ITU.470

Click on ITU button, highlighted in the next figure, to access the ITU modulator parameters window.

Figure 22. ITU window

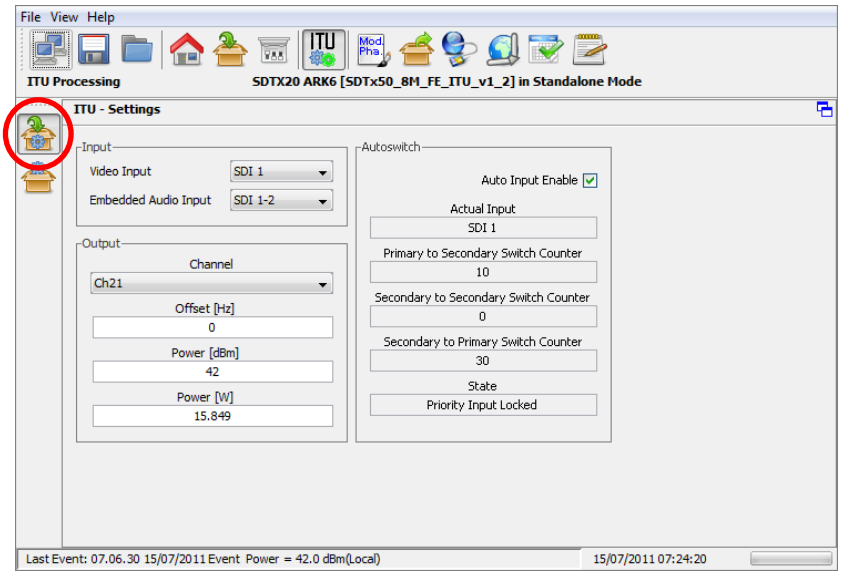


Use the ITU Processing page to manage the configuration of the analog modulator.

5.7.1 ITU Settings

Click on the ITU Settings button, highlighted in the next figure, to access the ITU general settings.

Figure 23. ITU Processing: ITU Settings



Use the ITU Settings page to select inputs, to set input/output RF channels, offset frequencies, Frontend and Measure alarm thresholds and to manage Input Autoswitch functionality (refer to Appendix A for further information).

Settings within this page will be used only in ITU mode but will be saved and stored as mode specific controls.

Table 12. ITU Processing: ITU Settings

Box	Parameter / Control	Description	Admitted Ranges / Values	
Input	Video input	Video input selector. Use this control to select one of the available video inputs. CVBS analog inputs are available only when the A/V frontend is available. When and SDI input is selected, the embedded audio channel for that input are modulated and the user can select between channel 1-2 and channel 3-4. When CVBS input is selected the relative analog audio input channels are used.	• SDI 1 • SDI 2 • SDI 3 • SDI 4 • CVBS 1 • CVBS 2	
Input	Embedded audio input	Embedded audio channels selector. When a SDI input is selected this control can be used to send the embedded audio channels 1-2 or the embedded audio channels 3-4 to the modulation.	• Channel 1-2 • Channel 3-4	
Output	Channel	Output RF channel selector. Output channel selection depends on the channel planning definition loaded on the device. The following ranges and values are typical for Italian/European TV channels.	VHF (BIII EU option): • Min: E2 • Max: E12	UHF (UHF EU option): • Min: 21 • Max: 69
Output	Offset [Hz]	The receiver frequency will accept offset frequencies in the range +/- 200 kHz (1 Hz steps).	• Min: - 200 kHz • Max: + 200 kHz	
Output	Power [dBm]	Output power setting. This control sets the output power in dBm values. Changing this control will also change the value of power control expressed in W.	• Min and Max values depends on the power class of the device. e.g. for a SDTX-500 device: • 28 dBm up to 48 dBm	

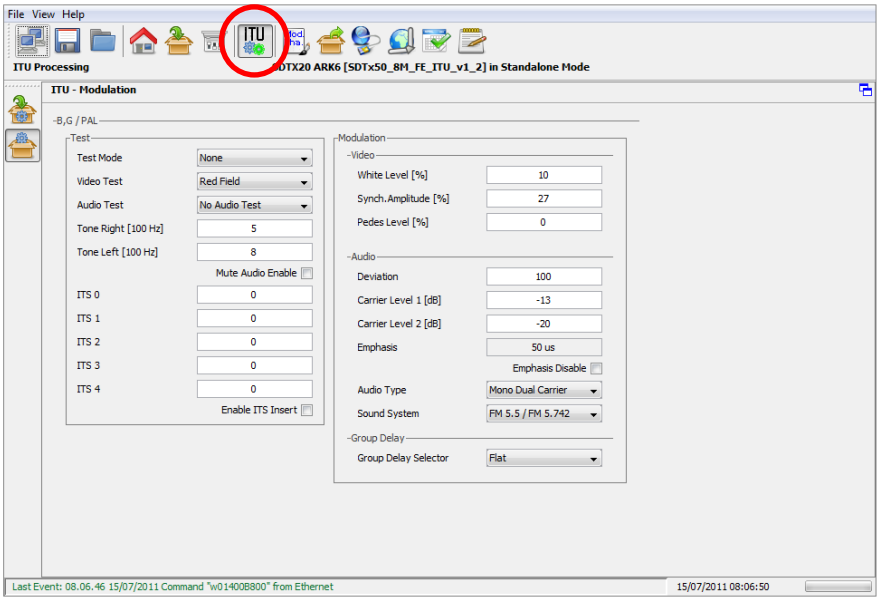
Box	Parameter / Control	Description	Admitted Ranges / Values
Output	Power [w]	Output power setting. This control sets the output power in W. Changing this control will also change the value of power control expressed in dBm.	• Min and Max values depends on the power class of the device. e.g. for a SDTX-500 device: • 0.63 W up to 63 W
Input Autoswitch	Auto Input Enable	Enables the use of Input Autoswitch finite-state machine. Refer to Appendix A. for further information.	• Enabled • Disabled
Input Autoswitch	Actual Input	Shows the currently used input.	• SDI 1 • SDI 2 • SDI 3 • SDI 4 • CVBS 1 • CVBS 2
Input Autoswitch	Primary to Secondary Switch Counter	Primary to secondary input switch countdown expressed in seconds.	• Min: 0 s • Max: *.def file dependant • Default: 25 s
Input Autoswitch	Secondary to Secondary Switch Counter	Secondary to secondary input switch countdown expressed in seconds.	• Min: 0 s • Max: *.def file dependant • Default: 25 s
Input Autoswitch	Secondary to Primary Switch Counter	Secondary to primary input switch countdown expressed in seconds.	• Min: 0 s • Max: *.def file dependant • Default: 300 s

Box	Parameter / Control	Description	Admitted Ranges / Values
Input Autoswitch	State	Current state of the finite-state machine	• Priority Input Locked • Priority Input Not Locked • Searching First Input Locked • Check Priority Input

5.7.2 ITU Modulation

The ITU Modulation window allows actual modulation parameters monitoring and setting.

Figure 24. ITU Processing page: ITU Modulation



The ITU Modulation window is composed by the following sections:

- Modulator manager;
- Test: used to manage RF test modes and Audio-Video test

5.7.2.1 ITU Modulation: Modulator manager

Commands and indicators belonging to this section allow to:

- Select the video modulation parameters;
- Set the audio modulation parameters;
- Set the group delay.

Figure 25. ITU Modulation: Modulator manager

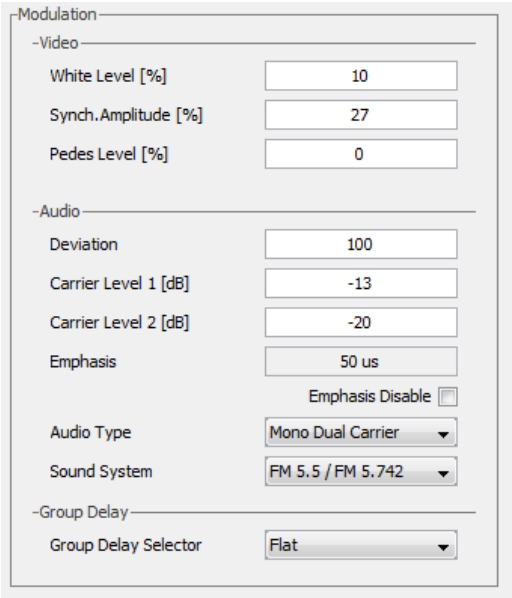


Table 13. ITU Modulation: Modulator manager

Box	Parameter / Control	Description	Admitted Ranges / Values
Video	White Level [%]	Video white level setting. The level value is in percentage upon the synch level. The synch level is taken as 100% reference.	• MIN: 10 • MAX: 22 • Step: 0,05
Video	Synch. Amplitude [%]	Video synch amplitude setting. The level value is in percentage upon the synch level. The synch level is taken as 100% reference.	• MIN: 22 • MAX: 27,5 • Step: 0,05
Video	Pedes Level [%]	Video pedes level setting. The level value is in percentage upon the synch level. The synch level is taken as 100% reference.	• MIN: 0 • MAX: 7 • Step: 0,05
Audio	Deviation	Audio deviation. This parameter is used to change the frequency deviation of the audio modulation in order to adjust the audio volume.	• Relative values • 0 up to 255 • Default value 100
Audio	Carrier Level 1 [dB]	Audio 1 carrier level setting. This parameter is the amplitude difference, expressed in dB values, between the video carrier and the audio 1 carrier.	• MIN: -22 • MAX: -7 • Step: 1

Box	Parameter / Control	Description	Admitted Ranges / Values
Audio	Carrier Level 2 [dB]	Audio 2 carrier level setting. This parameter is the amplitude difference, expressed in dB values, between the video carrier and the audio 1 carrier. **Not used for mono audio carrier configurations such as NTSC or PAL M.**	• MIN: -22 • MAX: -7 • Step: 1
Audio	Emphasis	Audio emphasis value monitor. The audio emphasis used depends on the modulation standard.	• 50us (used for PAL-BG) • 75us
Audio	Emphasis disable	Audio emphasis disable. This control disables the audio emphasis.	• Audio emphasis enabled (not ticked); • Audio emphasis disabled (ticked).
Audio	Audio type	Audio modulation type selection. This control selects the audio modulation mode. Stereo and dual carrier modes are not available for standards that support mono audio only.	• Mono dual carrier; • Dual sound; • Stereo; • Mono single carrier.
Audio	Sound system	Audio carrier spacing selector. This control shows more options for the standard that supports more than one audio carrier spacing.	• FM 5.5/5.742 •
Group delay	Group delay selector	Select the group delay to apply. The available group delay curve depends on the group delay definition loaded on the device.	• e.g. for PAL BG: • Flat (no group delay curve) • Curve A • Curve B

5.7.2.2 ITU Modulation: Modulator test controls

The following controls enable the testing of RF signal, audio and video.

Figure 26. ITU Modulation: Modulator test modes

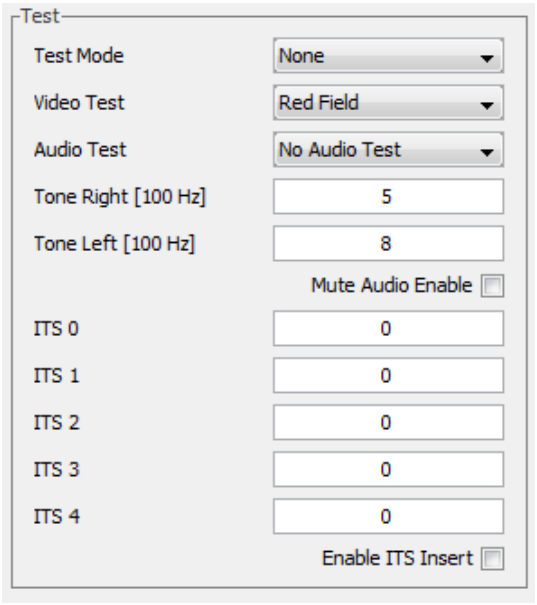


Table 14. ITU Modulation: Modulator test modes

Box	Parameter / Control	Description	Admitted Ranges / Values
Test	Test mode	Enables one of the available test modes for RF signal.	• None; • CW: non modulated carrier at centre frequency; • CW AV: non modulated video and audio carriers;
Test	Video test	Enables one of the available video test signals.	• Input video. No test signal; • SMPTE bars; • Horizontal bars; • Red field.
Test	Audio test	Enables one of the available audio test signals.	• No audio test; • Test tone. Sin waves at the selected frequency on left and right channel. (Left only for mono modulations)
Test	Tone right [100 Hz]	Set the frequency of the right channel test tone. Base unit is 100Hz.	• Base unit 100 Hz; • 0 up to 127, 0 up to 12.7 kHz.
Test	Tone left [100 Hz]	Set the frequency of the right channel test tone. Base unit is 100Hz.	• Base unit 100 Hz; • 0 up to 127, 0 up to 12.7 kHz.
Test	Mute audio enable	Enables the audio carriers' suppression for test purposes.	• Mute audio disabled: audio carries are transmitted; • Mute audio enabled: audio carriers are suppressed.

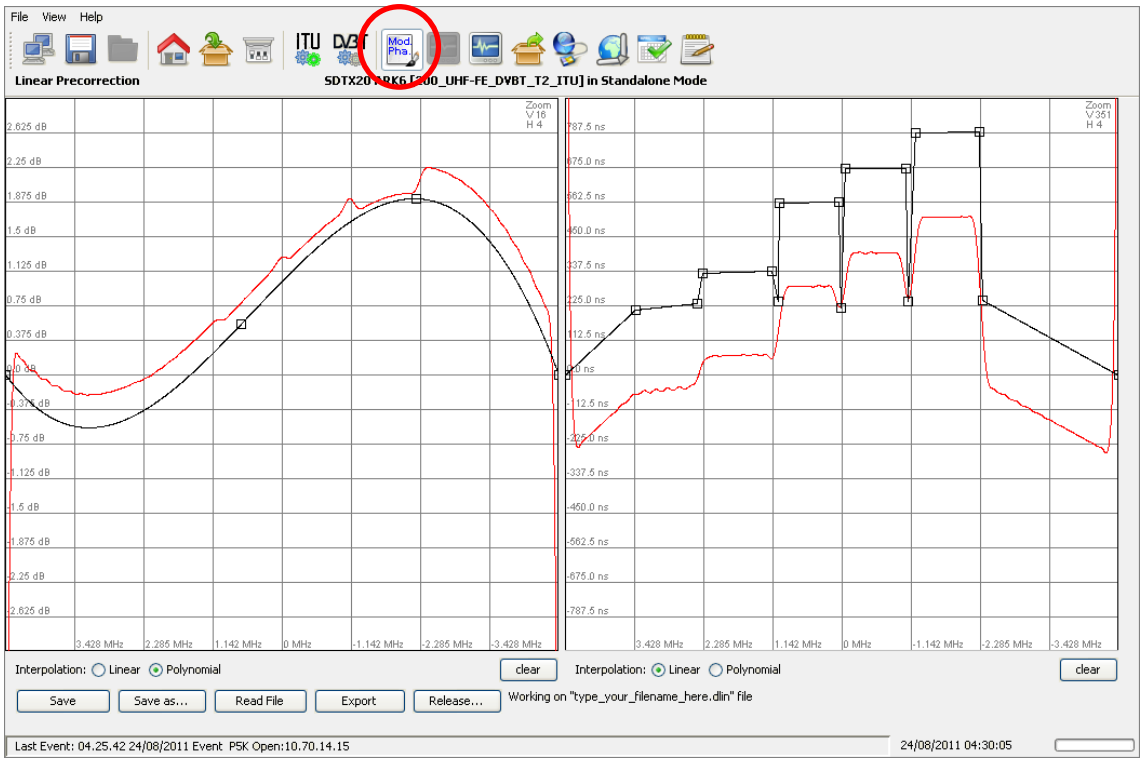
Box	Parameter / Control	Description	Admitted Ranges / Values
Test	ITS 0	Select the line where to inject the ITS 0 when the enable ITS insert option is enabled.	• Min: 7 • Max: 622
Test	ITS 1	Select the line where to inject the ITS 1 when the enable ITS insert option is enabled.	• Min: 7 • Max: 622
Test	ITS 2	Select the line where to inject the ITS 2 when the enable ITS insert option is enabled.	• Min: 7 • Max: 622
Test	ITS 3	Select the line where to inject the ITS 3 when the enable ITS insert option is enabled.	• Min: 7 • Max: 622
Test	ITS 4	Select the line where to inject the ITS 4 when the enable ITS insert option is enabled.	• Min: 7 • Max: 622
Test	Enable ITS insert	Enables the insertion of Injected Test Signals in the selected video lines.	• Min: 7 • Max: 622

5.8 Manual compensation

5.8.1 Linear Precorrection

Click on Linear Precorrection button, highlighted in the next figure, to access the filter window.

Figure 27. Adaptive Linear Precorrection



The ARK6 system provides a pre-correction tool for Module&Phase output signal pre-correction.

This tool provides two grids for the drawing of:

- Module of the filter's curve.
- Group Delay of the filter's curve.

The two curves are used to calculate the linear pre-correction coefficients. The curves are drawn by the interpolation of 1024 points referring to the points inserted and using a linear or polynomial interpolation algorithm.

Knob points can be added with a left-click of the mouse on the grid and deleted with a right-click, drag and move a point to change the curve.

Each coefficient variation, due to curves change, is saved in the FPGA "runtime" memory registers and dynamically changes the device's output.

The tool is prevented to send an "overflowing" amount of data to the device: curve changes will be applied only when the mouse button is released.

In the module grid, the red curve is used to monitor the current module curve calculating and saving. The last saved coefficients are locally downloaded from the FPGA runtime memory registers in order to redraw the curve.

Remember to click on the *Save as* button the first time you change the factory default curves in order to do not overwrite them.

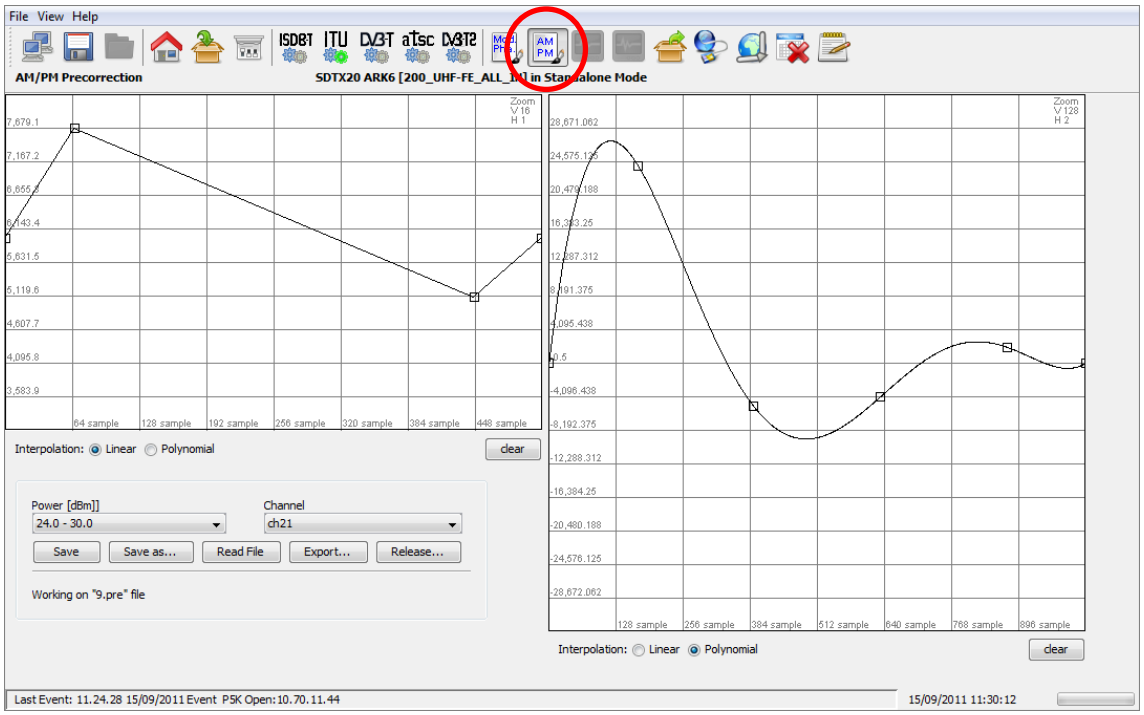
The following buttons allow the management of linear pre-correction files and the management of the connection to port 5000:

- **Save:** used to save in the device memory the current curves setting. The previously saved file will be overwritten except in the event that no files have been saved before; in this case a dedicated window appears in order to let the user name the new file.
- **Save as:** used to save in the device memory the current curves setting. The previously saved file will be overwritten with a new name. In the event that no files have been saved before, a new file will be created.
- **Read file:** used to reload the last saved file.
- **Export:** used to download pre-correction files on the user PC. A browser window allows the selection of the saving path.
- **Release:** releases the connection in order to allow others remote machines to connect to port 5000 (refer to Connection to port 5000 paragraph).

5.8.2 Non Linear Precorrection

Click on AM/PM button icon, highlighted in the next figure, to access the pre-correction window.

Figure 28. AM/PM Precorrection



Two main actions are possible in this section:

- AM/AM and AM/PM curve drawing: used to change the AM/PM pre-correction coefficient.
- AM/PM pre-correction files management: used to open or save AM/PM pre-correction setting file.
- AM/AM and AM/PM curves are specific for each power range of each output channel.

The two curves are used to calculate the AM/PM pre-correction coefficients. The curves are drawn by the interpolation of 1024 points referring to the points inserted and using a linear or polynomial interpolation algorithm.

Knob points can be added with a left-click of the mouse on the grid and deleted with a right-click, drag and move a point to change the curve.

Each coefficient variation, due to curves change, is saved in the FPGA “runtime” memory registers and dynamically changes the device’s output.

The tool is prevented to send an “overflowing” amount of data to the device: curve changes will be applied only when the mouse button is released.

In the module grid, the red curve is used to monitor the current module curve calculating and saving. The last saved coefficients are locally downloaded from the FPGA runtime memory registers in order to redraw the curve.

During saving actions one linear pre-correction file is created, the *.dpre file, which contains the digital coefficients for linear pre-correction filter.

The following buttons allow the management of non linear pre-correction files and the management of the connection to port 5000:

- **Save:** used to save in the device memory the current curves setting. The previously saved file will be overwritten except in the event that no files have been saved before; in this case a dedicated window appears in order to let the user name the new file.
- **Save as:** used to save in the device memory the current curves setting. The previously saved file will be overwritten with a new name. In the event that no files have been saved before, a new file will be created.
- **Read file:** used to reload the last saved file.
- **Export:** used to download pre-correction files on the user PC. A browser window allows the selection of the saving path.
- **Release:** releases the connection in order to allow others remote machines to connect to port 5000 (refer to Connection to port 5000 paragraph).

5.8.3 Port 5000 connection

The connection to port 5000 is performed every time a pre-correction tool is opened through Mod. Pha. and AM/PM buttons, from Java interface. The pre-correction tool opens and keeps busy the connection to port 5000 till the connection releasing.

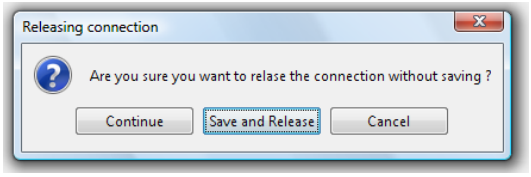
The connection to this port precludes the possibility of:

- programming the device;
- allowing more than one user, the very same one that is keeping busy the connection, to open the pre-correction tools,
- saving the parameters of the Option sub-menu.

The Release button comes through these limits. It closes the connection to port 5000, close the Mod. Pha. / AM/PM window and opens the General window. Once clicked the Release buttons and before quitting the pre-correction tool, three options are provided:

- **Continue:** continue without saving;
- **Save and Release:** save, continue and release the connection;
- **Cancel:** cancel the request of releasing the connection.

Figure 29. Realizing connection

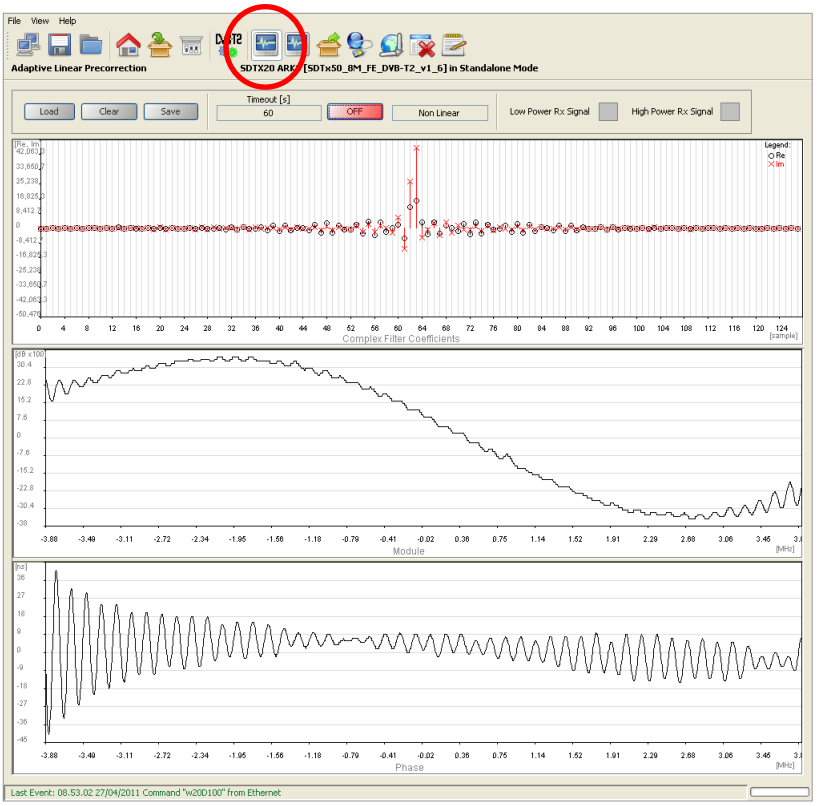


5.9 Adaptive compensation

5.9.1 Linear Adaptive Precorrection

Click on Linear Adaptive Precorrection button, highlighted in the next figure, to access the filter window.

Figure 30. Adaptive Linear Precorrection



This window provides commands and indicators for adaptive filter management and monitor.

The Filter window is organized as follows:

- Management panel.
- Complex filter coefficients graph.
- Module graph.
- Phase graph.

In order to enable the adaptive linear precorrection, click on the ON/OFF button.

5.9.1.1 Adaptive Filter

The Adaptive Filter provides the ARK6 with an effective adaptive linear compensation.

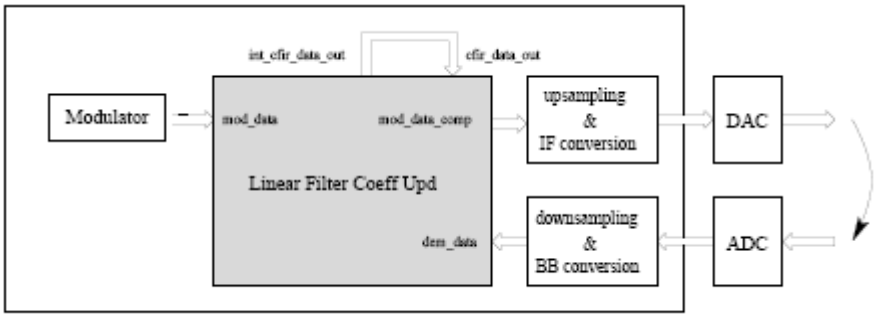
The developed system is responsible for pre-emptively compensating a DVB-T/T2 signal in order to make unimportant the contribution of the system transmission section. The signal passes through the transmission section and re-enters the system as to determine the distortion and the compensating adaptive filter.

The system is composed of two main blocks: a Power Calculation block and a 128-tap Complex FIR. The modulated signal, with IQ format and sampled at fc frequency, enters both blocks:

Power Calculation block is responsible for estimating the mean power level that will be restored at both transmitting and receiving sides;

128-tap Complex FIR is responsible for linearly pre-correcting the modulated signal. Filter coefficients are obtained by estimating the channel between the signal before the transmission section and the signal reentering the system, after the channel distortion and the A/D conversion.

Figure 31. Adaptive Filter



5.9.1.2 Adaptive Linear Precorrection: Management panel

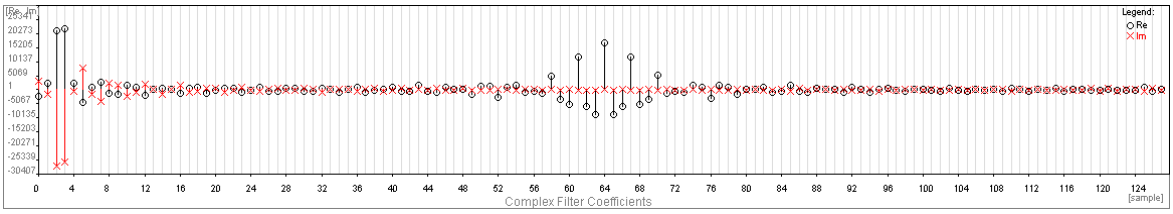
Table 15. Adaptive Linear Precorrection: Management panel

Box	Parameter / Control	Description	Admitted Ranges / Values
General	Load	Loads filter coefficients from the respective FPGA registers.	
General	Clear	Loads flat curve coefficients.	
General	Timeout [s]	Once enabled, the adaptive linear compensation has a timeout. When the timeout is expired, the precorrection is stopped. In order to continue updating coefficients, click on ON/OFF button.	Fixed to 60 seconds
General	Save	Saves the current adaptive filter coefficients.	
General	ON/OFF	Enables the adaptive linear compensation.	• ON(Green):Enabled • OFF(Red): Disabled
General	Status	Shows the type of adaptive compensation currently used, if any.	• None • Linear • Non Linear
General	Low Power Rx Signal	Indicates that the signal that re-enters the system has a low power. When this flag is on, the automatic update of the filter coefficients is stopped.	• Red: Alarm On • Grey: Alarm Off
General	High Power Rx Signal	Indicates that the signal that re-enters the system has a high power. When this flag is on, the automatic update of the filter coefficients is stopped.	• Red: Alarm On • Grey: Alarm Off

5.9.1.3 Complex Filter coefficients graph

The Complex Filter coefficients graph shows the current coefficients values. The circles indicate the real part of coefficients; the red crosses indicate the imaginary one.

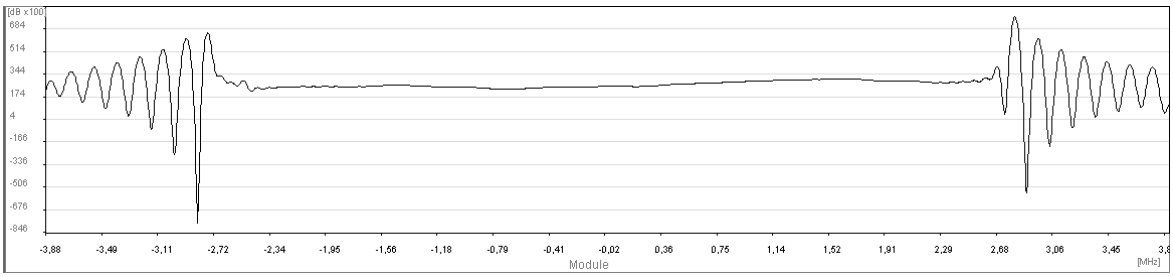
Figure 32. Filter window: complex filter coefficients graph



5.9.1.4 Module graph

The Module graph shows the actual output signal module according to the complex filer coefficients applied.

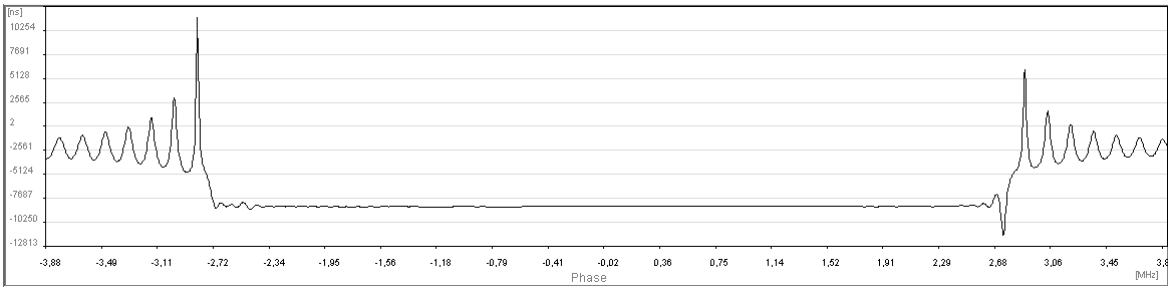
Figure 33. Filter window: module graph



5.9.1.5 Phase graph

The Phase graph shows the actual output signal phase according to the complex filer coefficients applied.

Figure 34. Filter window: phase graph



5.9.2 Adaptive Non-Linear Precorrection

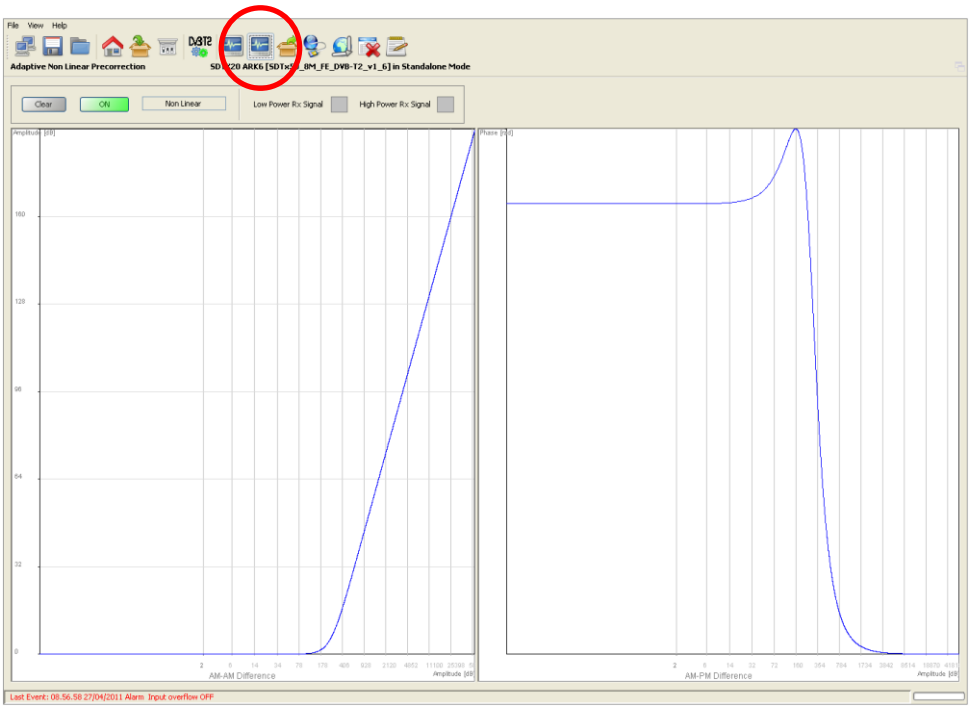
The Non Linear Adaptive Filter provides the ARK6-T2 with an effective **adaptive non linear compensation**.

The developed system is responsible for pre-emptively compensating the signal in order to make unimportant the contribution of the intermodulation products due to the power amplifiers.

The signal passes through the power amplifiers and re-enters the system as to determine the distortion and the compensating adaptive filter.

In order to enable the adaptive non linear precorrection, click on the ON/OFF button.

Figure 35. Adaptive Non Linear Precorrection



5.9.2.1 Adaptive Non Linear Precorrection: Management panel

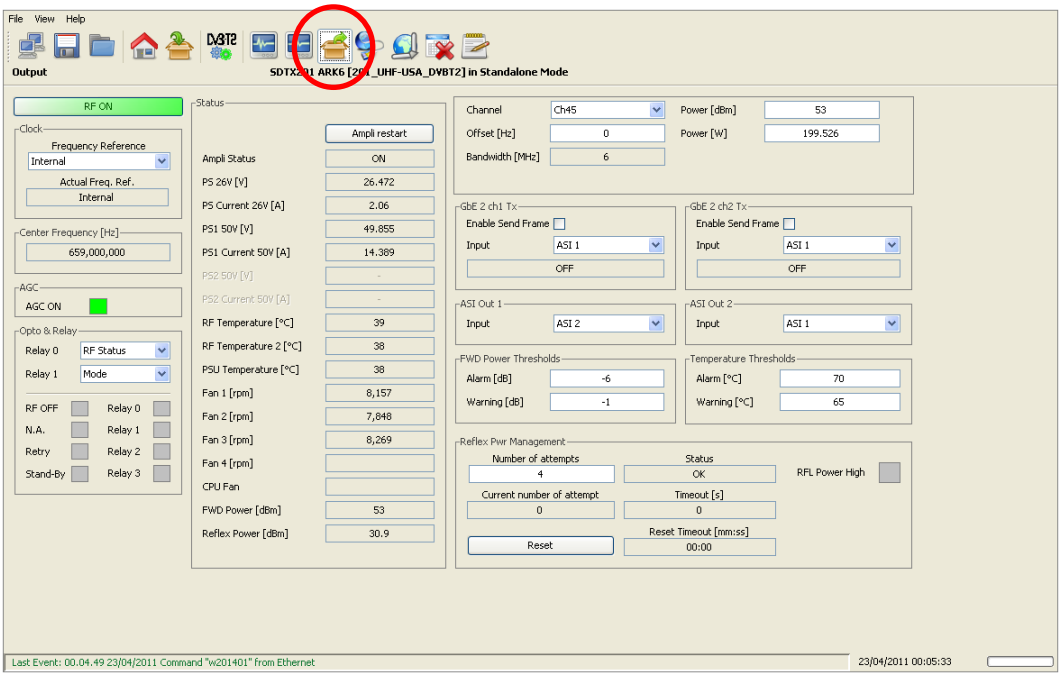
Table 16. Adaptive Non Linear Precorrection: Management panel

Box	Parameter / Control	Description	Admitted Ranges / Values
General	Clear	Resets the filter coefficients to zero.	
General	ON/OFF	Enables the adaptive non linear compensation.	• ON(Green):Enabled • OFF(Red): Disabled
General	Status	Shows the type of adaptive compensation currently used, if any.	• None • Linear • Non Linear
General	Low Power Rx Signal	Indicates that the signal that re-enters the system has a low power. When this flag is on, the automatic update of the filter coefficients is stopped.	• Red: Alarm On • Grey: Alarm Off
General	High Power Rx Signal	Indicates that the signal that re-enters the system has a high power. When this flag is on, the automatic update of the filter coefficients is stopped.	• Red: Alarm On • Grey: Alarm Off

5.10 Output

Click on Output button, highlighted in the next figure, to access the output window.

Figure 36. Output window



Use the Output window to change Ethernet, RF and ASI outputs settings, and to monitor all available hardware indicators.

ASI Out selectors are used as direct bypass of the specified inputs to ASI OUT HP and ASI OUT LP output interfaces.

Table 17. Output window

Box	Parameter / Control	Description	Admitted Ranges / Values
General	RF ON / OFF	Output RF signal enabling. The possible output RF signal status are the following: • ON; • RF OFF: automatic switch off of the output signal (refer to Amplifier status); • OFF: manual switch off of the output signal.	• Green: ON • Green: RF OFF • Red: OFF
Clock	Frequency reference	Frequency reference source selector. This command will select the reference source used to lock the internal clocks (10 MHz and 1 PPS). When set to internal the 10 MHz clock and 1 PPS generator runs unlocked. When set to external or GPS the 10 MHz clock is locked to the source selected and the 1 PPS counter reset is triggered by the source 1 PPS. Note: External 10 MHz, 1PPS and GPS shall be connected and locked when the External and GPS are selected as frequency references. If the Network Mode is SFN and the Frequency Reference is set to Internal, the frequency reference is automatically forced to GPS and the event “Freq Ref Forced: GPS” is generated Use the Actual Freq. Ref.indicator in order to check the used reference source.	• External • Internal • GPS
Clock	Actual Freq. Ref.	Frequency reference source actually used.	• External • Internal • GPS
Centre Frequency[Hz]		Shows the output centre frequency expressed in Hz.	
AGC	AGC ON	AGC status.	• Green: ON • Grey: OFF

Box	Parameter / Control	Description	Admitted Ranges / Values
Status	PS 26V [V]	First PSU voltage indicator, expressed in Volt, for SDTx20, SDTx50, SDTx201 and SDTx501 devices.	• Min: 24V • Max: 28V
Status	PS Current 26V [A]	First PSU current indicator, expressed in Ampere, for SDTx20, SDTx50, SDTx201 and SDTx501 devices.	• Max: 8A
Status	PS1 50V [V]	Second PSU voltage indicator, expressed in Volt, for SDTx201 and SDT501 devices.	• Min: 45V • Max: 55V
Status	PS1 Current 50V [A]	Second PSU current indicator, expressed in Ampere, for SDTx201 and SDT501 devices.	• Max: 18A
Status	PS2 50V [V]	Third PSU voltage indicator, expressed in Volt, for SDTx501 devices.	• Min: 45V • Max: 55V
Status	PS2 Current 50V [A]	Third PSU current indicator, expressed in Ampere, for SDTx501 devices.	• Max: 18A
Status	Ampli status	Current amplifier status indicator: 1. ON: the amplifier has been manually set to on and no alarms or settings switched it off 2. PS Alarm OFF: when an alarm of over current, over voltage or over power occurs on the second or third Power Supply, the Amplifier is restarted four times, if the alarm is still on, the Amplifier is automatically switched off. Single Power Supply models do not support this status 3. Restart: the amplifier has been automatically restarted due to an alarm for over current, over voltage or forward power exceeding the upper limit on the second Power Supply. Single Power Supply models do not support this status 4. Stand-by OFF: the equipment has been put on Standby mode and the amplifier has been automatically muted 5. Init: at every amplifier initialization the amp is automatically switched off.	• ON • PS Alarm OFF • Restarting • Stand-by OFF • Init • Alarm OFF • RF OFF • Opto OFF • Change mode • Missing file OFF

Box	Parameter / Control	Description	Admitted Ranges / Values
		6. Alarm OFF: an alarm switched off the amplifier 7. RF OFF: amplifier manually set to off 8. Opto OFF: output RF is switched off by an optocoupler 9. Change mode: the amplifier is automatically switched off during the mode switch (e.g. T1 / T2) 10. Missing file OFF: the amplifier is automatically switched off because of the lack of *.cdef and *.def files (additional files will be included in future releases). 11. Loading New Config: the amplifier is automatically switched off during the loading of new T2 configuration parameters, 12. Reflex Pwr High retry: the output RF stage has been restart because of the reflex power that has gone over the maximum threshold. 13. Reflex Pwr Alarm: the maximum number of attempts to restore the system after a Reflex Power High warning has been reached, the equipment is in Reflex Power High alarm and the Amplifier has been automatically switched off. 14. Test Mode: the amplifier is in ON state, but the transmitter is modulating a test signal instead of the selected input. 15. Start New Firmware: during the loading of a new fw the output RF is OFF. 16. Restart Mode: a system error occurs and the FPGA fw boot is forced. During these operations the amplifier is turned OFF.	• Loading New Config • Reflex Pwr High Retry • Reflex Pwr High Alarm • Test Mode • Start New Fw • Restart Mode
Status	RF Temperature [°C]	Case temperature indicator (values are expressed in °C).	
Status	RF Temperature 2 [°C]	2nd Case temperature indicator (values are expressed in °C). Only in SDTx201 and SDTx501 versions.	
Status	PSU Temperature	PSU temperature indicator (values are expressed in °C).	
Status	Fan 1	Fan 1 speed indicator (values are expressed in rpm). Used in SDTx20, SDTx50, SDTx201 and SDTx501	

Box	Parameter / Control	Description	Admitted Ranges / Values
Status	Fan 2	Fan 2 speed indicator (values are expressed in rpm). Used in SDTx20, SDTx50, SDTx201 and SDTx501.	
Status	Fan 3	Fan 3 speed indicator (values are expressed in rpm). Used in SDTx20, SDTx50, SDTx201 and SDTx501.	
Status	Fan 4	Fan 4 speed indicator (values are expressed in rpm). Used in SDTx501.	
Status	CPU Fan	Shows the status of the CPU fan. There are two types of errors: • Fan fault: fan speed equal to zero; • No Fan: the CPU fan is not connected.	• FAN_OK • FAN_FAULT • NO_FAN
Status	FWD Power [dBm]	Output forward power indicator (values are expressed in dBm).	
Status	Reflex Power [dBm]	Output reflex power indicator (values are expressed in dBm).	
Opto & Relay	Relay 0	Selector of Relay 0 mode.	• Alarm: indicator of an alarm condition • Mode: indicator of operating mode • RF Status: indicator output RF signal status (on/off)
Opto & Relay	Relay 1	Selector of Relay 1 mode.	• Alarm: indicator of an alarm condition • Mode: indicator of operating mode

Box	Parameter / Control	Description	Admitted Ranges / Values
Opto & Relay	Relay 0…3	Relays status indicators.	• Green: Alarm on/Mode A/RF Off • Grey: Alarm off/Mode B/RF On
Opto&Relay	RF OFF	RF Off Opto status indicators. Opto 0 is a output RF manual on/off switch: • Closed (0): RF off • Opened (1): RF on (default value)	• Green: Closed (0) • Grey: Opened (1)
Opto&Relay	N.A.	**NOT AVAILABLE** Switch mode Opto status indicators. When the Switch mode is set to Opto: • Closed (0): Switch to mode B • Opened (1): Switch to mode A	• Green: Closed (0) • Grey: Opened (1)
Opto&Relay	N.A.	**NOT AVAILABLE** Retry of amplifier alarms status indicators.(only in SDTX 201 version);	• Green: Closed (0) • Grey: Opened (1)
Opto&Relay	Stand-By	Stand-by enabling Opto status indicators: .(in version SDTX 20/50/201); • Closed (0): stand-by on • Opened (1): stand-by off Interlock Opto status indicators.(only in SDTX 501 version); • Closed (0): Interlock off • Opened (1): Interlock on	Stand-by enabling Opto status indicators • Green: Closed (0) • Grey: Opened (1) Interlock Opto status indicators • Green: Closed (0) • Red: Opened (1)
General	Channel	Output channel.	Channel ranges are device's definition dependant.

Box	Parameter / Control	Description	Admitted Ranges / Values
General	Offset [Hz]	Output frequency offset (expressed in Hz).	• Min: -200 kHz • Max: +200 kHz
General	Power [dBm]	Output power (expressed in dBm).	Output power ranges are device's definition dependant.
General	Power [W]	Output power (expressed in W).	
General	Bandwidth [MHz]	The output channel bandwidth.	It depends on the device definition.
FWD Power Thresholds	Warning [dB]	Forward power warning threshold expressed in dB.	• Min: -16 dB • Max: 0 dB
FWD Power Thresholds	Alarm [dB]	Forward power alarm threshold expressed in dB.	
Temperature Thresholds	Warning [°C]	Temperature warning threshold expressed in °C.	• Min: 50 °C • Max: 74 °C
Temperature Thresholds	Alarm [°C]	Temperature alarm threshold expressed in °C.	
GbE 2 ch1/2 Tx	Enable send frame	Ethernet channel 1 transmission enabling.	• Checked: Enabled • Not checked: Disabled

Box	Parameter / Control	Description	Admitted Ranges / Values
GbE 2 ch1/2 Tx	Input	It selects which TS input shall be re-transmitted on RTP output channel 1. This selection is totally independent from the selection of the TS input to the modulator.	• ASI 1 • ASI 2 • ASI 3 • ASI 4 • Tuner 1 (if present) • Tuner 2 (if present) • GbE 2 ch1 • GbE 2 ch2
GbE ch1/2 Out	Status	Ethernet transmission on channel 1 status indicator.	• Resolving IP Addr. • IP not found • No entry • Transmitting data • Transmitting data multicast • No TS input • ON • OFF

Box	Parameter / Control	Description	Admitted Ranges / Values
ASI Out 1/2	Input	Digital modes: Selects which Transport Stream shall be re-proposed on ASI OUT HP/LP output. Analog modes: Selects which SDI input shall be re-proposed on ASI OUT HP/LP output. This selection is totally independent from the selection of the input of the modulator.	• Digital: ○ ASI 1 ○ ASI 2 ○ ASI 3 ○ ASI 4 ○ Tuner 1 (if present) ○ Tuner 2 (if present) ○ GbE 2 ch1 ○ GbE 2 ch2 ○ Rate Ad Out • Analog: ○ SDI 1 ○ SDI 2 ○ SDI 3 ○ SDI 4

5.10.1 Reflex Power Management

The ARK6 is provided with a reflex power control logic that prevents the amplifier stage from being permanently damaged.

Figure 37. Reflex Pwr Management

If the output reflex power goes over its alarm threshold, the amplifier stage is automatically shut down and the system reacts to this situation on the basis of the user selectable “Number of attempts”.

In the case that the user sets a “Number of attempts” equal to zero, the red “RFL Power High” LED is turned on, the “Status” indicator shows “Alarm” and the amplifier stage is shut down by a “Reflex Pwr High Alarm”.

In the case that the user sets N as “Number of attempts”, where N is different from zero, a self test is conducted to determine if the system can be successfully restored. The red “RFL Power High” LED is turned on, the “Status” indicator shows “Warning” and the amplifier stage is restarted N times. The delay between two consecutive attempts is fixed to 10 seconds. At every RF ON/OFF the “Ampli status” indicator will show “Reflex Pwr High Retry”. When the maximum number of attempts is reached, the “Status” indicator shows “Alarm” and the amplifier stage is shut down by a “Reflex Pwr High Alarm”.

When the “Reflex Pwr High Alarm” is on the amplifier stage is permanently shut down. Once the operator has carried out the necessary checks, the amplifier shall be manually reset through the button “Reset”.

If the RFL power control mechanism is in warning state and the RFL power level doesn’t go over the alarm threshold for 30 minutes, the amplifier stage is automatically reset.

The events associated to the reflex power control logic are the following:

- “RFL Power Warning”: the reflex power level is higher than the specification and the “Number of attempts” is different from zero.
- “RFL Power OK”: RFL power goes under the alarm threshold.
- “RFL Power Alarm”: RFL power goes over the alarm threshold for N times, where N is the number of attempts specified in the Output page of the Java GUI.
- “RFL RF OFF”: The output RF has been switched off because of either a RFL Power Warning (for every attempt to restore the system) or a RFL Power Alarm.
- “RFL RF ON ”*N”:* The output RF has been switched on after attempt number “*N*”.

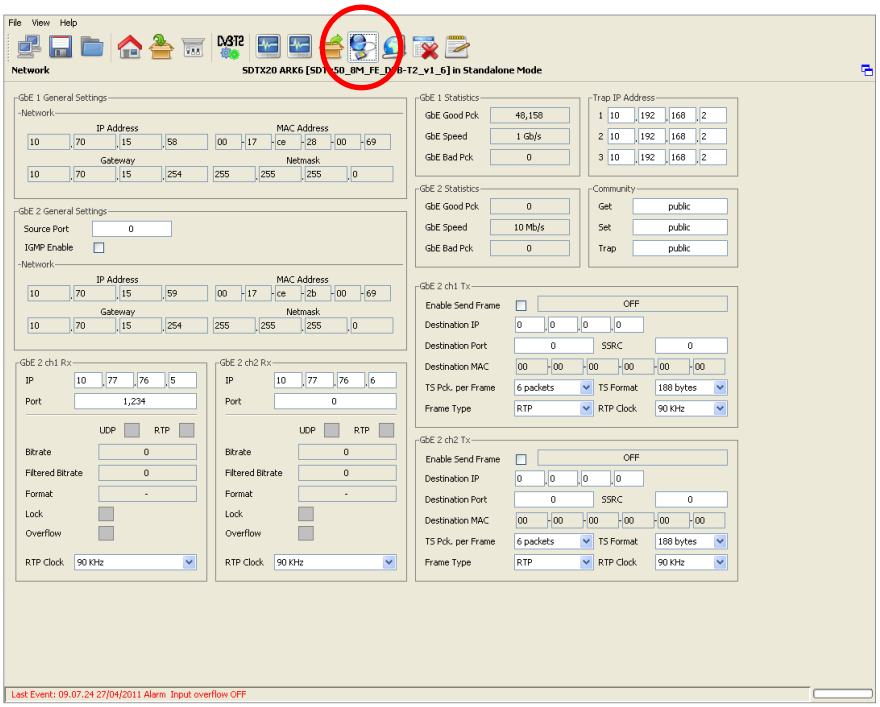
Table 18. Output window: Reflex Pwr Management

Box	Parameter / Control	Description	Admitted Ranges / Values
Reflex Pwr Management	Number of attempts	The number of attempts to restore the system after RFL power has gone over the alarm threshold.	• Min: 0 • Max: 255
Reflex Pwr Management	Current number of attempt	The current number attempt to restore the system.	• Min: 0 • Max: "*Number of attempts*"
Reflex Pwr Management	Status	It shows the current status of the Reflex Power.	• OK • Warning • Alarm
Reflex Pwr Management	RFL Power High	It shows if RFL power goes over the alarm threshold.	• Red: RFL power over the alarm threshold • Grey: RFL power under the alarm threshold
Reflex Pwr Management	Timeout [s]	The timeout between two consecutive attempts.	Fixed to 10 seconds
Reflex Pwr Management	Reset	This button resets the amplifier stage when it is switched off due to a Reflex Power High alarm.	
Reflex Pwr Management	Reset Timeout [s]	If the RFL power control mechanism is in warning state and the RFL power level doesn't go over the alarm threshold for 30 minutes, the amplifier stage is automatically reset.	Fixed to 30 minutes

5.11 Network

Click on Network button, highlighted in the next figure, to access the Network management window.

Figure 38. Network window



This window allows the Network management on both PRO-MPEG COP 3 RX and TX sides. It also allows the monitoring of the board IP and MAC addresses.

Note: The Clock Recovery Function, used in MFN transmissions of received streams on Ethernet channels 1 and/or 2, is based on the timestamps of incoming packets. UDP packets do not contain STS information therefore it is not allowed using GbE inputs with UDP protocol in MFN transmission mode.

Table 19. Network window

Box	Parameter / Control	Description	Admitted Ranges / Values
GbE 1/2 General Settings / Network	IP address	Gbe port 1 / 2 IP address.	
GbE 1/2 General Settings / Network	MAC address	Gbe port 1 / 2 MAC address.	
GbE 1/2 General Settings / Network	Gateway	Gbe port 1 / 2 Gateway address.	
GbE 1/2 General Settings / Network	Netmask	Gbe port 1 / 2 Netmask.	
GbE 2 General Settings / Network	IGMP Enable	Enables the IGMP protocol.	• Checked: Enabled • Not checked: Disabled
GbE 2 General Settings / Network	Source Port	Board transmitting port.	• Min: 0 • Max: 65.535
Trap IP address	1/2/3	Manager Trap 1/2/3 IP addresses.	
GbE 2 ch1/2 Rx	IP Address	Channel 1/2 receiving IP address.	
GbE 2 ch1/2 Rx	Port	Channel 1/2 receiving port.	• Min: 0 • Max: 65,535

Box	Parameter / Control	Description	Admitted Ranges / Values

GbE 2 ch1/2 Rx	Protocol	Ethernet input packets protocol.	• UDP/RTP:
			  ○ Green: Detected
			  ○ Grey: Not detected

GbE 2 ch1/2 Rx	Bitrate	Bit-rate of TS from Ethernet input.	
GbE 2 ch1/2 Rx	Filtered bitrate	Bit-rate actually used by the modulator.	• Zero when the input is not selected • Equal to the total bit-rate, when Delete Null Packets disabled • Less than total bit-rate, when Delete Null Packets enabled
GbE 2 ch1/2 Rx	Format	Received transmission format.	• 188 Bytes • 204 Bytes
GbE 2 ch1/2 Rx	Lock	Ethernet input lock status indicator. The input Transport Stream is locked when no more than two consecutive Sync Byte are missed.	• Green: Lock • Grey: Not locked
GbE 2 ch1/2 Rx	Overflow	Input GbE overflow alarm status. This alarm condition occurs when the input bit-rate exceeds the capability of the modulation (Ref. to ETSI EN 302 755).	• Red: Alarm on • Grey: Alarm off
GbE 2 ch1/2 Rx	RTP Clock	RTP packets source clock reference.	• 90 kHz • 27 MHz
GbE 1 / 2 Statistic	GbE Good Pck	Total amount of frames delivered to the higher-level protocol.	
GbE 1 / 2 Statistic	GbE Speed	Ethernet connection speed. No duplex information is provided.	• 10 Mbit//s • 100 Mbit//s • 1 Gbit/s

Box	Parameter / Control	Description	Admitted Ranges / Values
GbE 1 / 2 Statistic	GbE Bad Pck	The number of inbound packets that contained errors.	
Community	Get	Read community setting.	
Community	Set	Set community setting.	
Community	Trap	Trap community setting.	
GbE 2 ch1/2 Tx	Enable send frame	Channel 1/2 Ethernet transmission enabling.	• Checked: Enabled • Not checked: Disabled
GbE 2 ch1/2 Tx	IP	Channel 1/2 Ethernet transmission IP address.	
GbE 2 ch1/2 Tx	Port	Port used for RTP/UDP data transmission	• Min: 0 • Max: 65,535
GbE 2 ch1/2 Tx	Status	Ethernet transmission on channel 1/2 status indicator.	• Resolving IP Addr. • IP not found • No entry • Transmitting data • Transmitting data multicast • ON • OFF
GbE 2 ch1/2 Tx	Destination MAC	Destination MAC address.	
GbE 2 ch1/2 Tx	SSRC	SSRC identifier of the RTP transmission on channel ½.	

Box	Parameter / Control	Description	Admitted Ranges / Values
GbE 2 ch1/2 Tx	TS Pck per Frame	Number of packets per frame.	• Min: 1 • Max: 7
GbE 2 ch1/2 Tx	Frame type	Transmission protocol selector.	• RTP • UDP
GbE 2 ch1/2 Tx	TS Format	Transmission format.	• 188 Bytes • 204 Bytes
GbE 2 ch1/2 Tx	RTP Clock	RTP packets clock reference.	• 90 kHz • 27 MHz

5.12 GPS

Click on GPS button, highlighted in the next figure, to access the GPS received statistics window.

Figure 39. GPS window

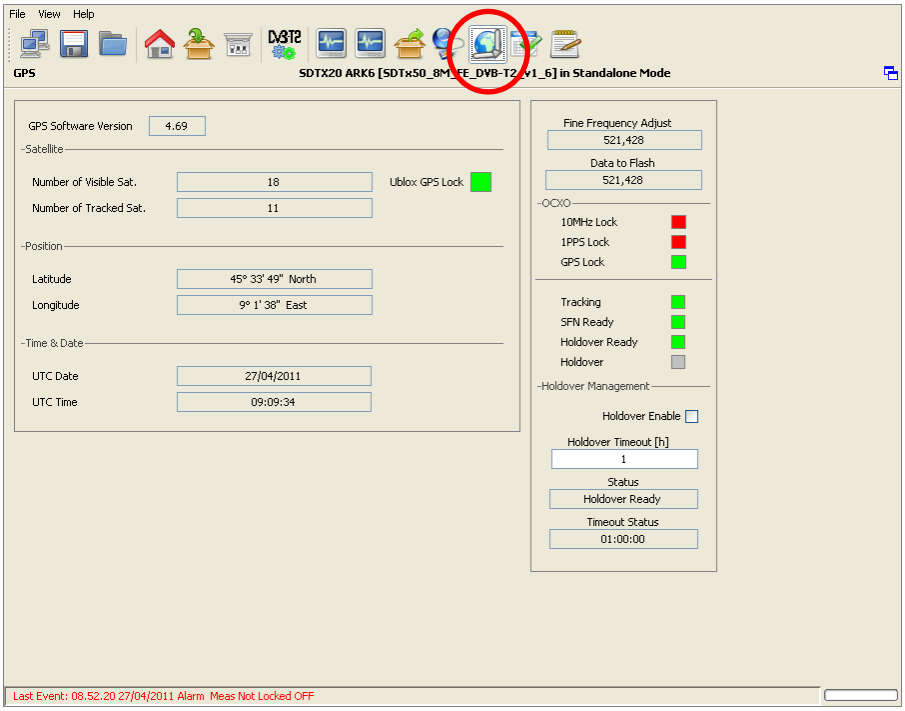


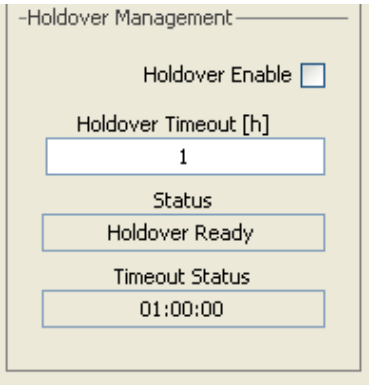
Table 20. GPS window

Box	Parameter / Control	Description	Admitted Ranges / Values
General	GPS Software Version	The firmware version of the GPS module.	
Satellite	#Number of Visible sat	Number of visible GPS satellites indicator.	
Satellite	#Number of Tracked sat	Number of tracked GPS satellites indicator.	
Satellite	Ublox GPS Lock	Ublox GPS Lock status. This LED shows the GPS lock status derived from live data provided by the GPS receiver through a proprietary protocol.	• Green: GPS Locked • Red: GPS Not Locked
Position	Latitude (°)	Site latitude expressed in degrees.	
Position	Longitude (°)	Site longitude expressed in degrees.	
Date & Time	UTC Time	Current time indicator. Each GPS satellite has an atomic clock and continually transmits messages containing the current time and date at the start of the message sent by the GPS itself.	
Date & Time	UTC Date	Current date indicator. Each GPS satellite has an atomic clock and continually transmits messages containing the current time and date at the start of the message send by the GPS itself.	

5.12.1 Holdover Management

The ARK6 includes a holdover function provided by a higher grade Oven-Controlled Crystal Oscillator.

Figure 40. Holdover Management



The ARK6 is equipped with an internal OCXO for improved phase noise and stability. The system is provided with internal 10MHz and 1PPS signals which are disciplined to the GPS time signal or to the 10MHz and 1PPS external references. The stability of internal frequency and phase is assured by the highly stable OCXO. If the satellites signal, from the GPS receiver, or the external reference sources are completely lost, the Holdover mode enables the unit to keep working with internal 10MHz and 1PPS for the duration of the Holdover Timeout, with very low drift over time. If the timeout period elapses prior to regain the lock of the selected clock reference source and the Holdover function is enabled, the alarm "Holdover" is raised.

Depending on the conditions, the Holdover function can work in one of the following state:

1. *Holdover OFF*
   - Condition 1: the clock reference is changed and the OCXO is not locked yet.
   - Condition 2: the input clock reference is not present.
   - Associated event: "Holdover OFF"-
2. *SFN Ready*
   - Condition: the OCXO is locked to the selected frequency reference and the system is waiting for the OCXO stabilization.
   - Associated event: "Holdover SFN Ready".
3. *Holdover Ready*
   - Condition 1: the OCXO is stable and the Holdover function is now available.
   - Condition 2: the system quit the Holdover mode because the OCXO regain the lock to the selected clock reference.
   - Associated event: "Holdover Ready".

4. *Holdover ON*

   - Condition: if the OCXO is no more locked to the selected frequency reference and the Holdover function is enabled and available, the equipment enters into holdover mode.
   - Associated event: “Holdover ON”.

5. *Holdover TMO Expired*

   - Condition: the Holdover state is “Holdover ON” (the function is enabled) and the Holdover timeout period elapses prior to regain the lock of the selected clock reference source.
   - Associated event: “Holdover TMO Expired”.

Table 21. GPS window: Holdover Management

Box	Parameter / Control	Description	Admitted Ranges / Values
General	Fine Frequency Adjust	Internal frequency reference fine tuning setting. It is possible to increase and decrease the frequency offset of the OCXO with reference to the 10MHz clock by 1/21 Hz steps using the Fine Frequency Adjust. This field is accessible only if the Frequency Reference selector is set to Internal	• Min: 0 • Max: 1,048,575
General	Data to Flash	The saved DAC value during the stabilization process of the OCXO. It represents the last saved frequency offset of the OCXO, expressed in 1/21 Hz steps, with respect to the selected frequency reference source. Using External or GPS as frequency reference, the last saved Data to Flash value will be: • retained after a software reset; • reinitialized to zero after a hardware reset (unit powered down and powered back up). Using Internal as frequency reference, the last saved Data to Flash value will be overwritten with the Fine Frequency Adjust value after: • a software reset; • an hardware reset; • setting to Internal the frequency reference.	• Min: 0 • Max: 1,048,575
OCXO	10MHz Lock	Shows the lock status of the OCXO to the external 10MHz reference.	• Red: Not Locked • Green: Locked
OCXO	1PPS lock	Shows the lock status of the OCXO to the external 1PPS reference.	• Red: Not Locked • Green: Locked

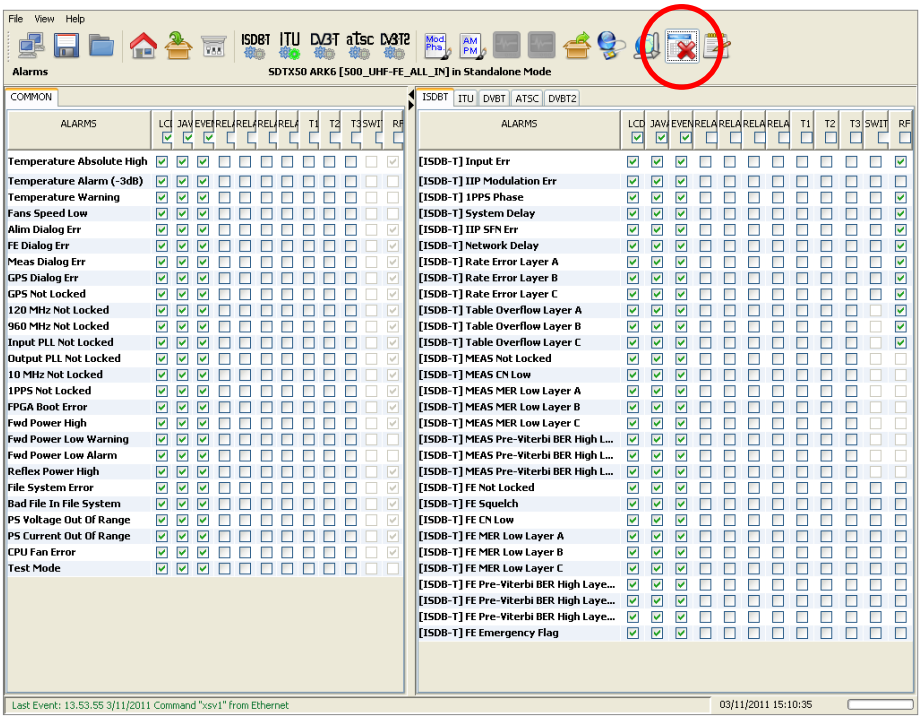
Box	Parameter / Control	Description	Admitted Ranges / Values
OCXO	GPS Lock	OCXO locked to the external GPS reference.	• Green: Locked • Grey: Not Locked
OCXO	Tracking	It shows whenever the OCXO is not locked to the selected frequency reference or not.	• Green: Locked • Grey: Not Locked
OCXO	SFN Ready	It shows whenever the OCXO is locked to the selected frequency reference and the system is waiting for the OCXO stabilization or not.	• Green: SFN Ready • Grey: SFN Not Ready
OCXO	Holdover Ready	It shows whenever the Holdover function is available or not.	• Green: Holdover Ready • Grey: Holdover Not Ready
OCXO	Holdover	It notifies that the equipment entered into Holdover mode	• Green: Holdover On • Grey: Holdover Off
Holdover Management	Holdover Enable	Enables the Holdover mechanism.	• Checked: Enabled • Not checked: Disabled
Holdover Management	Holdover Timeout [h]	Sets the timeout of the Holdover in hour.	• Min: 0 h • Max: 24 h
Holdover Management	Status	The status of the Holdover mechanism.	• OFF • SFN Ready • Ready • ON • Expired

Box	Parameter / Control	Description	Admitted Ranges / Values
Holdover Management	Timeout Status	The countdown of the Holdover timeout.	• Min:00:00:00 • Max: “Holdover Timeout [s]”

5.13 Alarms

Click on Alarms button, highlighted in the next figure, to access the alarms management window.

Figure 41. Alarms window



The Alarms window allows the setting of alarm masks and the monitoring of alarms status. Use alarm masks to select how and which alarm have to be notified.

Masks are organized in columns. The twelve columns represent twelve destinations of each alarm notification:

- **GUI:** the selected alarms status is notified on the Java alarm page icon.
- **LCD:** the selected alarms status is notified on LCD display lighting the alarm button and listing the alarms in the Alarms menu.
- **Event:** the selected alarms status generate an alarm event that will be logged in the event memory (refer to Events paragraph).
- **RELAY0…3:** the selected alarms switch on the corresponding relay.
- **T1…T3:** the selected alarms generate the corresponding trap messages (refer to Network paragraph to set destination IP addresses).
- **RF:** the selected alarms switch off the output RF signal. The RF mask is almost entirely fixed in order to avoid device damages or malfunctioning.
- **SWITCH:** the selected alarms trigger the automatic input switching, if enabled.

In the Alarms window, when an alarm condition occurs, the relative alarm is red highlighted. The Total check boxes enable all alarms-to-masks associations.

Table 22. Alarms window

Alarm	Description and limitations	Troubleshooting	Mode(2)	RF mask (1)
Temperature Absolute High	Case temperature over 75°C, the maximum endurable limit.	• Check alarm and warning thresholds • Lower the output power to decrease internal temperature • Check the device airflow • Check fans	C	1
Temperature Alarm (-3dB)	Temperature level goes over the alarm threshold. The output power is consequently lowered by 3 dB (always within the admitted power range).		C	0
Temperature Warning	Temperature level goes over the warning threshold.		C	0
Fans Speed Low	One of the fans speed is under the minimum speed level (2,000 rpm).	• Check fans connections • Verify that fans are not damaged; in this case substitute them. The substitution can be performed during device normal operations	C	0
Alim Dialog Err	Communication errors between the main board and the power supply board.	• Hardware fault	C	1
FE Dialog Err	Communication errors between the main board and the Front-End board.	• Hardware fault	C	1
Meas Dialog Err	Communication errors between the main board and the Measure board.	• Hardware fault	C	1

Alarm	Description and limitations	Troubleshooting	Mode(2)	RF mask (1)
GPS Not Locked	GPS signal is not locked by either the OCXO or the GPS receiver. The monitoring of this alarm is disabled when GPS is not used as clock reference or when the GPS Communication Error is raised.	• Check cable and GPS antenna connections • Hardware fault	C	1
GPS Dialog Err	Communication errors between main board and GPS board. The monitoring of this alarm is disabled when GPS is not used as clock reference.	• Hardware fault	C	1
120MHz Not Locked	120 MHz is not locked. The monitoring of this alarm is disabled when the Signal 10 MHz Not Locked alarm is raised or when GPS is used as clock reference and GPS alarm (GPS Not Locked, GPS Dialog Err) is raised.	• In SFN configuration, when selected TS input or MIP are not detected, 120 MHz oscillator can lose the lock • Hardware fault	C	1
960MHz Not Locked	960 MHz is not locked.	• Hardware fault	C	1
Input PLL Not Locked	Input PLL not locked alarm	• Hardware fault	C	1
Output PLL Not Locked	Output PLL not locked alarm	• Hardware fault	C	1
Bad File In File System	One or more of the following files are not present in the File System:	• Check files list	C	1

Alarm	Description and limitations		Troubleshooting	Mode(2)	RF mask (1)
	*.cfg *.drlin *.ochf *.fpga6 *.snmp *.htm	*.jar *.def *.pwr2 *.sav *.cdef2 *.gpsf	• Reload the file system		

10MHz Not Locked	10 MHz is not locked.		• If the frequency reference is Internal: OCXO fault
			• If the frequency reference is External:
			  ○ OCXO fault
			  ○ Lack of external 10 MHz
			  ○ Hardware fault
			• If the frequency reference is GPS:
			  ○ Check GPS alarms
			  ○ OCXO fault
			  ○ Hardware fault
				C	1

Alarm	Description and limitations	Troubleshooting	Mode(2)	RF mask (1)

1PPS Not Locked	1PPS is not locked to the selected frequency reference.	• If the frequency reference is Internal: OCXO fault
		• If the frequency reference is External:
		  ○ OCXO fault
		  ○ Lack of external 1PPS
		  ○ Hardware fault
		• If the frequency reference is GPS:
		  ○ Check GPS alarms
		  ○ OCXO fault
		  ○ Hardware fault
			C	1

FPGA Boot alarm	FPGA boot has not been successfully completed.	• Restart the machine • Reload the file system	C	1
Forward Power High	FWD power goes over the maximum endurable limit.	• Hardware fault	C	1
Forward Power Low Warning	FWD power level goes over the warning threshold.	• Check alarm and warning thresholds • At every amplifier initialization the FWD power alarm and warning are temporary on • Amplifier is not properly working, hardware fault	C	0
Forward Power Low Alarm	FWD power level goes over the alarm threshold.		C	0
Reflex Power High	RFL power goes over the set power -9 dB.	• Check the RF output for disconnection or wrong impendence adaptation	C	0
File System Error	File System loading error.	• File system partition damage	C	1

Alarm	Description and limitations	Troubleshooting	Mode(2)	RF mask (1)
PS Voltage Out Of Range	Power Supply voltage out of range. This alarm is risen when at least one of the following conditions is met: • PS 26V < 24V or > 28V • PS1/PS2 50V < 45V or > 55V	• Hardware fault	C	1
PS Current Out Of Range	Power Supply current out of range. This alarm is risen when at least one of the following conditions is met: • PS Current 26V > 8A • PS1/PS2 Current 50V> 18A	• Hardware fault	C	1
CPU Fan Error	CPU fan speed equal to zero or CPU fan not connected.	• Check fan connection	C	1
Test Mode	The equipment is generating a test signal.	• Disable the test signal	C	0
FE S2 Not Locked	Lock state indicator of the satellite feed.	• Check input signal and cable	C	X
FE S2 S/N Low	Front-End S/N measure goes over the alarm threshold.	• Check input signal and cable	C	X
FE S2 BER High	Front-End BER measure goes over the alarm threshold.	• Check input signal and cable	C	X
FE S2 Global Alarm		•	C	X
[DVB-T2] No Input	Selected TS input not locked.	• Check input cable • Check input statistics	T2	X

Alarm	Description and limitations	Troubleshooting	Mode(2)	RF mask (1)
[DVB-T2] Input Overflow	Selected TS input overflow.	• Check the capability of the current modulation scheme • Check if the configuration has been loaded	T2	X
[DVB-T2] FE Not Locked	Logical AND between FE TS lock and FE demodulator ready (SyncStat equals to 6).	• Check input signal and cable	T2	X
[DVB-T2] FE Squelch	Front-End Squelch level goes over the alarm threshold.	• Check input signal and cable	T2	X
[DVB-T2] FE Pre LDPC BER High	Front-End Pre LDPC BER goes over the alarm threshold.	• Check input signal and cable	T2	X
[DVB-T2] FE SNR Low	Front-End SNR goes under the alarm threshold.	• Check input signal and cable	T2	X
[DVB-T2] FE MER Low	Front-End MER goes under the alarm threshold.	• Check input signal and cable	T2	X
[DVB-T2] FE Signal Quality Low	Front-End Signal Quality goes under the alarm threshold.	• Check input signal and cable	T2	X
[DVB-T2] MEAS Not Locked	Logical AND between Meas TS lock and Meas demodulator ready (SyncStat equals to 6).	• Check the configuration • Check if the configuration has been loaded	T2	0
[DVB-T2] MEAS Pre LDPC BER High	Measure Pre LDPC BER goes over the alarm threshold.	• Check the configuration • Check if the configuration has been loaded	T2	0
[DVB-T2] MEAS SNR Low	Measure SNR goes under the alarm threshold.	• Check the configuration • Check if the configuration has been loaded	T2	0

Alarm	Description and limitations	Troubleshooting	Mode(2)	RF mask (1)
[DVB-T2] MEAS MER Low	Measure MER goes under the alarm threshold.	• Check the configuration • Check if the configuration has been loaded	T2	0
[DVB-T2] MEAS Signal Quality Low	Measure Signal Quality goes under the alarm threshold.	• Check the configuration • Check if the configuration has been loaded	T2	0
[DVB-T2] T2-MI Err	The logical OR of the following conditions: • CRC of incoming T2-MI pkts is not correct. • The Network mode is SFN but the selected Parameters Source is not T2-MI Parameters.	• Check input signal	T2	1
[DVB-T2] T2-MIP Err	T2-MIP errors	• Check input signal	T2	X
[DVB-T2] Holdover	An alarm that is raised when the Holdover function is enabled and the set timeout period elapsed prior to regain the lock of the frequency reference.	• Check input frequency reference source.	T2	X
[DVB-T2] PPS Phase	1PPS is not lock to a source reference common to the network. This alarm is available only when the frequency reference is external.	• Check 1PPS • Hardware fault	T2	X
[DVB-T2] Configuration Not Loaded	Some configuration parameters have been changed and the current configuration has not been loaded yet.	• Load the configuration through the Load Config button in DVB-T2 Processing window	T2	X
[DVB-T2] FE LDPC Mean Err	RF input LDPC iteration per minute goes over the alarm threshold.	• Check input signal	T2	X

Alarm	Description and limitations	Troubleshooting	Mode(2)	RF mask (1)
[DVB-T2] MEAS LDPC Mean Err	RF output LDPC iteration per minute goes over the alarm threshold.	• Check input signal	T2	0
[DVB-T2] SFN Alarm	The logical OR of the following conditions: • T2-MI Timestamp error. • T2-MI Timestamp wrong CRC. • T2-MI Timestamp not present. • The Holdover status is either OFF or TMO Expired. The monitoring of this alarm is disabled when the [DVB-T2] T2-MI Err alarm is on and when the Network mode is MFN.	• Check input signal	T2	X
[DVB-T] Input Not present Alarm	Seamless improper working warning One or both Seamless logic input of the current mode isn't locked. This alarm is enable only in Tx DVBT mode	• Check connection status of physical input associated to logic input • Check type and source of input associated to logic input • Hardware fault	T	0

Alarm	Description and limitations	Troubleshooting	Mode(2)	RF mask (1)
[DVB-T] Input Not valid Alarm	Seamless improper working warning An error has been detected on Logical seamless input. The possible errors which may be detected on input are: • PAT error • MIP error • TS synchronization • Packet jitter • Transport error • ASI word error When the alarm is detected, an event (if event mask is enabled on alarm mask) shows the cause of the error. The cause shown is only one, and it is the heaviest one. The priority in the errors is as previously listed (the heaviest error cause is the one listed in the bottom of the list, and so on).	• Check input signal • Check cable connection status • Hardware fault	T	0
[DVB-T] MIP Delay High	Seamless improper working warning This alarm is high when the MIP in one of the seamless inputs of the current mode, is not in its expected position. This can be caused by a too high delay on the input.	• Check cable connections • Check Network delay • Hardware Fault	T	0
[DVB-T] No Input	Selected TS input not locked. It could be either ASI or Tuner input.	• Check input cable • Check input statistics	T	X
[DVB-T] Input Overflow	Selected TS input overflow.	• Check the capability of the current modulation scheme	T	X

Alarm	Description and limitations	Troubleshooting	Mode(2)	RF mask (1)
[DVB-T] MIP Err	MIP packets missing. This alarm's RF OFF mask should always be enabled. Alarm raising limitations: The monitoring of this alarm is enabled only when the device has SFN modulation enabled. The monitoring of this alarm is disabled when a No Input alarm is raised.	• Check input signal	T	1
[DVB-T] PPS Phase	1PPS is not lock to a source reference common to the network. This alarm is available only when the frequency reference is external.	• Check 1PPS • Hardware fault	T	X
[DVB-T] SFN Alarm	Seamless improper working warning This alarm is high when the Network delay is greater than the Maximum delay or when the internal counter, used to compute the System delay is not locked to 1PPS. This alarm shall always be enabled in the RF Off alarm mask.	• Check cable connections • Check Network delay • Check 1PPS • Hardware Fault	T	1
[DVB-T] FE Not Locked	Logical AND between FE TS lock and FE demodulator ready (SyncStat equals to 6).	• Check input signal and cable	T	X
[DVB-T] FE Squelch	Front-End Squelch level goes over the alarm threshold.	• Check input signal and cable	T	X
[DVB-T] FE Pre Viterbi BER High	Front-End Pre Viterbi BER goes over the alarm threshold.	• Check input signal and cable	T	X
[DVB-T] FE SNR Low	Front-End SNR goes under the alarm threshold.	• Check input signal and cable	T	X

Alarm	Description and limitations	Troubleshooting	Mode(2)	RF mask (1)
[DVB-T] FE MER Low	Front-End MER goes under the alarm threshold.	• Check input signal and cable	T	X
[DVB-T] FE Signal Quality Low	Front-End Signal Quality goes under the alarm threshold.	• Check input signal and cable	T	X
[DVB-T] MEAS Not Locked	Logical AND between Meas TS lock and Meas demodulator ready (SyncStat equals to 6).	• Check the configuration • Check if the configuration has been loaded	T	0
[DVB-T] MEAS Pre Viterbi BER High	Measure Pre Viterbi BER goes over the alarm threshold.	• Check the configuration • Check if the configuration has been loaded	T	0
[DVB-T] MEAS SNR Low	Measure SNR goes under the alarm threshold.	• Check the configuration • Check if the configuration has been loaded	T	0
[DVB-T] MEAS MER Low	Measure MER goes under the alarm threshold.	• Check the configuration • Check if the configuration has been loaded	T	0
[DVB-T] MEAS Signal Quality Low	Measure Signal Quality goes under the alarm threshold.	• Check the configuration • Check if the configuration has been loaded	T	0
[DVB-T] Holdover	An alarm that is raised when the Holdover function is enabled and the set timeout period elapsed prior to regain the lock of the frequency reference.	• Check input frequency reference source.	T	X
[ITU] No video input	Selected input not locked.	• Check input cable • Check input statistics	ITU	X

Alarm	Description and limitations	Troubleshooting	Mode(2)	RF mask (1)
[ITU] Input Wrong Standard	Selected Input video standard (525 or 625 lines) not compatible with the ARK6 definition standard.	• Check input format • Check input statistics	ITU	X
[ITU] Holdover	An alarm that is raised when the Holdover function is enabled and the set timeout period elapsed prior to regain the lock of the frequency reference.	• Check input frequency reference source.	ITU	X
[ISDB-T] Input Error			ISDB-T	X
[ISDB-T] IIP Modulation Error			ISDB-T	X
[ISDB-T] 1PPS Phase	1PPS is not lock to a common reference of the network. This alarm is available only when the frequency reference is external.	• Check 1PPS • Hardware fault	ISDB-T	X
[ISDB-T] System delay			ISDB-T	X
[ISDB-T] IIP SFN error			ISDB-T	X
[ISDB-T] Network delay			ISDB-T	X
[ISDB-T] Rate error Layer A	The layer Rate alarm is on when the layer input bitrate is over/under the expected bitrate. Expected bit-rate depends on modulation parameter setting	• Check input bitrate • Check modulation parameter setting	ISDB-T	X

Alarm	Description and limitations	Troubleshooting	Mode(2)	RF mask (1)
[ISDB-T] Rate error Layer B	The layer Rate alarm is on when the layer input bitrate is over/under the expected bitrate. Expected bit-rate depends on modulation parameter setting	• Check input bitrate • Check modulation parameter setting	ISDB-T	X
[ISDB-T] Rate error Layer C	The layer Rate alarm is on when the layer input bitrate is over/under the expected bitrate. Expected bit-rate depends on modulation parameter setting	• Check input bitrate • Check modulation parameter setting	ISDB-T	X
[ISDB-T] Table Overflow Layer A	Table NOT inserted before next request to insert arrive	• Check the Table Bitrate • Check input Bitrate • Check modulation parameter setting	ISDB-T	X
[ISDB-T] Table Overflow Layer B	Table NOT inserted before next request to insert arrive	• Check the Table Bitrate • Check input Bitrate • Check modulation parameter setting	ISDB-T	X
[ISDB-T] Table Overflow Layer C	Table NOT inserted before next request to insert arrive	• Check the Table Bitrate • Check input Bitrate • Check modulation parameter setting	ISDB-T	X
[ISDB-T] MEAS not locked		• Check the configuration • Check if the configuration has been loaded	ISDB-T	0
[ISDB-T] MEAS CN Low			ISDB-T	0

Alarm	Description and limitations	Troubleshooting	Mode(2)	RF mask (1)
[ISDB-T] MEAS MER Layer A	Measure MER goes under the alarm threshold.	• Check the configuration • Hardware fault	ISDB-T	0
[ISDB-T] MEAS MER Layer B	Measure MER goes under the alarm threshold.	• Check the configuration • Hardware fault	ISDB-T	0
[ISDB-T] MEAS MER Layer C	Measure MER goes under the alarm threshold.	• Check the configuration • Hardware fault	ISDB-T	0
[ISDB-T] MEAS Pre-Viterbi BER High Layer A	Measure Pre-Viterbi BER goes over the alarm threshold.	• Check the configuration • Hardware fault	ISDB-T	0
[ISDB-T] MEAS Pre-Viterbi BER High Layer B	Measure Pre-Viterbi BER goes over the alarm threshold.	• Check the configuration • Hardware fault	ISDB-T	0
[ISDB-T] MEAS Pre-Viterbi BER High Layer C	Measure Pre-Viterbi BER goes over the alarm threshold.	• Check the configuration • Hardware fault	ISDB-T	0
[ISDB-T] FE Not Locked		•	ISDB-T	X
[ISDB-T] FE Squelch	Front-End Squelch level goes over the alarm threshold.	• Check input signal and cable	ISDB-T	X
[ISDB-T] FE CN Low			ISDB-T	X
[ISDB-T] FE MER Layer A	Front-End MER goes over the alarm threshold.	• Check input signal and cable	ISDB-T	X

Alarm	Description and limitations	Troubleshooting	Mode(2)	RF mask (1)
[ISDB-T] FE MER Layer B	Front-End MER goes over the alarm threshold.	• Check input signal and cable	ISDB-T	X
[ISDB-T] FE MER Layer C	Front-End MER goes over the alarm threshold.	• Check input signal and cable	ISDB-T	X
[ISDB-T] FE Pre-Viterbi BER High Layer A	Front-End Pre-Viterbi BER goes over the alarm threshold.	• Check input signal and cable	ISDB-T	X
[ISDB-T] FE Pre-Viterbi BER High Layer B	Front-End Pre-Viterbi BER goes over the alarm threshold.	• Check input signal and cable	ISDB-T	X
[ISDB-T] FE Pre-Viterbi BER High Layer C	Front-End Pre-Viterbi BER goes over the alarm threshold.	• Check input signal and cable	ISDB-T	X
[ISDB-T] FE Emergency Flag			ISDB-T	X
[ATSC] No Input	Selected input is not present. It could be either ASI or Tuner input.	• Check input cable • Check input statistics	ATSC	X
[ATSC] Input Overflow	Selected TS input overflow.	• Check input signal	ATSC	X
[ATSC] MH Err	MH error.	• Check input signal	ATSC	X
[ATSC] MEAS Demodulator Not Locked	ATSC demodulator of the Measure board not locked.	• Check the configuration	ATSC	0

Alarm	Description and limitations	Troubleshooting	Mode(2)	RF mask (1)
[ATSC] MEAS SNR Low	Measure SNR goes under the alarm threshold.	• Check the configuration	ATSC	0
[ATSC] FE Demodulator Not Locked	ATSC demodulator of the Front-End board not locked.	• Check input signal	ATSC	X
[ATSC] FE SNR Low	Front-End SNR goes under the alarm threshold.	• Check input signal	ATSC	X
[ATSC] No TVCT	Input TVCT table not present.	• Check input signal	ATSC	X

Notes to the table:

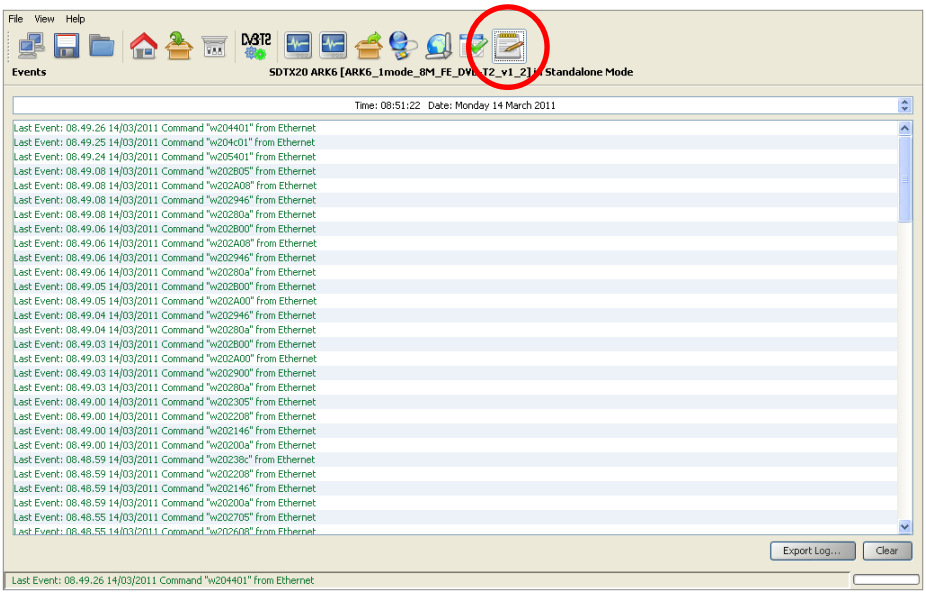
(1) 0/1 stands for disabled/enabled and is fixed, X stands for not fixed.

(2) C stands for Common alarm. T2/T/ATSC/ITU/ISDB-T specifies the mode the alarm belongs to. Alarms are divided in two different classes: common alarms and mode-specific alarms.
Common alarms are those which are HW dependant or are dependent on how the operating system has been designed. Common alarms are shared by all the operational modes.
Mode-specific alarms are those which depend on the implemented functionalities and standards. Mode-specific alarms can be easily recognized thanks to the addition of the mode prefix enclosed in squared brackets.

5.14 Events

Click on Events button, highlighted in the next figure, to access the events windows.

Figure 42. Events window



Open the Events window to slide the events list.

Events are reported with the following information:

- **Time:** event detection time.
- **Date:** event detection date.
- **Type:** type of event:
  - **Alarm;**
  - **Command;**
  - **Event;**
  - **System Init.**
- **Description:** event description:
  - if the event type is **Alarm**: which alarm generated the event followed by "**ON**" or "**OFF**";
  - if the event type is **Command**: the low level code and command source;
  - if the event type is **Event**: event description;
  - if the event type is **System Init**: system initialization, followed by the alarm in case of error.

Each event type is characterized by a different colour, the following list explain the mean of each colour:

- **Red: alarm** (refer to alarms list in Alarms paragraph and to Alarms list table);
- **Green: command** (See *ARK6_SW_Reference manual_v1_0.doc* for further information);
- **Blue: system Init** (refer to System Initialization Event paragraph);
- **Black:**
  - **Event** (refer to Events list table);
  - **TASK_ERR** (refer to Task Error Event paragraph);
  - **SYS_ERR** (refer to System Error Event paragraph).

Use the following buttons, sited on the right side of the window, to manage the Events list:

- **Clear:** resets the events list.
- **Get History:** gets all the stored events from the last board reset (max 512 events).

Table 23. Events descriptions list

Description-Event	Event Description
RF OFF enabled from OPTO	RF output switched off through OPTO 0.
RF OFF dis. from OPTO	RF output switched on through OPTO 0.
Stand-by ON from OPTO	Stand-by mode enabled through OPTO 3.
Stand-by ON from LCD	Stand-by mode enabled through LCD button or OPTO 3.
Stand-by ON CPU Fan Err	Stand-by mode enabled because of a CPU Fan error.
Stand-by OFF	Stand-by mode disabled through LCD button.
Power = *xx.x* dBm (Local)	New output power setting. *xx.x*: output power expressed in dBm.
Update file *.*xxxx*	New file loading. *xxxx*: file extension.
P5K open: *xx.xx.xx.xx*	Connection to port 5000 open. *xx.xx.xx.xx:* host IP address.
P5K closed	Connection to port 5000 closed.
File system busy	File system already in use while trying to employ it (e.g. change mode during a file loading).
Mode = (*mode*)	Manual change mode. *mode*: • "OFF", • "ISDBT", • "ITU", • "DVB-T", • "ATSC", • "DVB-T2", • "ECHO", • "Rep. Analog", • "Rep. Digital".
UTC Time set from GPS	Time and date set by GPS. As soon as the GPS lock is regained, once lost, and if the current time and date are different from the GPS ones, the UTC time is set by GPS.

Description-Event	Event Description
PS Restart *N*	This event is reported when one of the following alarms is raised: • PS1/2 50V voltage out range • PS1/2 50V current out of range The fourth time one of the preceding alarms is raised the amplifier is restarted (from 1 up to 4 times). *N:* number of amplifier restarting. Only in SDTX 201 and 501 versions.
PS OFF	After the fourth time the amplifier has been restarted, if an alarm condition causing a PS Restart event occurs, PS OFF event is reported and the amplifier is turned off When this event is reported amplifier can be turned on only by OPTO 2 or by the Restart button in the Output window (only in SDTX 201 and 501 versions).
Restart Amp. from OPTO	This event is reported when the retry command is given by the Retry Alarm OPTO (OPTO 2).
PS ON	This event is reported at every amplifier restarting
Events List cleared	This event is reported when the events list is cleared.
Updating *string* fw...	This event is reported when the update of the FPGA firmware starts. String values: • "ISDBT", • "ITU", • "DVB-T", • "ATSC", • "DVB-T2", • "ECHO", • "Rep. Analog", • "Rep. Digital".
FPGA firmware err *xx*	This event is reported when an error occurs during the update of the FPGA firmware. *xx:* error code: • 0x10, 0x20, 0x01, 0x02, 0x03: programming error; • 0x11: firmware not found in FS (for the current mode); • 0x22: FPGA file opening error; • 0x33: FPGA file reading error; • 0x44: erasing FLASH memory block error.
FPGA firmware OK	New FPGA firmware successfully loaded.
Saving config…	Saving configuration task started (after the command “s” given by RS232 or GbE commands).
Save config Finished	Saving configuration task correctly ended.
Save config error: *xx*	An error occurs during saving configuration. *xx:* error code: • 0x80: File system busy; • 0x01: New *.sav file opening error; • 0x02: uC header writing error; • 0x03: uC data writing error; • 0x04: FPGA header writing error; • 0x05: FPGA data writing error; • 0x07: File date writing error; • 0x08: Old *.sav file deleting error • 0x09: New file naming error (deleting of “*”); • 0x0A: File date writing error it can’t be found into the FS • 0x10: file already opened.
Pwr adjusted to *xx.x* dBm	New output power setting due to a set value exceeding the mode specific power range. *xx.x*: output power expressed in dBm.

Description-Event	Event Description
In. AUTO switch to *string*	When Input Select Mode is set on Autoswitch and the selected input is not locked the device switch to the next available locked input (refer to Task Error Event paragraph) and this event is generated. *string:* • ASI1 • ASI2 • ASI3 • ASI4 • Tuner • RxCh1 • RxCh2
Forced = *mode*	If the device is in Mode A and the selected working mode is disabled by default (as established in the MODE_DIS field of the *.def file), the next available working mode is forced. *mode*: • "ISDBT", • "ITU", • "DVB-T", • "ATSC", • "DVB-T2", • "ECHO", • "Rep. Analog", • "Rep. Digital".
Forced Ch In A= *string*	Channel input.
Forced ChOut A= *string*	Channel output.
Forced reset for IIC err	An IIC error forced the board reset.
=>*string* err *status*	It notifies witch file generated the Bad file in File System alarm. *string*: file extension *status*: ON or OFF
ERR on delete file '*string*'	After a FS file update the old file is renamed and then deleted. This event is reported when the deletion of the old file during the system initialization does not succeed. *string*: file extension.
Delete file '*string*'	FS file deleted. *string*: file extension.
Init FS date	This event is reported once time and date table of the File System is initialized for the first time.
Error init FS date *xx*	An error occurs during FS initialization. *xx*: error code: • 0x01: EEPROM data reading error; • 0x02: EEPROM data writing error; • 0x03: CRC error in time and date table.
Error on delete *.*string*	FS file deleting error. *string*: file extension.
S1/S2 changed, P1 loading	Automatic update of P1 symbol. This event is reported at every system initialization and, in T2-MI mode, when S1 and S2 fields of incoming T2-MI pkts change.
Saving drlin …	Saving linear coefficients task started (after the command "p2" given by RS232 or GbE commands).
Saving drlin Finished	Saving linear coefficients task correctly ended.

Description-Event	Event Description
Save drlin err: *xx*	An error occurs during saving linear precorrection coefficients. *xx:* error code: • 0x80: File system busy; • 0x01: New *.drlin file opening error; • 0x02: number of coefficients information writing error; • 0x03: linear coefficients writing error; • 0x07: File date writing error; • 0x08: Old *.drlin file deleting error • 0x09: New file naming error (deleting of "*"); • 0x10: file already opened; • 0x0A: File date writing error it can't be found into the FS.
New T2MI PID *N*	New T2-MI PID found by the Automatic T2-MI PID Mode mechanism.
IIC Error	IIC bus error
DVB-T2 params err *xx*	An error occurs during T2 parameters loading. *xx*: error code: • 0x01: P1 symbol loading error; • 0x02: P1 symbol loading error due to a not valid T2-MI input.
Re-start mode	When DVB-T2 params err 01 occurs during T2 parameters loading, the FPGA firmware is reloaded and this event is generated.
DVB-T2 preset err *xx*	An error occurs during T2 preset configuration loading. *xx*: error code: • 0x80: File system busy; • 0x01: *.t2cfg file opening error; • 0x02: *.t2cfg file header reading error; • 0x03: the selected configuration is corrupted; • 0x04: preset configuration data too big; • 0x05: memory allocation error; • 0x06: *.t2cfg file header reading error; • 0x09: *.t2cfg file not found; • 0x10: the selected configuration is not present.
RFL Power Warning	RFL power goes over the alarm threshold for the first time and the "Number of attempts" is different from zero.
RFL Power OK	RFL power goes under the alarm threshold.
RFL Power Alarm	RFL power goes over the alarm threshold for N times, where N is the number of attempts specified in the Output page of the Java GUI.
RFL RF ON "*N*"	When RFL power goes over the alarm threshold the system switch off and on the output RF signal for a maximum number of times. N is the current number of attempt.
T2-MI Autodetect PID OK	The Automatic T2-MI PID detection has been put across
T2MI PID PAT Err	During Automatic T2-MI PID operations, PAT has not been found in the input Transport Stream.
T2-MI PID Not Valid	During Automatic T2-MI PID operations, no PIDs with stream type x06 has been found in the PMT.
T2MI PID PMT Err	During Automatic T2-MI PID operations, more than one PID with stream type x06 has been found in the PMT.
T2-MI PID Not Found	During Automatic T2-MI PID operations, the detected T2-MI PID has not been found in the input Transport Stream
Freq Ref Forced: GPS	If the Network mode is SFN but the clock reference is set to Internal, the frequency reference is automatically forced to GPS and this event is generated.
Freq Ref set to *string*	Event generated at every new Frequency Reference selection. *string:* the clock reference • External • Internal • GPS

Description-Event	Event Description
Holdover OFF	Condition 1: the clock reference is changed and the OCXO is not locked yet. Condition 2: the input clock reference is not present.
Holdover SFN Ready	The OCXO is locked to the selected frequency reference and the system is waiting for the OCXO stabilization.
Holdover Ready	Condition 1: the OCXO is stable and the Holdover function is now available. Condition 2: the system quit the Holdover mode because the OCXO regain the lock to the selected clock reference.
Holdover ON	If the OCXO is no more locked to the selected frequency reference and the Holdover function is enabled and available, the equipment enters in holdover mode.
Holdover TMO Expired	Condition: the Holdover state is “ON” (the function is enabled) and the Holdover timeout period elapses prior to regain the lock of the selected clock reference source.
Fan *N* Speed *string*	It notifies which fan caused the Fans Speed Low alarm. *string*: • Low; • OK
Updating GPS fw…	This event is reported when the update of the GPS firmware starts.
GPS firmware err *xx*	This event is reported when an error occurs during the update of the GPS firmware. *xx:* error code: • 0x80: File system busy; • 0x01: firmware not found in FS (for the current mode); • 0x02: GPS file opening error; • 0x03: GPS file reading error; • 0x06:GPS fw transferring into buffer error.
GPS firmware OK	New GPS firmware successfully loaded.
Updating GPS fw (NILL)…	When an error occurs during the update of the GPS firmware, the system reloads the Nill firmware prior to attempt another update.

The following table lists the descriptions of all the alarm type events (refer to Alarms paragraph for further information about alarms).

Table 24. Alarms descriptions list

Alarm	Description-Alarm
Temperature Absolute High	Temp. High
Temperature Alarm (-3dB)	Temp. High -3dB
Temperature Warning	Temp. High Warning
Fans Speed Low	Fans Speed Low
Alim Dialog Err	Alim Dialog Err
FE Dialog Err	FE Dialog Err
Meas Dialog Err	Meas Dialog Err
GPS Dialog Err	GPS Dialog Err
GPS Not Locked	GPS Not Locked
120MHz Not Locked	120MHz Not Locked

Alarm	Description-Alarm
960MHz Not Locked	960MHz Not Locked
Input PLL Not Locked	Input PLL Not Locked
Output PLL Not Locked	Out PLL Not Locked
10MHz Not Locked	10MHz Not Locked
1PPS Not Locked	1PPS Not Locked
FPGA Boot Error	FPGA Boot Err
Forward Power High	FWD Power High
Forward Power Low Warning	FWD Pwr Low Warning
Forward Power Low Alarm	FWD Pwr Low
Reflex Power High	Reflex Power High
File System Error	File System Err
Bad File In File System	File Err
PS Voltage Out Of Range	PS1 V Out Of Range
PS Current Out Of Range	PS1 I Out Of Range
CPU Fan Error	CPU Fan Error
Test Mode	Test Mode
FE S2 Not Locked	FE S2 not locked
FE S2 S/N Low	FE S2 SNR Low
FE S2 BER High	FE S2 BER high
FE S2 Global Alarm	
[DVB-T2] No Input	No Input
[DVB-T2] Input Overflow	Input overflow
[DVB-T2] FE Not Locked	FE Not Locked
[DVB-T2] FE Squelch	FE Squelch
[DVB-T2] FE Pre LDPC BER High	FE Pre LDPC BER
[DVB-T2] FE SNR Low	FE SNR Low
[DVB-T2] FE MER Low	FE MER Low
[DVB-T2] FE Signal Quality Low	FE S.Quality Low
[DVB-T2] MEAS Not Locked	Meas Not Locked
[DVB-T2] MEAS Pre LDPC BER High	Meas Pre LDPC BER
[DVB-T2] MEAS SNR Low	Meas SNR Low

Alarm	Description-Alarm
[DVB-T2] MEAS MER Low	Meas MER Low
[DVB-T2] MEAS Signal Quality Low	Meas S.Quality Low
[DVB-T2] T2-MI Err	T2-MI Err
[DVB-T2] T2-MIP Err	T2-MIP Err
[DVB-T2] Holdover	Holdover
[DVB-T2] PPS Phase	PPS Phase
[DVB-T2] Configuration Not Loaded	Cfg. Not Loaded
[DVB-T2] FE LDPC Mean Err	FE LDPC Mean Err
[DVB-T2] MEAS LDPC Mean Err	MEAS LDPC Mean Err
[DVB-T2] SFN Alarm	SFN Alarm *code* *code:* Bit[0]: the Holdover function is enabled and the OCXO is not locked yet Bit[1]: the Timestamp is not present Bit[2]: wrong Timestamp CRC Bit[3]: wrong Timestamp Bit[4]: SFN Resynch
[DVB-T] Input Not Present	Input not present
[DVB-T] Input Not valid Alarm	Input not valid
[DVB-T] MIP Delay High	MIP delay high
[DVB-T] No Input	Input not detected
[DVB-T] Input Overflow	Input overflow
[DVB-T] MIP Err	MIP error
[DVB-T] PPS Phase	PPS phase wrong
[DVB-T] SFN Alarm	SFN Alarm
[DVB-T] FE Not Locked	FE Not Locked
[DVB-T] FE Squelch	FE Squelch
[DVB-T] FE Pre Viterbi BER High	FE Pre Vit BER
[DVB-T] FE SNR Low	FE SNR Low
[DVB-T] FE MER Low	FE MER Low
[DVB-T] FE Signal Quality Low	FE S.Quality Low
[DVB-T] MEAS Not Locked	Meas Not Locked
[DVB-T] MEAS Pre Viterbi BER High	Meas Pre Vit BER

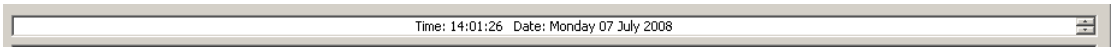
Alarm	Description-Alarm
[DVB-T] MEAS SNR Low	Meas SNR Low
[DVB-T] MEAS MER Low	Meas MER Low
[DVB-T] MEAS Signal Quality Low	Meas S.Quality Low
[DVB-T] Holdover	Holdover
[ITU] No Video Input	Input not detect
[ITU] Input wrong format	Wrong standard
[ITU] Holdover	Holdover
[ISDB-T] Input Error	Input not valid
[ISDB-T] IIP Modulation Error	IIP error
[ISDB-T] 1PPS Phase	PPS phase wrong
[ISDB-T] System delay	System delay alarm
[ISDB-T] IIP SFN error	IIP SFN err
[ISDB-T] Network delay	Network Delay
[ISDB-T] Rate error Layer A	Layer A Err Rate
[ISDB-T] Rate error Layer B	Layer B Err Rate
[ISDB-T] Rate error Layer C	Layer C Err Rate
[ISDB-T] Table Overflow Layer A	Lay A Table ovfl
[ISDB-T] Table Overflow Layer B	Lay B Table ovfl
[ISDB-T] Table Overflow Layer C	Lay C Table ovfl
[ISDB-T] MEAS not locked	Meas Not Locked
[ISDB-T] MEAS CN Low	Meas C/N Low
[ISDB-T] MEAS MER Layer A	Meas MER A Low
[ISDB-T] MEAS MER Layer B	Meas MER B Low
[ISDB-T] MEAS MER Layer C	Meas MER C Low
[ISDB-T] MEAS Pre-Viterbi BER High Layer A	Meas Pre Vit A BER
[ISDB-T] MEAS Pre-Viterbi BER High Layer B	Meas Pre Vit B BER
[ISDB-T] MEAS Pre-Viterbi BER High Layer C	Meas Pre Vit C BER
[ISDB-T] FE Not Locked	FE Not Locked
[ISDB-T] FE Squelch	FE Squelch

Alarm	Description-Alarm
[ISDB-T] FE CN Low	FE C/N Low
[ISDB-T] FE MER Layer A	FE MER A Low
[ISDB-T] FE MER Layer B	FE MER B Low
[ISDB-T] FE MER Layer C	FE MER C Low
[ISDB-T] FE Pre-Viterbi BER High Layer A	FE Pre Vit A BER
[ISDB-T] FE Pre-Viterbi BER High Layer B	FE Pre Vit B BER
[ISDB-T] FE Pre-Viterbi BER High Layer C	FE Pre Vit C BER
[ISDB-T] FE Emergency Flag	FE emergency flag
[ATSC] No Input	Input not valid
[ATSC] Input Overflow	Input overflow
[ATSC] MH Err	MH Error
[ATSC] MEAS Demodulator Not Locked	Meas Not Locked
[ATSC] MEAS SNR Low	Meas SNR Low
[ATSC] FE Demodulator Not Locked	FE Not Locked
[ATSC] FE SNR Low	FE SNR Low
[ATSC] No TVCT	TVCT Not Present

5.14.1 Date and Time Setting

The upper part of the event window shows the actual time and date and allows the manual setting of those parameters.

Figure 43. Time and date setting



Click to each part of the date and time to change the parameter and then increase or decrease its value with the up/down arrows.

Note: When the onboard GPS receiver is locked and GPS frequency reference is enabled, the date and time information are received by GPS satellite and updated every thirty seconds.

The board incorporates a rechargeable battery to maintain the time when there isn't a power supply. The battery supplies the clock for two or three days, after that the time shall be reset either by char interface, or LCD display, or Java interface or selecting the GPS as frequency reference.

5.14.2 Task Error Event

The watchdog performs a periodic (every 20 seconds) polling of tasks and triggers a system reset if one or more tasks do not answer, restarting the Code loader (See Codeloader_Operations_Note_v1.1.doc for further information) and generating a TSK ERR event as follows:

TSK ERR 00000028, 0000003c

The blue underlined 32-bits word is the enabling status of the alarms mask. The red underlined 32-bits word indicates the status of tasks (1 if the task has been successfully performed, otherwise 0) as specified in the following table:

Table 25. Task error event specific data

TASK	Description	Bit
WD_FAN_TASK	This task controls fans speed on the basis of the board temperature.	0
WD_UPCV_TASK	This task controls the Up-converter status.	1
WD_GPS_TASK	This task controls the GPS status.	2
WD_STATUS_TASK	This task gathers quite all the board information in order to perform the following operations: • It updates all variables of the system; • It manages alarms; • It manages the RF status (e.g. on, off…); • It manages the mode switch; • It manages the ARP resolution in DVB mode.	3

TASK	Description	Bit
WD_TCP_IP_TASK	This task implements the TCP-IP protocol stack.	4
WD_TIMER_TICK_TASK	This task generates the clock for the TCP-IP task.	5
WD_STV0362_TASK	This task gathers information from both the HP and LP tuners and configures them.	6
WD_ARK6AL_TASK	This task gathers information from: • Get ADC value • Get Amplifier Voltage and current measure • Calculate FWD power level • Output AGC • Calculate Reflex power • Get temperature • Get opto & relay status • Disable alim status	7

The default tasks mask at the board startup is set to 0x0000007D (please note that the up-converter task is initially skipped). Once the presence of the up-converter is assured, the up-converter task bit is automatically enabled and the mask is set to 0x0000007F. Tasks execution is stopped during de-fragmentation operations and FPGA boots.

5.14.3 System Error Event

For critical and fatal errors, the system calls the system error function and the SYS_ERR event is reported.

The error codes are described below:

- 0x00: Out of memory. Memory pool size is too small.
- 0x01: Invalid memory block release. Buffer data has been written out of boundaries of the allocated memory block.
- 0x02: Link pointer corrupted. Buffer data has been written out of boundaries of the allocated memory block.
- 0x03: No free UDP Sockets. The system has run out of UDP Sockets.
- 0x04: No free TCP Sockets. The system has run out of TCP Sockets.
- 0x05: TCP socket is in an undefined state. System memory has been accidentally overwritten.

5.14.4 System Initialization Event

At every system initialization the event System Init is generated.

This event is followed by 25 bytes specifying type and specific code of errors occurred during system initialization.

Each byte refers to an error as described in the following table:

Table 26. Init system event specific data

Description	Errors code	Byte
FS_ERR File System error.	• 0x00: File System ok. • 0x01: FS partition error (invalid FS).	1°
INFO_ERR *.cfg file error.	• 0x00: File ok. • 0x01: File not found or File open error. • 0x02…0x03: Invalid file (syntax errors).	2°
DEF_ERR *.def file error.	• 0x00: File ok. • 0x01: File open error. • 0x02: File not found.	3°
LCD_ERR LCD error.	• 0x00: LCD ok. • 0x01: LCD not found.	4°
PLL_960M_ERR 960 MHz PLL error.	• 0x00: PLL locked. • 0x01: PLL not locked	5°
BOOT_ERR FPGA boot error.	• 0x00: FPGA boot ok. • 0x01: FPGA NILL boot error • 0x02: FPGA file version error • 0x03: FPGA code error.	6°
LOAD_CFG_ERR *.sav file error.	• 0x00: File ok. • 0x01: File open error. • 0x02…0x05: Invalid file (syntax errors).	7°
SNMP_ERR SNMP file error.	• 0x00: SNMP file ok. • 0x01: SNMP file not found. • 0x02: File open error. • 0x03: UDP socket initialization error. • 0x04: Port 161 open error.	8°

Description	Errors code	Byte
CALIB_ERR *.pwr file error.	• 0x00: File ok. • 0x01: Current AGC mode file not found. • 0x02: Current AGC mode file open error. • 0x03…0x12: Invalid current AGC mode file (syntax error). • 0x20: Other AGC mode file not found • 0x21: Other AGC mode file open error. • 0x22…0x26: Invalid other AGC mode file (syntax error). Please note that the AGC mode may be analog or digital. Actual AGC mode is displayed in Java output window.	9°
PREC_ERR	• 0x00: File ok.	10°
LINEAR_ERR	• 0x00: File ok. • 0x01: File not found. • 0x02: File open error. • 0x03…0x06: Invalid file (syntax errors).	11°
DOWNCV_ERR Downconverter PLL not locked error.	• 0x00: PLL locked. • 0x01: PLL not locked • 0x10: PLL disabled.	12°
UPCV_ERR Upconverter error.	• 0x00: Upconverter ready.	13°
CH_FILT_ERR *.chf7 or *.chf8 file error.	• 0x00: File ok. • 0x01: File not found. • 0x02: File open error. • 0x03…0x06: Invalid file (syntax errors). Please note that checked file is the one which refers to the current signal bandwidth: *.chf7 refers to VHF bandwidth, *.chf8 refers to UHF bandwidth.	14°

Description	Errors code	Byte
CH_DEF_ERR *.cdef file error.	• 0x00: File ok. • 0x01: File not found. • 0x02: File open error. • 0x03: syntax error or lack of input number of channels. • 0x13: syntax error or lack of output number of channels. • 0x04: input channels memory allocation error. • 0x14: output channels memory allocation error. • 0x05: when the automatic indexing of channels listed in *.cdef file is disabled, it notifies syntax errors or lack of input channels definition lines. • 0x15: when the automatic indexing of channels listed in *.cdef file is disabled, it notifies syntax errors or lack of output channels definition lines. • 0x06: when the automatic indexing of channels listed in *.cdef file is enabled, it notifies syntax errors or lack of input channels definition lines. • 0x16: when the automatic indexing of channels listed in *.cdef file is enabled, it notifies syntax errors or lack of output channels definition lines.	15°

5.15 System menu

Figure 44. Menu bar

The menu bar allows the access to three menus:

- **File:** allows to import/export the configuration file, to load and save the board configuration and to download the screenshots of the Java GUI;
- **View:** allows to navigate windows and to configure java update time and events alert massages;
- **Help:** allows to access information such as board name, board IP address, serial numbers of HW components, File System content, an abstract of the User Manual and system characteristics.

5.15.1 File Menu

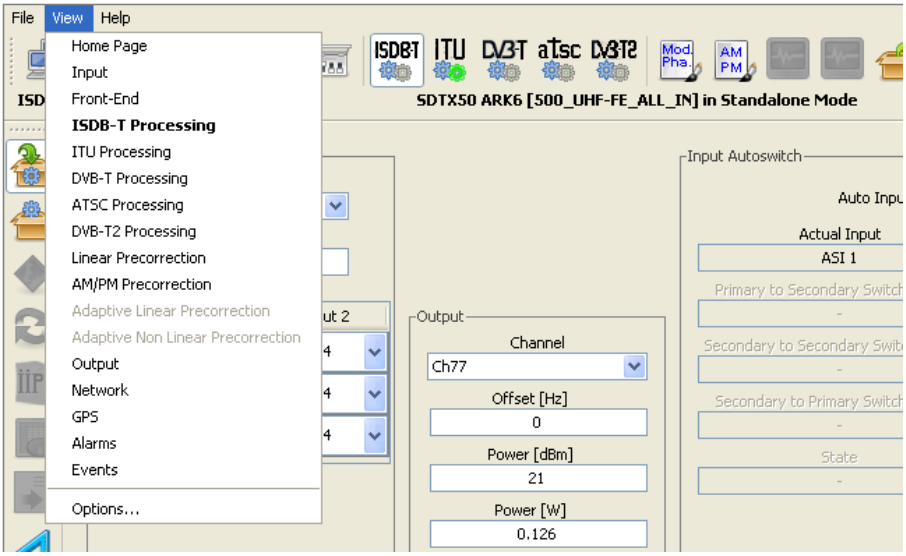
Figure 45. File menu

The File menu is structured as follows:

- **Save:** saves the current device configuration.
- **Load:** loads the last saved configuration.
- **Export Config:** exports last saved configuration of the device (the *.sav file).
- **Import Config:** imports a new configuration file (the *.sav file).
- **Capture screenshots:** downloads a screenshot for each one of the selected windows.

5.15.2 View Menu

Figure 46. View menu



The View menu allows accessing the following windows:

- **Home Page**
- **Input**
- **Front-End**
- **ISDB-T Processing**
- **ITU Processing**
- **DVB-T Processing**
- **ATSC Processing**
- **DVB-T2 Processing**
- **Linear Precorrection**
- **AM/PM Precorrection**
- **Adaptive Linear Precorrection**
- **Adaptive Non Linear Precorrection**
- **Output**
- **Network**.
- **GPS**.
- **Alarms**
- **Events:** Events window.
- **Options...:** Options window.

5.15.2.1 Options window

The Options window has two tabs:

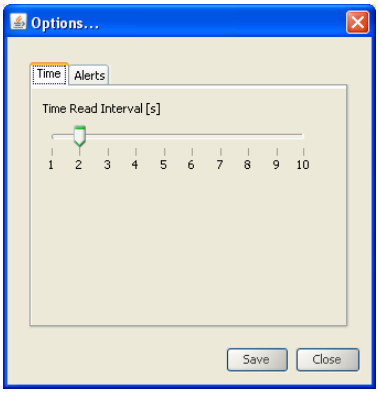
- **Time:** Time Read Interval [s];
- **Alerts:** the selection of events to display.

Click on the *Save* button to save Java options; a new *.properties file will be created.

The device is not loaded with a factory default *.properties file, but it is created and then stored in System File once properties are saved for the first time.

5.15.2.1.1 Time

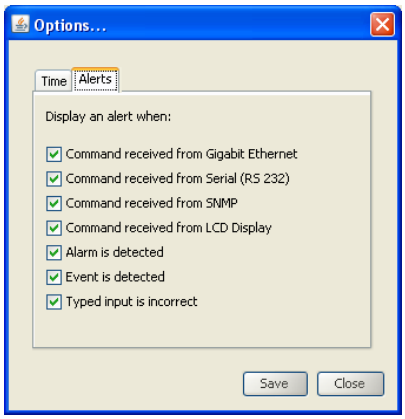
Figure 47. Time window



This control allows changing the device-to-management PC java update time. The default value is 2 seconds. Click on Close button to quit this window.

5.15.2.1.2 Alerts

Figure 48. Alerts window



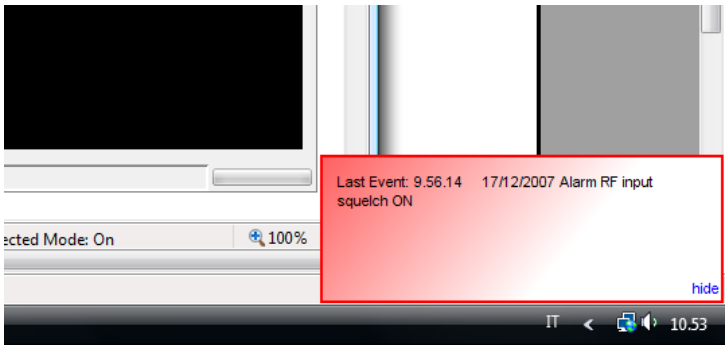
Alerts tab allows selecting which types of events will be notified through Alert boxes. Alerts appear on the right side of the monitor.

The selection is performed among the following types of event:

- **Commands (blue boxes):**
  - Gigabit Ethernet commands;
  - RS232 commands;
  - SNMP commands;
  - LCD Display commands.
- **Alarms (red boxes);**
- **Events (green messages):**
  - Board events.
- **Typing error (yellow messages):**
  - Typed setting is incorrect.

Click on hide button to close alerts popup windows.

Figure 49. Alert message



Alerts can be disabled through the hide button located on the right side of the box.

The hide button, once clicked, disables all boxes belonging to the same class.

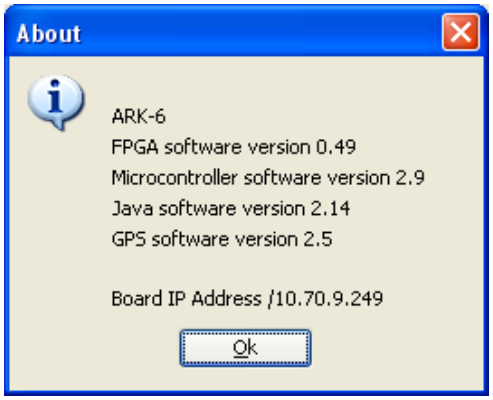
5.15.3 Help Menu

Figure 50. Help menu

The Help menu allows to select one of the following options:

- **Contents:** Help with an abstract of the User Manual.
- **About:** shows the board name and the management IP address. It also provides uC, FPGA, Java and GPS software versions. Click on OK button to close the window.

Figure 51. About window



- **Info:** shows serial numbers of HW components, File System content and the managed system characteristics. Click on OK button to close Info window.

Figure 52. Info window: Serial Numbers

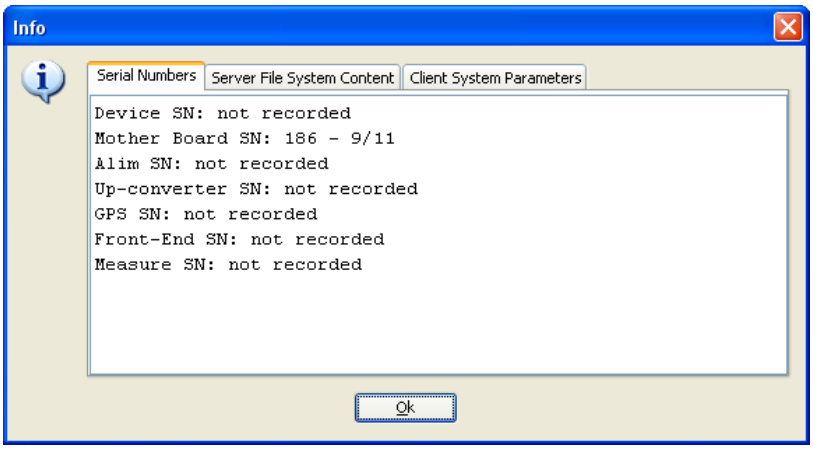


Figure 53. Info window: Server File System Content

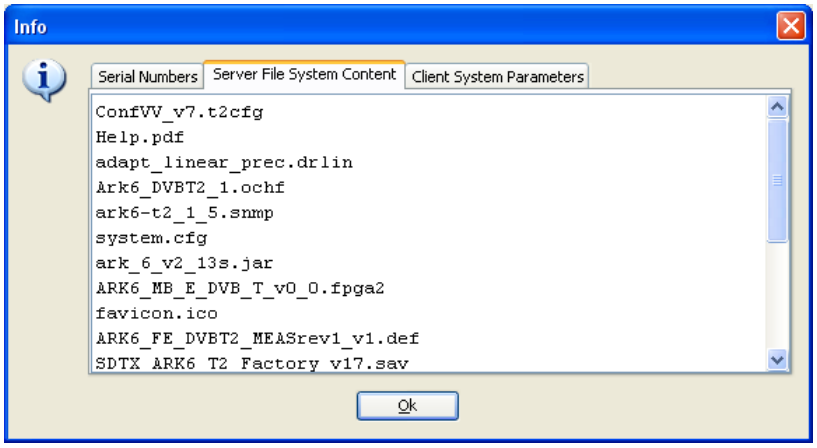
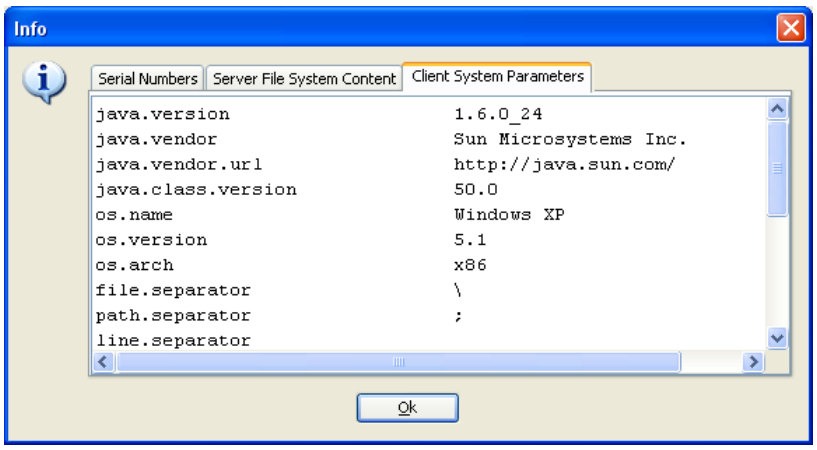


Figure 54. Info window: Client System Parameters



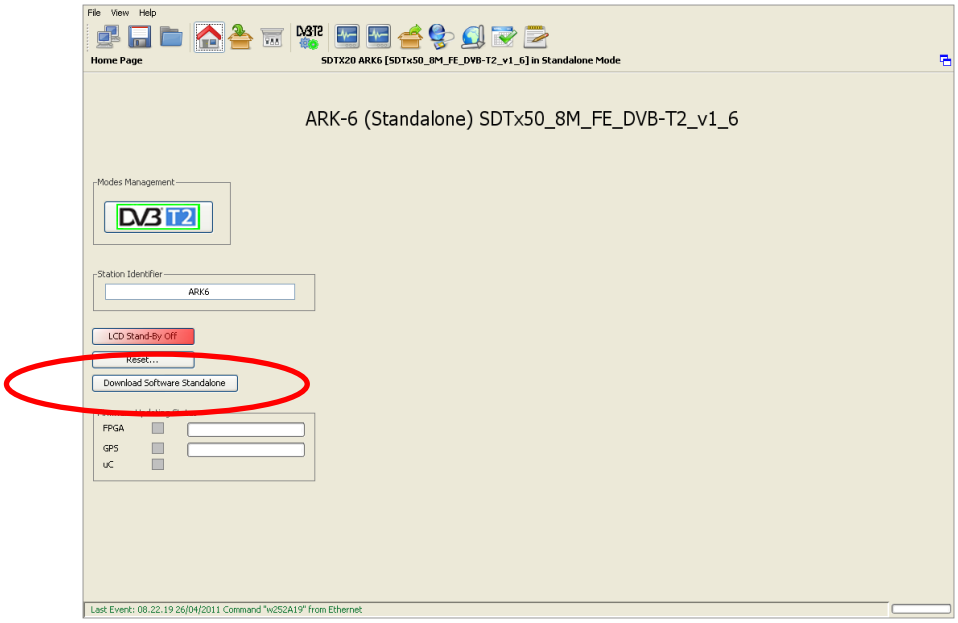
5.16 Download Software Standalone

The Download Software Standalone button allows the downloading of standalone Java application (executable *.jar file) based on java applet.

If your browser is Internet Explorer, it may block the site from downloading files to your computer. If you want to enable the file downloading, follow the instructions listed below:

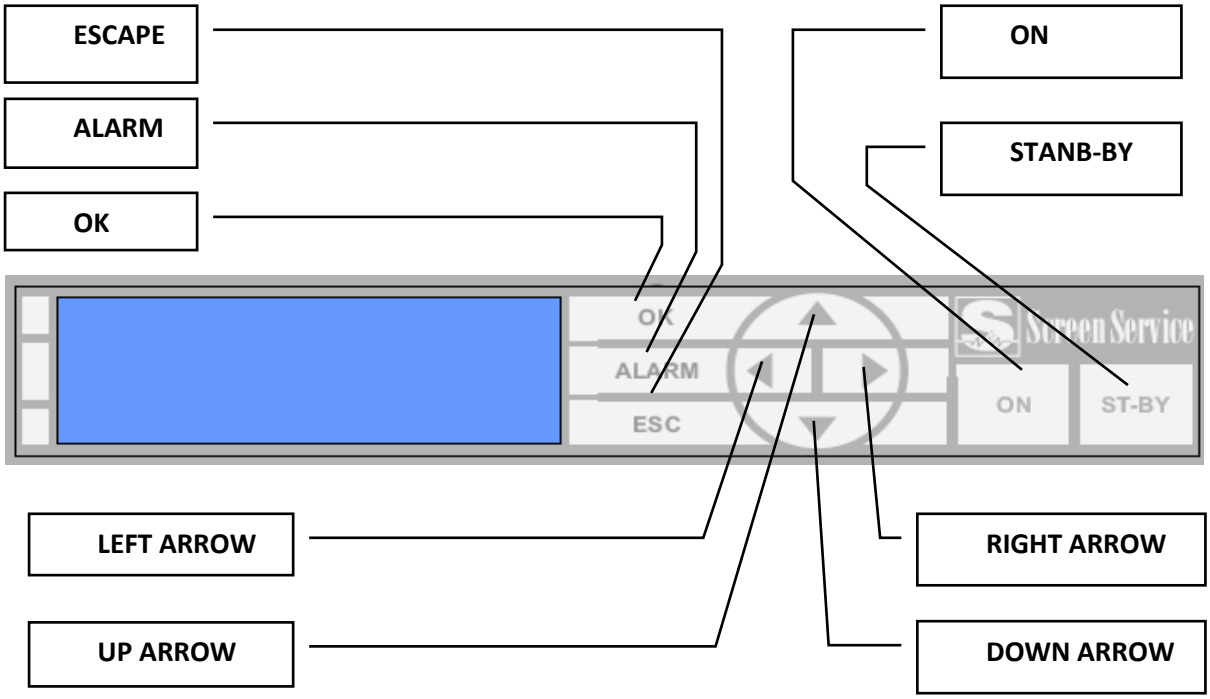
- Open Internet Explorer;
- Click on the Tools button and then click on Internet Options;
- Click on the Security tab and then click on Custom level button;
- To turn off the Information bar for file downloads, scroll to the Downloads section of the list, and then, under Automatic prompting for file downloads, click on Enable;
- Click on OK, click Yes in order to confirm that you want to make the change, and then click OK again.

Figure 55. Download Software Standalone



6 Local User Interface

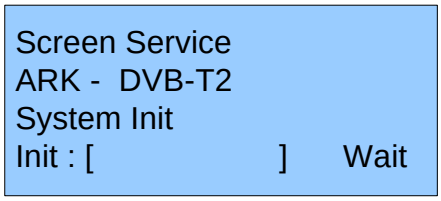
The following paragraphs describe the local user interface for **ARK6 T2**. This user interface is composed of LCD Display, seven buttons and two status LEDs. Here below is depicted the ARK6 Front Panel.

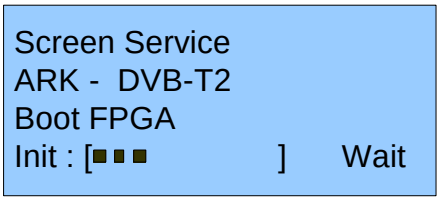


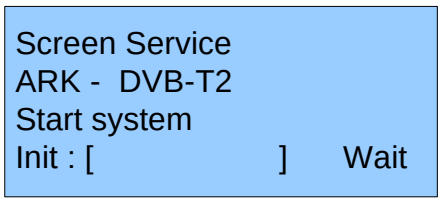
- **STAND-BY**: push this button (lie in wait for two seconds) to put the equipment on STAND-BY mode. The orange led lights up and the written **STAND-BY MODE** appears on the display. The remote Stand-by mode is enforceable only if on JAVA interface this feature is enabled.
- **ON**: push this button (lie in wait for two seconds) to turn on the equipment. The green led lights up and the **MAIN MENU** is displayed.
- **OK**: push this button to select or to confirm the sub-menu or the value respectively. Touching the screen with a finger the green led lights up.
- **ESC**: push this button to quit a submenu and to return to the previous one. Touching the screen with a finger the green led lights up.
- **ALARM**: when an alarm occurs the RED LED lights up.
- **UP ARROW**: push this button to scroll up menus or to increase a value. Touching the screen with a finger the green led lights up.
- **DOWN ARROW**: push this button to scroll down menus or to decrease a value. Touching the screen with a finger the green led lights up.
- **LEFT ARROW**: push this button to move within a string. Touching the screen with a finger the green led lights up.
- **RIGHT ARROW**: push this button to move within a string. Touching the screen with a finger the green led lights up.

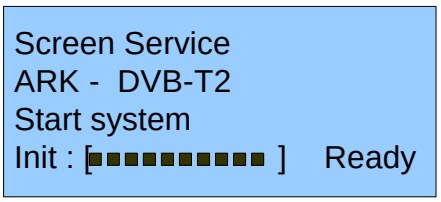
6.1 Boot and Welcome Message

Turning on the equipment, the display shows the progress bar as follow:

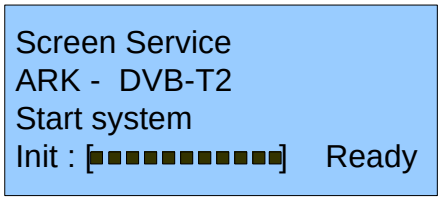


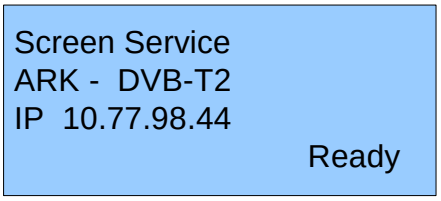






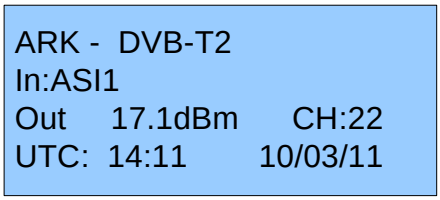
When the boot is over, the device is ready.





Press ESC to enter the main menu, otherwise after one minute waiting the idle status message appears.

6.2 Idle Menu



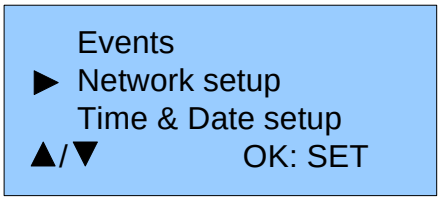
This menu appears after one minute waiting from the last touch. Information contained in the Idle Menu are described in next table.

Table 27. Local User Interface: Idle Menu

Information	Description
ARK – DVB-T2 (ATSC)	Device description
In	Input signal source
Out	Output power and channel
IP	Management IP address (GBE 1)
UTC	UTC time and date

Press ESC to enter the MAIN MENU.

6.3 Main Menu



This menu shows six SUBMENUs. It is possible to view them sliding the menu up and down, with the UP or DOWN ARROWS, and to select one of them by pushing OK button.

Submenus contained in the Main Menu are described in next table.

Table 28. Local User Interface: submenus descriptions

Submenu	Description
Network setup	Enter this submenu to set: • GbE1 Board IP address • GbE1 Gateway address • GbE1 Netmask • GbE2 IP address • GbE2 Gateway address • GbE2 Netmask Settings in this submenu do not need to be saved; they will be loaded at next device restart.
Time & Date setup	Enter this submenu to set: • Time • Date Settings in this submenu do not need to be saved in order to be loaded at next device restart.
System Status	Enter this submenu to monitor system status and installer version the device is loaded with.
Alarms	Alarms, detected and associated to the local interface by the relative mask, are listed in this submenu.
Reset system	Enter this submenu to reset the device.
Events	Enter this submenu to manage and monitor the events list.

6.4 LCD Alarms

Through the LCD Alarms mask it is possible to select which alarm has to be notified on LCD display. When an alarm condition occurs the alarm button is lighted and an alarm message is displayed in the Alarms submenu.

The following table lists alarms to alarm messages association (refer to Alarms paragraph for further information about alarms and their masks).

Table 29. Alarms descriptions list

Alarm	Alarm Message
Temperature Absolute High	Temp. High
Temperature Alarm (-3dB)	Temp. High (-3dB)
Temperature Warning	Temp.High Warning
Fans Speed Low	Fans Speed Low
Alim Dialog Err	Alim Dialog Err
FE Dialog Err	FE Dialog Err
Meas Dialog Err	Meas Dialog Err
GPS Dialog Err	GPS Dialog Err
GPS Not Locked	GPS Not Locked
120MHz Not Locked	120M Not Locked
960MHz Not Locked	960M Not Locked
Input PLL Not Locked	In PLL Not Locked
Output PLL Not Locked	Out PLL Not Locked
10MHz Not Locked	10M Not Locked
1PPS Not Locked	1PPS Not Locked
FPGA Boot Error	FPGA Boot Err
Forward Power High	FWD Power High
Forward Power Low Warning	FWD Low Warning
Forward Power Low Alarm	FWD Pwr Low
Reflex Power High	Reflex Power High
File System Error	FS Err
Bad File In File System	File Error

Alarm	Alarm Message
PS Voltage Out Of Range	PS1V Out Of Range
PS Current Out Of Range	PS1I Out Of Range
CPU Fan Error	CPU Fan Error
Test Mode	Test Mode
FE S2 Not Locked	FE S2 not locked
FE S2 S/N Low	FE S2 SNR Low
FE S2 BER High	FE S2 BER high
FE S2 Global Alarm	
[ATSC] No Input	Input not valid
[ATSC] Input Overflow	Input overflow
[ATSC] MH Err	MH Error
[ATSC] MEAS Demodulator Not Locked	Meas Not Locked
[ATSC] MEAS SNR Low	Meas SNR Low
[ATSC] FE Demodulator Not Locked	FE Not Locked
[ATSC] FE SNR Low	FE SNR Low

7 SNMP – Simple Network Management Protocol

The SNMP model assumes the existence of managers and agents. A manager is a software module in a management system responsible for managing the device. An agent is a software module in a managed device responsible for maintaining local management information and delivering that information to a manager via SNMP. A management information exchange can be initiated by the manager (via polling) or by the agent (via trap).

Interaction between a user of board management and the board management software takes place across a user interface. Such an interface is needed to provide users with a monitoring and controlling tool in order to allow some parameters to be viewed or set locally.

The operations that are supported in SNMP network management are the alteration and inspection of variables. Specifically, three general-purpose operations may be performed on scalar objects:

- Get: a management station retrieves a scalar object value from a managed station.
- Set: a management station updates a scalar object value in a managed station.
- Trap: a managed station sends an unsolicited scalar object value to a management station.

Management information accessible via SNMP is maintained in a management information base (MIB) at each manager and agent node.

On manager side, ARK6 management system has been tested with MG-SOFT as MIB Browser; besides compatibility with any other MIB browser is assured.

The following MIB libraries are required for the SNMP management of the equipment:

- screenservice.mib
- screen-common-types.mib
- ark6-t2.mib
- clk-ref.mib
- clock.mib
- gps.mib
- hw-monitor.mib
- input.mib
- measure.mib
- s2-fe.mib2
- ark6.mib
- network.mib
- output.mib
- screen-common.mib
- t2-fe.mib
- t2-meas.mib
- t2-modulation.mib
- ts-over-ip.mib
- itu-modulation.mib2
- t-fe.mib2
- t-meas.mib2
- t-modulation.mib2
- ark6-atsc.mib2
- ark6-isdbt.mib2
- ark6-itu.mib2
- ark6-t.mib2
- atsc-fe.mib2
- atsc-meas.mib2
- atsc-modulation.mib2
- isdbt-fe.mib2
- isdbt-meas.mib2
- isdbt-modulation.mib2

Compatibility tested and assured with SNMP version 1 and 2.

7.1 SNMP Protocol Preferences

Go to SNMP Protocol Preferences. The following parameters should be set in order to correctly configure the SNMP Manager:

SNMP protocol version: SNMPv1/SNMPv2;

Read Community: the same of the one set in the Get field of Java interface, community section;

Set Community: the same of the one set in the Set field of Java interface, community section;

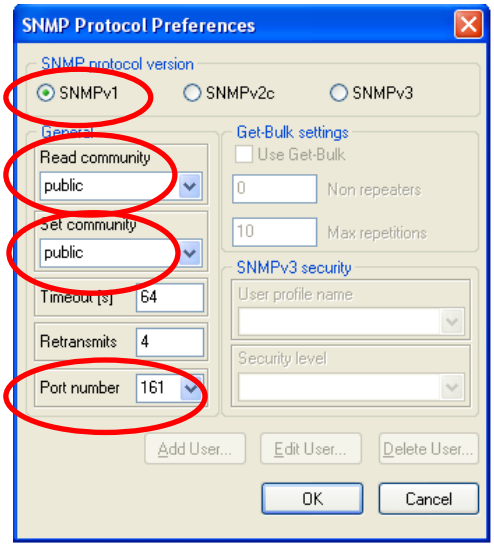
Timeout [s]: user defined;

Retransmits: user defined;

Port number: 161.

Next figure illustrates how to configure SNMP Protocol Preferences using MG_SOFT MIB Browser as an example.

Figure 56. SNMP Protocol Preferences

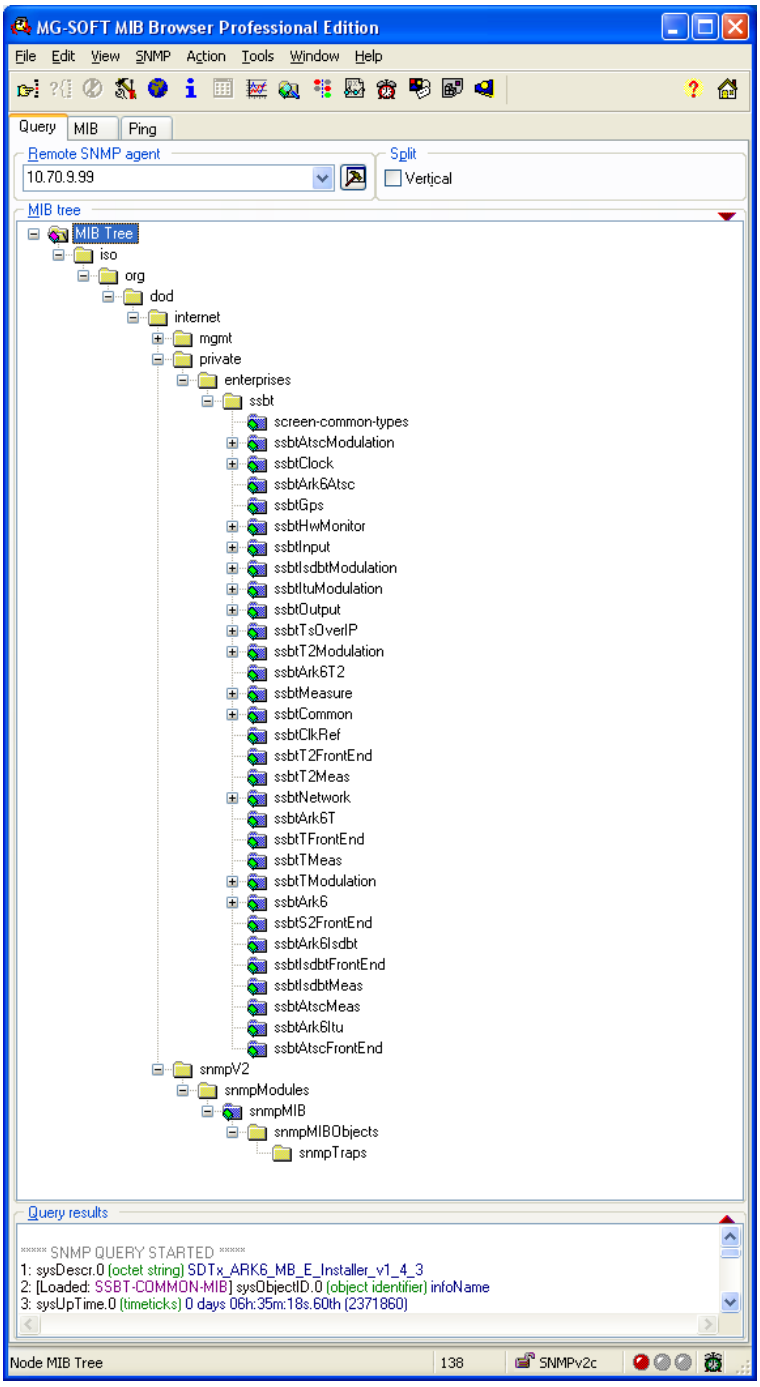


7.2 Monitoring

All status and setup information can be queried via SNMP. To get the setup and status information you need a management system (or a special MIB browser).

Next figure, referring to MG-SOFT MIB Browser as an example, is a broad view of the ARK6 tree structure.

Figure 57. ARK6 Tree Structure



The SSBT MIBs are:

- ssbt-common-types: the MIB module housing SSBT Textual Conventions.
- ssbtAtscModulation: the MIB module to manage the equipment configuration when operated in ATSC mode.
- ssbtClock: the MIB module for clock management.
- ssbtArk6Atsc: the specific ARK6-ATSC MIB.
- ssbtGps: the MIB module to monitor the collection of live data from the GPS receiver.
- ssbtHwMonitor: The MIB module for HW monitor.
- ssbtInput: the MIB module to monitor and manage inputs.
- ssbtIsdbtModulation: the MIB module to manage the equipment configuration when operated in ISDB-T mode.
- ssbtItuModulation: the MIB module to manage the equipment configuration when operated in ITU mode.
- ssbtOutput: the MIB module to monitor and manage outputs.
- ssbtTsOverIP: the MIB module to manage input and output GbE channels.
- ssbtT2Modulation: the MIB module to manage the equipment configuration when operated in DVB-T2 mode.
- ssbtArk6T2: the specific ARK6-T2 MIB.
- ssbtMeasure: the MIB module to manage and monitor ARK6 Measure board.
- ssbtCommon: the MIB module housing SSBT common objects.
- ssbtClkRef: the MIB module to set the frequency reference.
- ssbtT2FrontEnd: the MIB module to manage and monitor information from DVB-T2 Front-End.
- ssbtT2Meas: the MIB module to manage and monitor T2 information from Measure board.
- ssbtNetwork: the MIB module for network monitoring.
- ssbtArk6T: the specific ARK6-T MIB.
- ssbtTFrontEnd: the MIB module to manage and monitor information from DVB-T Front-End.
- ssbtTMeas: the MIB module to manage and monitor DVB-T information from Measure board.
- ssbtTModulation: the MIB module to manage the equipment configuration when operated in DVB-T mode.
- ssbtArk6: the MIB module for the objects common to all ARK6 modes.
- ssbtS2FrontEnd: the MIB module to manage and monitor information from DVB-S/S2 Front-End.
- ssbtArk6Isdbt: the specific ARK6-ISDBT MIB.
- ssbtIsdbtFrontEnd: the MIB module to manage and monitor information from ISDB-T Front-End.
- ssbtIsdbtMeas: the MIB module to manage and monitor ISDB-T information from Measure board.
- ssbtAtscMeas: the MIB module to manage and monitor ATSC information from Measure board.
- ssbtArk6Itu: the specific ARK6-ITU MIB.
- ssbtAtscFrontEnd: the MIB module to manage and monitor information from ATSC Front-End.

Table 30. ARK6 SNMP Tree Structure

OID	Name	R/W	Description
1	iso		
1.3	org		
1.3.6	dod		
1.3.6.1	internet		
1.3.6.1.2	mgmt		
1.3.6.1.2.1	mib-2		
1.3.6.1.2.1.1	system		
1.3.6.1.2.1.1.1	sysDescr	R	A textual description of the entity. This value includes the full name and version identification of the system"
1.3.6.1.2.1.1.2	sysObjectID	R	
1.3.6.1.2.1.1.3	sysUpTimeInstance	R	
1.3.6.1.2.1.1.4	sysContact	R	
1.3.6.1.2.1.1.5	sysName	R	Identification name of the equipment managed
1.3.6.1.2.1.1.6	sysLocation	R	
1.3.6.1.2.1.1.7	sysServices	R	
1.3.6.1.4	private		
1.3.6.1.4.1	enterprise		
1.3.6.1.4.1.21678	ssbt		
1.3.6.1.4.1.21678.302	ssbtAtscModulation		
1.3.6.1.4.1.21678.302.1	amMobileHandheld		
1.3.6.1.4.1.21678.302.1.1	ammhPid	RW	ATSC M/H mode PID setting
1.3.6.1.4.1.21678.302.1.2	ammhEnable	RW	Enables ATSC M/H mode
1.3.6.1.4.1.21678.302.1.3	ammhFrameStatus	R	ATSC M/H frame alarm
1.3.6.1.4.1.21678.303	ssbtClock		
1.3.6.1.4.1.21678.303.1	reference		
1.3.6.1.4.1.21678.303.1.1	refClock	RW	Frequency reference selector
1.3.6.1.4.1.21678.303.2	gps		
1.3.6.1.4.1.21678.303.2.1	satellites		
1.3.6.1.4.1.21678.303.2.1.1	satVisible	R	Number of visible satellites.
1.3.6.1.4.1.21678.303.2.1.2	satTracked	R	Number of locked satellite.
1.3.6.1.4.1.21678.303.2.2	position		
1.3.6.1.4.1.21678.303.2.2.1	positionLatitude	R	Latitude position [°]
1.3.6.1.4.1.21678.303.2.2.2	positionLongitude	R	Longitude position [°]
1.3.6.1.4.1.21678.303.2.3	utc		

OID	Name	R/W	Description
1.3.6.1.4.1.21678.303.2.3.1	utcDate	R	UTC date and time as specified in SNMPv2-TC
1.3.6.1.4.1.21678.303.2.4	gpsLockStatus		
1.3.6.1.4.1.21678.303.2.4.1	glsGps	R	GPS lock status derived from live data provided by the GPS receiver
1.3.6.1.4.1.21678.303.3	ocxo		
1.3.6.1.4.1.21678.303.3.1	fineFreqAdjust	RW	Enables the Holdover mechanism
1.3.6.1.4.1.21678.303.3.2	dataToFlash	R	Sets the timeout of the Holdover in hour
1.3.6.1.4.1.21678.303.3.3	ocxoLockStatus		
1.3.6.1.4.1.21678.303.3.3.1	olsGps	R	OCXO locked to the external GPS reference
1.3.6.1.4.1.21678.303.3.3.2	ols10Mhz	R	OCXO locked to the external 10 MHz reference
1.3.6.1.4.1.21678.303.3.3.3	ols1Pps	R	OCXO locked to the external 1PPS reference
1.3.6.1.4.1.21678.303.4	holdover		
1.3.6.1.4.1.21678.303.4.1	hEnable	RW	Enables the Holdover mechanism
1.3.6.1.4.1.21678.303.4.2	hTimeout	RW	Sets the timeout of the Holdover in hour
1.3.6.1.4.1.21678.303.4.3	hStatus	R	The status of the Holdover mechanism
1.3.6.1.4.1.21678.303.4.4	hTmoStatus	R	The countdown of the Holdover timeout expressed in seconds
1.3.6.1.4.1.21678.306	ssbtHwMonitor		
1.3.6.1.4.1.21678.306.1	reflexPower	R	Reflex power [dBm x 10]
1.3.6.1.4.1.21678.306.2	amplifierStatus	R	Amplifier status
1.3.6.1.4.1.21678.306.3	powerSupplies		
1.3.6.1.4.1.21678.306.3.1	psNumber	R	The number of power supplies present on this system
1.3.6.1.4.1.21678.306.3.2	psTable	NA	
1.3.6.1.4.1.21678.306.3.2.1	psEntry		
1.3.6.1.4.1.21678.306.3.2.1.1	psIndex	R	
1.3.6.1.4.1.21678.306.3.2.1.2	psDescr	R	Power supply description
1.3.6.1.4.1.21678.306.3.2.1.3	psVMeasUnit	R	Voltage unit of measurement
1.3.6.1.4.1.21678.306.3.2.1.4	psVoltage	R	Voltage indicator
1.3.6.1.4.1.21678.306.3.2.1.5	psCMeasUnit	R	Current unit of measurement
1.3.6.1.4.1.21678.306.3.2.1.6	psCurrent	R	Current indicator
1.3.6.1.4.1.21678.306.3.3	psRestart	W	Restarts the amplifier
1.3.6.1.4.1.21678.306.5	fans		
1.3.6.1.4.1.21678.306.5.1	fansNumber	R	The number of fans present on this system
1.3.6.1.4.1.21678.306.5.2	fansTable	NA	
1.3.6.1.4.1.21678.306.5.2.1	fansEntry		
1.3.6.1.4.1.21678.306.5.2.1.1	fansIndex	R	

OID	Name	R/W	Description
1.3.6.1.4.1.21678.306.5.2.1.2	fansDescr	R	Fan description
1.3.6.1.4.1.21678.306.5.2.1.3	fansMeasUnit	R	Fan speed unit of measurement
1.3.6.1.4.1.21678.306.5.2.1.4	fansSpeed	R	Fan speed
1.3.6.1.4.1.21678.306.6	temperatures		
1.3.6.1.4.1.21678.306.6.1	tempNumber	R	The number of temperature sensors present on this system
1.3.6.1.4.1.21678.306.6.2	tempTable	NA	
1.3.6.1.4.1.21678.306.6.2.1	tempEntry		
1.3.6.1.4.1.21678.306.6.2.1.1	tempIndex	R	
1.3.6.1.4.1.21678.306.6.2.1.2	tempDescr	R	Temperature indicator description
1.3.6.1.4.1.21678.306.6.2.1.3	tempMeasUnit	R	Temperature unit of measurement
1.3.6.1.4.1.21678.306.6.2.1.4	tempLevel	R	Temperature indicator
1.3.6.1.4.1.21678.306.7	relays		
1.3.6.1.4.1.21678.306.7.1	rlNumber	R	The number of relays present on this system
1.3.6.1.4.1.21678.306.7.2	rlTable	NA	
1.3.6.1.4.1.21678.306.7.2.1	rlEntry		
1.3.6.1.4.1.21678.306.7.2.1.1	rlIndex	R	
1.3.6.1.4.1.21678.306.7.2.1.2	rlDescr	R	Relay description
1.3.6.1.4.1.21678.306.7.2.1.3	rlStatus	R	Relay status
1.3.6.1.4.1.21678.306.8	optocouplers		
1.3.6.1.4.1.21678.306.8.1	optNumber	R	The number of optocouplers present on this system
1.3.6.1.4.1.21678.306.8.2	optTable	NA	
1.3.6.1.4.1.21678.306.8.2.1	optEntry		
1.3.6.1.4.1.21678.306.8.2.1.1	optIndex	R	
1.3.6.1.4.1.21678.306.8.2.1.2	optDescr	R	Optocoupler description
1.3.6.1.4.1.21678.306.8.2.1.3	optStatus	R	Optocoupler status
1.3.6.1.4.1.21678.306.9	cpuFan		
1.3.6.1.4.1.21678.306.9.1	cfNoFan	R	CPU Fan missing alarm status
1.3.6.1.4.1.21678.306.9.2	cfFanFault	R	CPU ventilation blocked alarm status
1.3.6.1.4.1.21678.307	ssbtInput		
1.3.6.1.4.1.21678.307.1	inputSettings		
1.3.6.1.4.1.21678.307.1.1	isT2InputManagement		
1.3.6.1.4.1.21678.307.1.1.1	ist2imInputSel	RW	Input selector
1.3.6.1.4.1.21678.307.1.1.2	ist2imRfChannel	RW	Input channel selector
1.3.6.1.4.1.21678.307.1.1.3	ist2imRfFreqOff	RW	Input frequency offset expressed in Hz (1Hz steps, from -200 kHz to 200 kHz)

OID	Name	R/W	Description
1.3.6.1.4.1.21678.307.1.2	isT2InputAutoswitch		
1.3.6.1.4.1.21678.307.1.2.1	ist2iaEnable	RW	Enables the use of Input Autoswitch finite-state machine
1.3.6.1.4.1.21678.307.1.2.2	ist2iaState	R	Current state of the finite-state machine
1.3.6.1.4.1.21678.307.1.2.3	ist2iaActualInput	R	Shows the currently used input
1.3.6.1.4.1.21678.307.1.2.4	ist2iaPrimaryToSecondaryCounter	R	Primary to secondary input switch countdown expressed in seconds
1.3.6.1.4.1.21678.307.1.2.5	ist2iaSecondaryToSecondaryCounter	R	Secondary to secondary input switch countdown expressed in seconds
1.3.6.1.4.1.21678.307.1.2.6	ist2iaSecondaryToPrimaryCounter	R	Secondary to primary input switch countdown expressed in seconds
1.3.6.1.4.1.21678.307.1.3	isTInputManagement		
1.3.6.1.4.1.21678.307.1.3.1	istimInputSel		
1.3.6.1.4.1.21678.307.1.3.1.1	istimisHpInput1	RW	High Priority input 1 selector
1.3.6.1.4.1.21678.307.1.3.1.2	istimisLpInput1	RW	Low Priority input 1 selector
1.3.6.1.4.1.21678.307.1.3.1.3	istimisHpInput2	RW	High Priority input 2 selector
1.3.6.1.4.1.21678.307.1.3.1.4	istimisLpInput2	RW	Low Priority input 2 selector
1.3.6.1.4.1.21678.307.1.3.2	istimRfChannel	RW	Input channel selector
1.3.6.1.4.1.21678.307.1.3.3	istimRfFreqOff	RW	Input frequency offset +/- 200 kHz (1Hz step)
1.3.6.1.4.1.21678.307.1.4	isTSeamlessSwitch		
1.3.6.1.4.1.21678.307.1.4.1	istssHpInput		
1.3.6.1.4.1.21678.307.1.4.1.1	istsshiForceInput	RW	Forces the use of the selected input as High Priority input
1.3.6.1.4.1.21678.307.1.4.1.2	istsshiPriorityInput	RW	Sets the priority input
1.3.6.1.4.1.21678.307.1.4.1.3	istsshiUsedInput	R	Shows the currently used input
1.3.6.1.4.1.21678.307.1.4.1.4	istsshiSwitchState	R	Shows the status of the Seamless Switch
1.3.6.1.4.1.21678.307.1.4.2	istssLpInput		
1.3.6.1.4.1.21678.307.1.4.2.1	istsslpForceInput	RW	Forces the use of the selected input as Low Priority input
1.3.6.1.4.1.21678.307.1.4.2.2	istsslpPriorityInput	RW	Sets the priority input
1.3.6.1.4.1.21678.307.1.4.2.3	istsslpUsedInput	R	Shows the currently used input
1.3.6.1.4.1.21678.307.1.4.2.4	istsslpSwitchState	R	Shows the status of the Seamless Switch
1.3.6.1.4.1.21678.307.1.4.3	istssSeamlessAlarms		
1.3.6.1.4.1.21678.307.1.4.3.1	istsssaInputNumber	R	The number of inputs depending on the Hierarchical Mode and on the HP/LP Force Input selectors
1.3.6.1.4.1.21678.307.1.4.3.2	istsssaTable	NA	
1.3.6.1.4.1.21678.307.1.4.3.2.1	istsssaEntry		
1.3.6.1.4.1.21678.307.1.4.3.2.1.1	istsssaIndex	R	
1.3.6.1.4.1.21678.307.1.4.3.2.1.2	istsssaInputDescr	R	Input description

OID	Name	R/W	Description
1.3.6.1.4.1.21678.307.1.4.3.2.1.3	istsssaPatCrcEn	RW	Enables the PAT CRC alarm bit in the Seamless Alarm Mask
1.3.6.1.4.1.21678.307.1.4.3.2.1.4	istsssaMipCrcEn	RW	Enables the MIP CRC alarm bit in the Seamless Alarm Mask
1.3.6.1.4.1.21678.307.1.4.3.2.1.5	istsssaSyncErrEn	RW	Enables the Sync alarm bit in the Seamless Alarm Mask
1.3.6.1.4.1.21678.307.1.4.3.2.1.6	istsssaPktJitterEn	RW	Enables the Packet Jitter alarm bit in the Seamless Alarm Mask
1.3.6.1.4.1.21678.307.1.4.3.2.1.7	istsssaTransportErrEn	RW	Enables the Transport Error alarm bit in the Seamless Alarm Mask
1.3.6.1.4.1.21678.307.1.4.3.2.1.8	istsssaAsiWordErrEn	RW	Enables the ASI Word Error alarm bit in the Seamless Alarm Mask
1.3.6.1.4.1.21678.307.1.4.3.2.1.9	istsssaMipPriorityErrEn	RW	Enables the MIP Priority alarm bit in the Seamless Alarm Mask
1.3.6.1.4.1.21678.307.1.4.3.2.1.10	istsssaNetworkDelay	R	Shows the Network Delay of the specific entry
1.3.6.1.4.1.21678.307.1.4.3.2.1.11	istsssaWatchdogErr	R	Input Watchdog alarm status
1.3.6.1.4.1.21678.307.1.4.3.2.1.12	istsssaLateMipErr	R	Late MIP alarm status
1.3.6.1.4.1.21678.307.1.4.3.2.1.13	istsssaNotValidErr	R	Invalid Input alarm status
1.3.6.1.4.1.21678.307.1.4.3.2.1.14	istsssaPatCrcErr	R	PAT CRC alarm status
1.3.6.1.4.1.21678.307.1.4.3.2.1.15	istsssaMipCrcErr	R	MIP CRC alarm status
1.3.6.1.4.1.21678.307.1.4.3.2.1.16	istsssaSyncErr	R	Transport Stream Sync Error alarm status
1.3.6.1.4.1.21678.307.1.4.3.2.1.17	istsssaPktJitterErr	R	Packet Jitter alarm status
1.3.6.1.4.1.21678.307.1.4.3.2.1.18	istsssaTransportErr	R	Transport Error alarm status
1.3.6.1.4.1.21678.307.1.4.3.2.1.19	istsssaAsiWordErr	R	ASI Word Error alarm status
1.3.6.1.4.1.21678.307.1.4.3.2.1.20	istsssaNetworkDelayErr	R	Network Delay alarm status
1.3.6.1.4.1.21678.307.1.4.3.2.1.21	istsssaMipPriorityErr	R	MIP Priority alarm status
1.3.6.1.4.1.21678.307.1.5	isIInputManagement		
1.3.6.1.4.1.21678.307.1.5.1	isiimInputSel	RW	Input selector
1.3.6.1.4.1.21678.307.1.5.2	isiimRfChannel	RW	Input channel selector
1.3.6.1.4.1.21678.307.1.5.3	isiimRfFreqOff	RW	Input frequency offset expressed in Hz (1Hz steps, from -200 kHz to 200 kHz)
1.3.6.1.4.1.21678.307.1.6	isAInputManagement		
1.3.6.1.4.1.21678.307.1.6.1	isaimInputSel	RW	Input selector
1.3.6.1.4.1.21678.307.1.6.2	isaimRfChannel	RW	Input channel selector
1.3.6.1.4.1.21678.307.1.6.3	isaimRfFreqOff	RW	Input frequency offset +/- 200 kHz (1Hz step)
1.3.6.1.4.1.21678.307.1.7	isAInputAutoswitch		
1.3.6.1.4.1.21678.307.1.7.1	isaiaEnable	RW	Enables the use of Input Autoswitch finite-state machine
1.3.6.1.4.1.21678.307.1.7.2	isaiaState	R	Current state of the finite-state machine

OID	Name	R/W	Description
1.3.6.1.4.1.21678.307.1.7.3	isaiaActualInput	R	Shows the currently used input
1.3.6.1.4.1.21678.307.1.7.4	isaiaPrimaryToSecondaryCounter	R	Primary to secondary input switch countdown expressed in seconds
1.3.6.1.4.1.21678.307.1.7.5	isaiaSecondaryToSecondaryCounter	R	Secondary to secondary input switch countdown expressed in seconds
1.3.6.1.4.1.21678.307.1.7.6	isaiaSecondaryToPrimaryCounter	R	Secondary to primary input switch countdown expressed in seconds
1.3.6.1.4.1.21678.307.1.8	isItuInputManagement		
1.3.6.1.4.1.21678.307.1.8.1	isituimInputSel	RW	Input selector
1.3.6.1.4.1.21678.307.1.8.2	isituimSdiAudioSel	RW	SDI audio selector
1.3.6.1.4.1.21678.307.1.9	isItuInputAutoswitch		
1.3.6.1.4.1.21678.307.1.9.1	isituiaEnable	RW	Enables the use of Input Autoswitch finite-state machine
1.3.6.1.4.1.21678.307.1.9.2	isituiaState	R	Current state of the finite-state machine
1.3.6.1.4.1.21678.307.1.9.3	isituiaActualInput	R	Shows the currently used input
1.3.6.1.4.1.21678.307.1.9.4	isituiaPrimaryToSecondaryCounter	R	Primary to secondary input switch countdown expressed in seconds
1.3.6.1.4.1.21678.307.1.9.5	isituiaSecondaryToSecondaryCounter	R	Secondary to secondary input switch countdown expressed in seconds
1.3.6.1.4.1.21678.307.1.9.6	isituiaSecondaryToPrimaryCounter	R	Secondary to primary input switch countdown expressed in seconds
1.3.6.1.4.1.21678.307.2	inputStatistics		
1.3.6.1.4.1.21678.307.2.1	isNumber	R	Number of inputs
1.3.6.1.4.1.21678.307.2.2	isTable	NA	
1.3.6.1.4.1.21678.307.2.2.1	isEntry		
1.3.6.1.4.1.21678.307.2.2.1.1	isIndex	R	
1.3.6.1.4.1.21678.307.2.2.1.2	isDescr	R	Input descriptor
1.3.6.1.4.1.21678.307.2.2.1.3	isType	R	Input type
1.3.6.1.4.1.21678.307.2.2.1.4	isWordRate	R	Input word rate
1.3.6.1.4.1.21678.307.2.2.1.5	isBitRate	R	Iinput bitrate
1.3.6.1.4.1.21678.307.2.2.1.6	isFiltered	R	Filtered bitrate
1.3.6.1.4.1.21678.307.2.2.1.7	isOverflow	R	Overflow
1.3.6.1.4.1.21678.307.2.2.1.8	isLock	R	Lock status
1.3.6.1.4.1.21678.307.2.2.1.9	isPckFormat	R	Packet format
1.3.6.1.4.1.21678.307.2.2.1.10	isCarrierDetect	R	Carrier detect indicator
1.3.6.1.4.1.21678.307.2.2.1.11	isErrors	R	Wrong bytes received
1.3.6.1.4.1.21678.307.2.2.1.12	isBypassEnable	RW	Cable equalizer bypass enable
1.3.6.1.4.1.21678.307.2.3	sdi		

OID	Name	R/W	Description
1.3.6.1.4.1.21678.307.2.3.1	sdiNumber	R	Number of SDI inputs.
1.3.6.1.4.1.21678.307.2.3.2	sdiTable	NA	
1.3.6.1.4.1.21678.307.2.3.2.1	sdiEntry		
1.3.6.1.4.1.21678.307.2.3.2.1.1	sdiIndex	R	Index of the specific entry
1.3.6.1.4.1.21678.307.2.3.2.1.2	sdiDescr	R	SDI input description
1.3.6.1.4.1.21678.307.2.3.2.1.3	sdiLock	R	SDI lock status
1.3.6.1.4.1.21678.307.2.3.2.1.4	sdiCarrierDetectAlarm	R	SDI carrier detect alarm
1.3.6.1.4.1.21678.307.2.3.2.1.5	sdiCh12Present	R	SDI audio channels 1-2 are present
1.3.6.1.4.1.21678.307.2.3.2.1.6	sdiCh1Level	R	SDI audio channel 1 level expressed in dBFS (-128 stands for muted or no signal)
1.3.6.1.4.1.21678.307.2.3.2.1.7	sdiCh2Level	R	SDI audio channel 2 level expressed in dBFS (-128 stands for muted or no signal)
1.3.6.1.4.1.21678.307.2.3.2.1.8	sdiCh34Present	R	SDI audio channels 3-4 are present
1.3.6.1.4.1.21678.307.2.3.2.1.9	sdiCh3Level	R	SDI audio channel 3 level expressed in dBFS (-128 stands for muted or no signal)
1.3.6.1.4.1.21678.307.2.3.2.1.10	sdiCh4Level	R	SDI audio channel 4 level expressed in dBFS (-128 stands for muted or no signal)
1.3.6.1.4.1.21678.307.2.3.2.1.11	sdiStandard	R	SDI standard
1.3.6.1.4.1.21678.307.2.3.2.1.12	sdiBypassEnable	RW	Cable equalizer bypass enable
1.3.6.1.4.1.21678.307.2.4	cvbs		
1.3.6.1.4.1.21678.307.2.4.1	cvbsNumber	R	Number of CVBS inputs.
1.3.6.1.4.1.21678.307.2.4.2	cvbsTable	NA	
1.3.6.1.4.1.21678.307.2.4.2.1	cvbsEntry		
1.3.6.1.4.1.21678.307.2.4.2.1.1	cvbsIndex	R	Index of the specific entry
1.3.6.1.4.1.21678.307.2.4.2.1.2	cvbsDescr	R	Input description
1.3.6.1.4.1.21678.307.2.4.2.1.3	cvbsLock	R	Input lock status
1.3.6.1.4.1.21678.307.2.4.2.1.4	cvbsColorSub	R	Color subcarrier lock status
1.3.6.1.4.1.21678.307.2.4.2.1.5	cvbsVerticalLock	R	Vertical lock status
1.3.6.1.4.1.21678.307.2.4.2.1.6	cvbsHorizontalLock	R	Horizontal lock status
1.3.6.1.4.1.21678.307.2.4.2.1.7	cvbsStandard	R	CVBS input standard
1.3.6.1.4.1.21678.307.2.4.2.1.8	cvbsFrameRate	R	Frame rate
1.3.6.1.4.1.21678.307.2.4.2.1.9	cvbsADPalCompensation	RW	Enables the A/D PAL Compensation
1.3.6.1.4.1.21678.307.3	t2FrontEnd		
1.3.6.1.4.1.21678.307.3.1	t2feStatistics		
1.3.6.1.4.1.21678.307.3.1.1	t2fesRxLevel	R	Input RX level 127: over input -128: low power -63...62: power expressed in dB
1.3.6.1.4.1.21678.307.3.1.2	t2fesCarrierOffset	R	Input carrier offset

OID	Name	R/W	Description
1.3.6.1.4.1.21678.307.3.1.3	t2fesIfAgc	R	Input IF AGC level
1.3.6.1.4.1.21678.307.3.1.4	t2fesRfAgc	R	Input RF AGC level
1.3.6.1.4.1.21678.307.3.1.5	t2fesTsLock	R	Demodulated TS Lock
1.3.6.1.4.1.21678.307.3.1.6	t2fesSyncStat	R	Sync statistics
1.3.6.1.4.1.21678.307.3.1.7	t2fesMer	R	Input MER [dBx1e3]
1.3.6.1.4.1.21678.307.3.1.8	t2fesSnr	R	Input SNR [dBx1e3]
1.3.6.1.4.1.21678.307.3.1.9	t2fesPreLdpcBer	R	Input Pre LDPC BER [1e7]
1.3.6.1.4.1.21678.307.3.1.10	t2fesPostBchFer	R	Input Post BCH FER [1e6]
1.3.6.1.4.1.21678.307.3.1.11	t2fesPreBchBer	R	Input Pre BCH BER [1e9]
1.3.6.1.4.1.21678.307.3.1.12	t2fesDemodPpm	R	Demodulated PPM [ppmx1e2]
1.3.6.1.4.1.21678.307.3.1.13	t2fesSignalQuality	R	Signal quality [%]
1.3.6.1.4.1.21678.307.3.1.14	t2fesBitrate	R	Expected bitrate
1.3.6.1.4.1.21678.307.3.1.15	t2fesLdpcIter	R	LDPC iterations per minute
1.3.6.1.4.1.21678.307.3.2	t2feL1Pre		
1.3.6.1.4.1.21678.307.3.2.1	t2feL1PreType	R	Input stream type
1.3.6.1.4.1.21678.307.3.2.2	t2feL1PreBwt	R	BWT extension indicator
1.3.6.1.4.1.21678.307.3.2.3	t2feL1PreS1	R	S1 field
1.3.6.1.4.1.21678.307.3.2.4	t2feL1PreS2	R	S2 field
1.3.6.1.4.1.21678.307.3.2.5	t2feL1PreFftSize	R	FFT size
1.3.6.1.4.1.21678.307.3.2.6	t2feL1PreMixed	R	Mixed indicator
1.3.6.1.4.1.21678.307.3.2.7	t2feL1PreL1Repeat	R	L1 repeat enable flag
1.3.6.1.4.1.21678.307.3.2.8	t2feL1PreGuardInterval	R	Guard Interval
1.3.6.1.4.1.21678.307.3.2.9	t2feL1PrePapr	R	PAPR
1.3.6.1.4.1.21678.307.3.2.10	t2feL1PreL1Mod	R	L1 modulation scheme
1.3.6.1.4.1.21678.307.3.2.11	t2feL1PreL1CodeRate	R	L1 code rate
1.3.6.1.4.1.21678.307.3.2.12	t2feL1PreL1Fec	R	L1 FEC Type
1.3.6.1.4.1.21678.307.3.2.13	t2feL1PreL1PostSize	R	L1 Post Size
1.3.6.1.4.1.21678.307.3.2.14	t2feL1PreL1PostInfoSize	R	L1 Post Info Size
1.3.6.1.4.1.21678.307.3.2.15	t2feL1PrePilotPattern	R	Pilot Pattern
1.3.6.1.4.1.21678.307.3.2.16	t2feL1PreTxIdAvailability	R	TX Id
1.3.6.1.4.1.21678.307.3.2.17	t2feL1PreCellId	R	Cell Id
1.3.6.1.4.1.21678.307.3.2.18	t2feL1PreT2NetworkId	R	T2 Network Id
1.3.6.1.4.1.21678.307.3.2.19	t2feL1PreT2SystemId	R	T2 System Id
1.3.6.1.4.1.21678.307.3.2.20	t2feL1PreNumT2Frames	R	Number of T2 frames
1.3.6.1.4.1.21678.307.3.2.21	t2feL1PreNumDataSymb	R	Number of data symbols
1.3.6.1.4.1.21678.307.3.2.22	t2feL1PreRegenFlag	R	Regeneration count indicator

OID	Name	R/W	Description
1.3.6.1.4.1.21678.307.3.2.23	t2feL1PreL1PostExt	R	L1 Post extension enabled
1.3.6.1.4.1.21678.307.3.2.24	t2feL1PreRfIndex	R	The current RF index
1.3.6.1.4.1.21678.307.3.3	t2feL1Post		
1.3.6.1.4.1.21678.307.3.3.1	t2feL1PostSubSliceNum	R	Number of sub-slices per frame
1.3.6.1.4.1.21678.307.3.3.2	t2feL1PostFefType	R	The type of the associated FEF part
1.3.6.1.4.1.21678.307.3.3.3	t2feL1PostFefLength	R	FEF length
1.3.6.1.4.1.21678.307.3.3.4	t2feL1PostFefInterval	R	FEF interval
1.3.6.1.4.1.21678.307.3.3.5	t2feL1PostAux		
1.3.6.1.4.1.21678.307.3.3.5.1	t2feL1PostAuxNum	R	Number of AUXs
1.3.6.1.4.1.21678.307.3.3.5.2	t2feL1PostAuxTable	NA	
1.3.6.1.4.1.21678.307.3.3.5.2.1	t2feL1PostAuxEntry		
1.3.6.1.4.1.21678.307.3.3.5.2.1.1	t2feL1PostAuxIndex	R	
1.3.6.1.4.1.21678.307.3.3.5.2.1.2	t2feL1PostAuxStreamType	R	The type of the current auxiliary stream
1.3.6.1.4.1.21678.307.3.3.5.2.1.3	t2feL1PostAuxPrivateConf	R	RFU
1.3.6.1.4.1.21678.307.3.3.6	t2feL1PostRf		
1.3.6.1.4.1.21678.307.3.3.6.1	t2feL1PostNumRf	R	The number of RF frequencies in use
1.3.6.1.4.1.21678.307.3.3.6.2	t2feL1PostRfTable	NA	
1.3.6.1.4.1.21678.307.3.3.6.2.1	t2feL1PostRfEntry		
1.3.6.1.4.1.21678.307.3.3.6.2.1.1	t2feL1PostRfIndex	R	
1.3.6.1.4.1.21678.307.3.3.6.2.1.2	t2feL1PostRfIdx	R	RF index
1.3.6.1.4.1.21678.307.3.3.6.2.1.3	t2feL1PostFrequency	R	Frequency
1.3.6.1.4.1.21678.307.3.3.7	t2feL1PostPlp		
1.3.6.1.4.1.21678.307.3.3.7.1	t2feL1PostPlpNum	R	Number of PLPs
1.3.6.1.4.1.21678.307.3.3.7.2	t2feL1PostPlpTable	NA	
1.3.6.1.4.1.21678.307.3.3.7.2.1	t2feL1PostPlpEntry		
1.3.6.1.4.1.21678.307.3.3.7.2.1.1	t2feL1PostPlpIndex	R	
1.3.6.1.4.1.21678.307.3.3.7.2.1.2	t2feL1PostPlpId	R	PLP ID
1.3.6.1.4.1.21678.307.3.3.7.2.1.3	t2feL1PostPlpType	R	PLP type
1.3.6.1.4.1.21678.307.3.3.7.2.1.4	t2feL1PostPlpPayloadType	R	PLP payload type
1.3.6.1.4.1.21678.307.3.3.7.2.1.5	t2feL1PostFfFlag	R	FF flag
1.3.6.1.4.1.21678.307.3.3.7.2.1.6	t2feL1PostFirstRfIdx	R	First RF index
1.3.6.1.4.1.21678.307.3.3.7.2.1.7	t2feL1PostFirstFrameIdx	R	First frame index
1.3.6.1.4.1.21678.307.3.3.7.2.1.8	t2feL1PostGroupId	R	PLP group id
1.3.6.1.4.1.21678.307.3.3.7.2.1.9	t2feL1PostPlpCod	R	The code rate used by the associated PLP
1.3.6.1.4.1.21678.307.3.3.7.2.1.10	t2feL1PostPlpMod	R	The modulation used by the associated PLP
1.3.6.1.4.1.21678.307.3.3.7.2.1.11	t2feL1PostPlpRotation	R	DVBT2 rotated constellation indicator

OID	Name	R/W	Description
1.3.6.1.4.1.21678.307.3.3.7.2.1.12	t2feL1PostPlpFec	R	The FEC type used by the associated PLP
1.3.6.1.4.1.21678.307.3.3.7.2.1.13	t2feL1PostNumBlocksMax	R	Maximum number of PLP blocks
1.3.6.1.4.1.21678.307.3.3.7.2.1.14	t2feL1PostFrameInterval	R	Frame interval
1.3.6.1.4.1.21678.307.3.3.7.2.1.15	t2feL1PostTimeIntLength	R	Time interleaving length
1.3.6.1.4.1.21678.307.3.3.7.2.1.16	t2feL1PostTimeIntType	R	Time interleaving type
1.3.6.1.4.1.21678.307.3.3.7.2.1.17	t2feL1PostInbandA	R	In-band A flag
1.3.6.1.4.1.21678.307.3.3.7.2.1.18	t2feL1PostInbandB	R	In-band B flag
1.3.6.1.4.1.21678.307.3.3.7.2.1.19	t2feL1PostPlpMode	R	PLP mode
1.3.6.1.4.1.21678.307.3.3.7.2.1.20	t2feL1PostStaticFlag	R	Static flag
1.3.6.1.4.1.21678.307.3.3.7.2.1.21	t2feL1PostStaticPaddFlag	R	Static padding flag
1.3.6.1.4.1.21678.307.4	tFrontEnd		
1.3.6.1.4.1.21678.307.4.1	tfeStatistics		
1.3.6.1.4.1.21678.307.4.1.1	tfesRxLevel	R	Input RX level 127: over input -128: low power -63...62: power expressed in dB
1.3.6.1.4.1.21678.307.4.1.2	tfesCarrierOffset	R	Input carrier offset
1.3.6.1.4.1.21678.307.4.1.3	tfesIfAgc	R	Input IF AGC level
1.3.6.1.4.1.21678.307.4.1.4	tfesRfAgc	R	Input RF AGC level
1.3.6.1.4.1.21678.307.4.1.5	tfesTsLock	R	Demodulated TS Lock
1.3.6.1.4.1.21678.307.4.1.6	tfesSyncStat	R	Sync statistics
1.3.6.1.4.1.21678.307.4.1.7	tfesMer	R	Input MER [dBx1e3]
1.3.6.1.4.1.21678.307.4.1.8	tfesSnr	R	Input SNR [dBx1e3]
1.3.6.1.4.1.21678.307.4.1.9	tfesPreVitBer	R	Input Pre Viterbi BER [1e7]
1.3.6.1.4.1.21678.307.4.1.10	tfesPreRsBer	R	Input Pre RS BER [1e7]
1.3.6.1.4.1.21678.307.4.1.11	tfesRsErrCount	R	Input RS errors count detected by the RS decoder over 1 second
1.3.6.1.4.1.21678.307.4.1.12	tfesDemodPpm	R	Demodulated PPM [ppmx1e2]
1.3.6.1.4.1.21678.307.4.1.13	tfesSignalQuality	R	Signal quality [%]
1.3.6.1.4.1.21678.307.4.1.14	tfesBitrate	R	Expected bitrate
1.3.6.1.4.1.21678.307.4.2	tfeDemodParams		
1.3.6.1.4.1.21678.307.4.2.1	tfedpConstellation	R	Constellation for current modulation scheme
1.3.6.1.4.1.21678.307.4.2.2	tfedpHierMode	R	Hierarchy information for current modulation scheme
1.3.6.1.4.1.21678.307.4.2.3	tfedpHpCodeRate	R	High Priority Code Rate
1.3.6.1.4.1.21678.307.4.2.4	tfedpLpCodeRate	R	Low Priority Code Rate
1.3.6.1.4.1.21678.307.4.2.5	tfedpFft	R	FFT size
1.3.6.1.4.1.21678.307.4.2.6	tfedpGuardInterval	R	Guard interval
1.3.6.1.4.1.21678.307.4.2.7	tfedpCellId	R	Cell identifier

OID	Name	R/W	Description
1.3.6.1.4.1.21678.307.5	s2FrontEnd		
1.3.6.1.4.1.21678.307.5.1	s2feSettngs		
1.3.6.1.4.1.21678.307.5.1.1	s2feFrequency	RW	Frequency [MHz]
1.3.6.1.4.1.21678.307.5.1.2	s2feSymbolRate	RW	Symbol Rate [KBaud]
1.3.6.1.4.1.21678.307.5.1.3	s2fePolarization	RW	Polarization
1.3.6.1.4.1.21678.307.5.1.4	s2feIsiA	RW	Input Stream Identifier A
1.3.6.1.4.1.21678.307.5.1.5	s2feIsiB	RW	Input Stream Identifier B
1.3.6.1.4.1.21678.307.5.1.6	s2fePls		
1.3.6.1.4.1.21678.307.5.1.6.1	s2fepMode	RW	Mode selector
1.3.6.1.4.1.21678.307.5.1.6.2	s2fepN0	RW	PLS number 0 setting
1.3.6.1.4.1.21678.307.5.1.6.3	s2fepN1	RW	PLS number 1 setting
1.3.6.1.4.1.21678.307.5.1.6.4	s2fepN2	RW	PLS number 2 setting
1.3.6.1.4.1.21678.307.5.2	s2feDemodParams		
1.3.6.1.4.1.21678.307.5.2.1	s2fedpRxLevel	R	Input RX level [dBm]
1.3.6.1.4.1.21678.307.5.2.2	s2fedpLock	R	Transponder lock status
1.3.6.1.4.1.21678.307.5.2.3	s2fedpStandard	R	Input standard
1.3.6.1.4.1.21678.307.5.2.4	s2fedpRxModCode	R	Modulation mode
1.3.6.1.4.1.21678.307.5.2.5	s2fedpBand	R	Band
1.3.6.1.4.1.21678.307.5.2.6	s2fedpMode	R	Mode
1.3.6.1.4.1.21678.307.5.2.7	s2fedpSnr	R	S/N level [dB * 10]
1.3.6.1.4.1.21678.307.5.2.8	s2fedpPilots	R	Pilots
1.3.6.1.4.1.21678.307.5.2.9	s2fedpRollOff	R	Roll off
1.3.6.1.4.1.21678.307.5.2.10	s2fedpConstellation	R	Constellation
1.3.6.1.4.1.21678.307.5.2.11	s2fedpBer	R	Bit Error Rate (* 10^7)
1.3.6.1.4.1.21678.307.6	isdbtFrontEnd		
1.3.6.1.4.1.21678.307.6.1	ifeStatistics		
1.3.6.1.4.1.21678.307.6.1.1	ifesRxLevel	R	Input RX level 127: over input -128: low power -63...62: power expressed in dB
1.3.6.1.4.1.21678.307.6.1.2	ifesIfLevel	R	Input IF level
1.3.6.1.4.1.21678.307.6.1.3	ifesIfAgcDac	R	IF AGC output DAC value
1.3.6.1.4.1.21678.307.6.1.4	ifesDemState	R	The state of the sequencer
1.3.6.1.4.1.21678.307.6.1.5	ifesMode	R	Input mode
1.3.6.1.4.1.21678.307.6.1.6	ifesGuardInterval	R	Input guard interval
1.3.6.1.4.1.21678.307.6.1.7	ifesSTRFreqErr	R	Frequency error detected by symbol timing recovery [Hz]
1.3.6.1.4.1.21678.307.6.1.8	ifesCRFreqErr	R	Frequency error detected by carrier recovery [kHz]
1.3.6.1.4.1.21678.307.6.1.9	ifesCN	R	Estimated Carrier to Noise ratio (dB x 10)

OID	Name	R/W	Description
1.3.6.1.4.1.21678.307.6.2	ifeLayerStatistics		
1.3.6.1.4.1.21678.307.6.2.1	ifelsNumber	R	The number of Layers
1.3.6.1.4.1.21678.307.6.2.2	ifelsTable	NA	
1.3.6.1.4.1.21678.307.6.2.2.1	ifelsEntry		
1.3.6.1.4.1.21678.307.6.2.2.1.1	ifelsIndex	R	
1.3.6.1.4.1.21678.307.6.2.2.1.2	ifelsDescr	R	Layer description
1.3.6.1.4.1.21678.307.6.2.2.1.3	ifelsMod	R	Modulation scheme
1.3.6.1.4.1.21678.307.6.2.2.1.4	ifelsCodeRate	R	Code rate
1.3.6.1.4.1.21678.307.6.2.2.1.5	ifelsTILength	R	Time Interleaving length
1.3.6.1.4.1.21678.307.6.2.2.1.6	ifelsSegNum	R	Number of segments
1.3.6.1.4.1.21678.307.6.2.2.1.7	ifelsMer	R	MER [dB] (* 10)
1.3.6.1.4.1.21678.307.6.2.2.1.8	ifelsPreVitBer	R	Pre-Viterbi BER (* 10^9)
1.3.6.1.4.1.21678.307.6.2.2.1.9	ifelsPostVitBer	R	Post-Viterbi BER (* 10^9)
1.3.6.1.4.1.21678.307.6.2.2.1.10	ifelsPktErrRate	R	Packet Error Rate (* 10^9)
1.3.6.1.4.1.21678.307.7	atscFrontEnd		
1.3.6.1.4.1.21678.307.7.1	afeStatistics		
1.3.6.1.4.1.21678.307.7.1.1	afesFrequencyOffset	R	Input carrier offset
1.3.6.1.4.1.21678.307.7.1.2	afesDemodStatus	R	VSB demodulation status
1.3.6.1.4.1.21678.307.7.1.3	afesEqStatus	R	Equalizer status
1.3.6.1.4.1.21678.307.7.1.4	afesDemLock	R	Demodulator lock status
1.3.6.1.4.1.21678.307.7.1.5	afesAgcLock	R	Digital AGC lock status
1.3.6.1.4.1.21678.307.7.1.6	afesFrameLock	R	Frame lock status
1.3.6.1.4.1.21678.307.7.1.7	afesCarrierFreqLoopLock	R	Carrier frequency loop lock status
1.3.6.1.4.1.21678.307.7.1.8	afesTimingFreqLoopLock	R	Timing frequency loop lock status
1.3.6.1.4.1.21678.307.7.1.9	afesSnr	R	Signal to Noise Ratio [dB]
1.3.6.1.4.1.21678.307.7.1.10	afesSer	R	Segment Error Rate
1.3.6.1.4.1.21678.307.7.1.11	afesBer	R	Bit Error Rate
1.3.6.1.4.1.21678.308	ssbtIsdbtModulation		
1.3.6.1.4.1.21678.308.1	imSettings		
1.3.6.1.4.1.21678.308.1.1	imsIipStatus		
1.3.6.1.4.1.21678.308.1.1.1	imsisValid	R	Input IIP valid
1.3.6.1.4.1.21678.308.1.1.2	imsisAlarm	R	Input IIP alarm
1.3.6.1.4.1.21678.308.1.2	imsNetworkMode	RW	Transmitter network mode selector
1.3.6.1.4.1.21678.308.1.3	imsEquipmentId	RW	Equipment ID
1.3.6.1.4.1.21678.308.1.4	imsDefIip	R	Equipment ID found in IIP
1.3.6.1.4.1.21678.308.1.5	imsNetworkDelay	R	Network delay [100ns]

OID	Name	R/W	Description
1.3.6.1.4.1.21678.308.1.6	imsEWS		
1.3.6.1.4.1.21678.308.1.6.1	imsewsEnable	RW	Enables the local editing of the Emergency switch on control flag
1.3.6.1.4.1.21678.308.1.6.2	imsewsSetting	RW	Sets the Emergency switch on control flag
1.3.6.1.4.1.21678.308.1.7	imsLayersMonitor		
1.3.6.1.4.1.21678.308.1.7.1	imslmNumber	R	The number of Layers
1.3.6.1.4.1.21678.308.1.7.2	imslmTable	NA	
1.3.6.1.4.1.21678.308.1.7.2.1	imslmEntry		
1.3.6.1.4.1.21678.308.1.7.2.1.1	imslmIndex	R	
1.3.6.1.4.1.21678.308.1.7.2.1.2	imslmDescr	R	Layer description
1.3.6.1.4.1.21678.308.1.7.2.1.3	imslmPktXFrame	R	Number of packets per frame
1.3.6.1.4.1.21678.308.1.7.2.1.4	imslmOverflow	R	Overflow
1.3.6.1.4.1.21678.308.1.7.2.1.5	imslmUnderflow	R	Underflow
1.3.6.1.4.1.21678.308.2	imIipParams		
1.3.6.1.4.1.21678.308.2.1	imipMode	R	IIP modulator mode.
1.3.6.1.4.1.21678.308.2.2	imipGuardInterval	R	IIP modulator guard interval.
1.3.6.1.4.1.21678.308.2.3	imipUsePartialReceptionFlag	R	IIP modulator use the Partial Reception Flag.
1.3.6.1.4.1.21678.308.2.4	imipMaxDelay	R	IIP maximum delay [100 ns].
1.3.6.1.4.1.21678.308.2.5	imipSyncId	R	IIP modulator use the Synchronization ID.
1.3.6.1.4.1.21678.308.2.6	imipStaticDelay	R	IIP modulator use the Time Reference.
1.3.6.1.4.1.21678.308.2.7	imipTimeOffset	R	IIP time offset [100 ns].
1.3.6.1.4.1.21678.308.2.8	imipLayers		
1.3.6.1.4.1.21678.308.2.8.1	imiplNumber	R	The number of Layers
1.3.6.1.4.1.21678.308.2.8.2	imiplTable	NA	
1.3.6.1.4.1.21678.308.2.8.2.1	imiplEntry		
1.3.6.1.4.1.21678.308.2.8.2.1.1	imiplIndex	R	
1.3.6.1.4.1.21678.308.2.8.2.1.2	imiplDescr	R	Layer description
1.3.6.1.4.1.21678.308.2.8.2.1.3	imiplMod	R	Modulation scheme
1.3.6.1.4.1.21678.308.2.8.2.1.4	imiplCodeRate	R	Code rate of inner code
1.3.6.1.4.1.21678.308.2.8.2.1.5	imiplTILength	R	Time Interleaving length
1.3.6.1.4.1.21678.308.2.8.2.1.6	imiplSegNum	R	Number of segments
1.3.6.1.4.1.21678.308.3	imLocalParams		
1.3.6.1.4.1.21678.308.3.1	imlpMode	RW	Modulator mode.
1.3.6.1.4.1.21678.308.3.2	imlpGuardInterval	RW	Modulator guard interval.
1.3.6.1.4.1.21678.308.3.3	imlpUsePartialReceptionFlag	RW	Use the Partial Reception Flag.
1.3.6.1.4.1.21678.308.3.4	imlpUserDelay	RW	User delay [100 ns].

OID	Name	R/W	Description
1.3.6.1.4.1.21678.308.3.5	imlplLayers		
1.3.6.1.4.1.21678.308.3.5.1	imlplNumber	R	The number of Layers
1.3.6.1.4.1.21678.308.3.5.2	imlplTable	NA	
1.3.6.1.4.1.21678.308.3.5.2.1	imlplEntry		
1.3.6.1.4.1.21678.308.3.5.2.1.1	imlplIndex	R	
1.3.6.1.4.1.21678.308.3.5.2.1.2	imlplDescr	RW	Layer description
1.3.6.1.4.1.21678.308.3.5.2.1.3	imlplMod	RW	Modulation scheme
1.3.6.1.4.1.21678.308.3.5.2.1.4	imlplCodeRate	RW	Code rate of inner code
1.3.6.1.4.1.21678.308.3.5.2.1.5	imlplTILength	RW	Time Interleaving length
1.3.6.1.4.1.21678.308.3.5.2.1.6	imlplSegNum	RW	Number of segments
1.3.6.1.4.1.21678.308.4	imCurrentParams		
1.3.6.1.4.1.21678.308.4.1	imcpMode	R	Current modulator mode.
1.3.6.1.4.1.21678.308.4.2	imcpGuardInterval	R	Current modulator guard interval.
1.3.6.1.4.1.21678.308.4.3	imcpUsePartialReceptionFlag	R	Use the Partial Reception Flag.
1.3.6.1.4.1.21678.308.4.4	imcpSystemDelay	R	Current system delay [100 ns].
1.3.6.1.4.1.21678.308.4.5	imcpLayers		
1.3.6.1.4.1.21678.308.4.5.1	imcplNumber	R	The number of Layers
1.3.6.1.4.1.21678.308.4.5.2	imcplTable	NA	
1.3.6.1.4.1.21678.308.4.5.2.1	imcplEntry		
1.3.6.1.4.1.21678.308.4.5.2.1.1	imcplIndex	R	
1.3.6.1.4.1.21678.308.4.5.2.1.2	imcplDescr	R	Layer description
1.3.6.1.4.1.21678.308.4.5.2.1.3	imcplMod	R	Modulation scheme
1.3.6.1.4.1.21678.308.4.5.2.1.4	imcplCodeRate	R	Code rate of inner code
1.3.6.1.4.1.21678.308.4.5.2.1.5	imcplTILength	R	Time Interleaving length
1.3.6.1.4.1.21678.308.4.5.2.1.6	imcplSegNum	R	Number of segments
1.3.6.1.4.1.21678.309	ssbtItuModulation		
1.3.6.1.4.1.21678.309.1	itumVideoSettings		
1.3.6.1.4.1.21678.309.1.1	itumvsWhitelevel	RW	White level [%] (range 10 to 22) = [(x*0.05) + 10] (x: range 0 to 240)
1.3.6.1.4.1.21678.309.1.2	itumvsSynchAmplitude	RW	Synch Amplitude [%] (range: 22 to 27,5) = [(x*0.05) + 20] (x: range 40 to 150)
1.3.6.1.4.1.21678.309.1.3	itumvsPedesLevel	RW	Pedes level [%] (range: 0 to 7) = (x*0.05) (x: range 0 to 140)
1.3.6.1.4.1.21678.309.2	itumAudioSettings		
1.3.6.1.4.1.21678.309.2.1	itumasDeviation	RW	Audio deviation level
1.3.6.1.4.1.21678.309.2.2	itumasSoundSystem	RW	Sound System selector

OID	Name	R/W	Description
1.3.6.1.4.1.21678.309.2.3	itumasCarrierLevel1	RW	Carrier Level 1 [dB] (range: -7 to -22) = [-1* (x/10)] (range 70 to 220)
1.3.6.1.4.1.21678.309.2.4	itumasCarrierLevel2	RW	Carrier Level 2 [dB] (range: -7 to -22) = [-1* (x/10)] (range 70 to 220)
1.3.6.1.4.1.21678.309.2.5	itumasEmphasis	R	Emphasis monitor
1.3.6.1.4.1.21678.309.2.6	itumasType	RW	Selects the audio type
1.3.6.1.4.1.21678.309.3	itumGroupDelay		
1.3.6.1.4.1.21678.309.3.1	itumgdCurveSelector	RW	Mode selector for group delay filter
1.3.6.1.4.1.21678.310	ssbtOutput		
1.3.6.1.4.1.21678.310.1	outputSettings		
1.3.6.1.4.1.21678.310.1.1	osOutputManagement		
1.3.6.1.4.1.21678.310.1.1.3	osomOutPower	RW	Output power
1.3.6.1.4.1.21678.310.1.1.4	osomRflManagement		
1.3.6.1.4.1.21678.310.1.1.4.1	osomrmNumberAttempts	RW	Number of attempts to restore the system after a Reflex Power warning
1.3.6.1.4.1.21678.310.1.1.4.2	osomrmStatus	R	Reflex Power status
1.3.6.1.4.1.21678.310.1.1.4.3	osomrmRflHigh	R	Shows if the Reflex Power High goes over the alarm threshold
1.3.6.1.4.1.21678.310.1.1.4.4	osomrmCurrNumAttempt	R	Shows the current number of attemp to restore the system after a Reflex Power warning
1.3.6.1.4.1.21678.310.1.1.4.5	osomrmAttemptTimeout	R	Shows the coutdown expressed in seconds between two attemps
1.3.6.1.4.1.21678.310.1.1.4.6	osomrmReset	W	Resets the output amplifier stage once the device is in Reflex Power Alarm
1.3.6.1.4.1.21678.310.1.1.4.7	osomrmResetTimeout	R	Shows the coutdown expressed in seconds to come back from Warning to Ok state
1.3.6.1.4.1.21678.310.1.1.5	osomT2Output		
1.3.6.1.4.1.21678.310.1.1.5.1	osomt2oRfChannel	RW	Output channel
1.3.6.1.4.1.21678.310.1.1.5.2	osomt2RfFreqOff	RW	Output frequency offset expressed in Hz (from -200 kHz up to 200 kHz)
1.3.6.1.4.1.21678.310.1.1.6	osomTOutput		
1.3.6.1.4.1.21678.310.1.1.6.1	osomtoRfChannel	RW	Output channel
1.3.6.1.4.1.21678.310.1.1.6.2	osomtoRfFreqOff	RW	Output frequency offset expressed in Hz (from -200 kHz up to 200 kHz)
1.3.6.1.4.1.21678.310.1.1.7	osomIOutput		
1.3.6.1.4.1.21678.310.1.1.7.1	osomioRfChannel	RW	Output channel

OID	Name	R/W	Description
1.3.6.1.4.1.21678.310.1.1.7.2	osomioRfFreqOff	RW	Output frequency offset expressed in Hz (from -200 kHz up to 200 kHz)
1.3.6.1.4.1.21678.310.1.1.8	osomAOutput		
1.3.6.1.4.1.21678.310.1.1.8.1	osomaoRfChannel	RW	Output channel
1.3.6.1.4.1.21678.310.1.1.8.2	osomaoRfFreqOff	RW	Output frequency offset expressed in Hz (1Hz steps, from -200 kHz to 200 kHz)
1.3.6.1.4.1.21678.310.1.1.9	osomItuOutput		
1.3.6.1.4.1.21678.310.1.1.9.1	osomituoRfChannel	RW	Output channel
1.3.6.1.4.1.21678.310.1.1.9.2	osomituoRfFreqOff	RW	Output frequency offset expressed in Hz (from -200 kHz up to 200 kHz)
1.3.6.1.4.1.21678.310.1.1.9.3	osomituoOutPower	RW	Output power
1.3.6.1.4.1.21678.310.1.2	osT2TsProcessing		
1.3.6.1.4.1.21678.310.1.2.1	ost2tpDelNullPck	RW	Delete null packets enable 0: disabled 1: enable
1.3.6.1.4.1.21678.310.1.3	osT2TsMonitoring		
1.3.6.1.4.1.21678.310.1.3.1	ost2tmAsiOut1Sel	RW	The input to ASI OUT HP output bypass selector
1.3.6.1.4.1.21678.310.1.3.2	ost2tmAsiOut2Sel	RW	The input to ASI OUT LP output bypass selector
1.3.6.1.4.1.21678.310.1.4	osTTsProcessing		
1.3.6.1.4.1.21678.310.1.4.1	osttpDelNullPck	RW	Delete null packets enable 0: disabled 1: enable
1.3.6.1.4.1.21678.310.1.5	osTTsMonitoring		
1.3.6.1.4.1.21678.310.1.5.1	osttmAsiOut1Sel	RW	The input to ASI OUT HP output bypass selector
1.3.6.1.4.1.21678.310.1.5.2	osttmAsiOut2Sel	RW	The input to ASI OUT LP output bypass selector
1.3.6.1.4.1.21678.310.1.6	osITsProcessing		
1.3.6.1.4.1.21678.310.1.6.1	ositpDelNullPck	RW	Delete null packets enable 0: disabled 1: enable
1.3.6.1.4.1.21678.310.1.7	osITsMonitoring		
1.3.6.1.4.1.21678.310.1.7.1	ositmAsiOut1Sel	RW	The input to ASI OUT HP output bypass selector
1.3.6.1.4.1.21678.310.1.7.2	ositmAsiOut2Sel	RW	The input to ASI OUT LP output bypass selector
1.3.6.1.4.1.21678.310.1.8	osATsProcessing		
1.3.6.1.4.1.21678.310.1.8.1	osatpDelNullPck	RW	Delete null packets enable 0: disabled 1: enable
1.3.6.1.4.1.21678.310.1.9	osATsMonitoring		
1.3.6.1.4.1.21678.310.1.9.1	osatmAsiOut1Sel	RW	The input to ASI OUT HP output bypass selector
1.3.6.1.4.1.21678.310.1.9.2	osatmAsiOut2Sel	RW	The input to ASI OUT LP output bypass selector
1.3.6.1.4.1.21678.310.2	rf		
1.3.6.1.4.1.21678.310.2.1	rfEnable	RW	RF output enable 0: disabled 1: enabled
1.3.6.1.4.1.21678.310.2.2	rfStatus	R	RF output status 0: off 1: on
1.3.6.1.4.1.21678.310.3	testSignals		
1.3.6.1.4.1.21678.310.3.1	tsNumber	R	Number of available test signals.
1.3.6.1.4.1.21678.310.3.2	tsTable	NA	

OID	Name	R/W	Description
1.3.6.1.4.1.21678.310.3.2.1	tsEntry		
1.3.6.1.4.1.21678.310.3.2.1.1	tsIndex	R	
1.3.6.1.4.1.21678.310.3.2.1.2	tsDescr	R	Test signal description.
1.3.6.1.4.1.21678.310.3.2.1.3	tsEnable	RW	Test signal enable 0: disabled 1: enabled.
1.3.6.1.4.1.21678.310.3.3	tsItu		
1.3.6.1.4.1.21678.310.3.3.1	video		
1.3.6.1.4.1.21678.310.3.3.1.1	videoTestSel	RW	Video test signal selector
1.3.6.1.4.1.21678.310.3.3.2	audio		
1.3.6.1.4.1.21678.310.3.3.2.1	audioToneEnable	RW	Enables the audio test tones
1.3.6.1.4.1.21678.310.3.3.2.2	audioToneRight	RW	Right tone frequency (range:0 to127) [unit x 100Hz]
1.3.6.1.4.1.21678.310.3.3.2.3	audioToneLeft	RW	Left tone frequency (range:0 to127) [unit x 100Hz]
1.3.6.1.4.1.21678.310.3.3.2.4	audioMuteEnable	RW	Enables the audio muting
1.3.6.1.4.1.21678.310.3.3.3	its		
1.3.6.1.4.1.21678.310.3.3.3.1	itsEnable	RW	Enables ITS test signal insertion
1.3.6.1.4.1.21678.310.3.3.3.2	its0	RW	ITS number 0 position
1.3.6.1.4.1.21678.310.3.3.3.3	its1	RW	ITS number 1 position
1.3.6.1.4.1.21678.310.3.3.3.4	its2	RW	ITS number 2 position
1.3.6.1.4.1.21678.310.3.3.3.5	its3	RW	ITS number 3 position
1.3.6.1.4.1.21678.310.3.3.3.6	its4	RW	ITS number 4 position
1.3.6.1.4.1.21678.310.4	outputMonitor		
1.3.6.1.4.1.21678.310.4.1	omFwdPower	R	Forward power [dBm x 10] indicator
1.3.6.1.4.1.21678.310.4.2	omAgcMode	R	AGC mode status 0: analog 1: digital
1.3.6.1.4.1.21678.310.4.3	omAgcOn	R	Auto AGC status 0: off 1: on
1.3.6.1.4.1.21678.310.5	standBy		
1.3.6.1.4.1.21678.310.5.1	sbEnable	RW	LCD stand-by button enable
1.3.6.1.4.1.21678.310.5.2	sbStatus	R	Current device mode
1.3.6.1.4.1.21678.311	ssbtTsOverIP		
1.3.6.1.4.1.21678.311.1	inputChannels		
1.3.6.1.4.1.21678.311.1.1	icIgmpEnable	RW	IGMP enable
1.3.6.1.4.1.21678.311.1.2	icNumber	R	Number of input Ethernet channels.
1.3.6.1.4.1.21678.311.1.3	icTable	NA	
1.3.6.1.4.1.21678.311.1.3.1	icEntry		
1.3.6.1.4.1.21678.311.1.3.1.1	icIndex	R	
1.3.6.1.4.1.21678.311.1.3.1.2	icDescr	R	Description of input channel
1.3.6.1.4.1.21678.311.1.3.1.3	icLocalIpAddr	RW	IP address
1.3.6.1.4.1.21678.311.1.3.1.4	icLocalPort	RW	Port

OID	Name	R/W	Description
1.3.6.1.4.1.21678.311.1.3.1.5	icSourceClkReference	RW	Source clock reference selector
1.3.6.1.4.1.21678.311.2	outputChannels		
1.3.6.1.4.1.21678.311.2.1	ocPort	RW	UDP port
1.3.6.1.4.1.21678.311.2.2	ocNumber	R	Number of output Ethernet channels.
1.3.6.1.4.1.21678.311.2.3	ocTable	NA	
1.3.6.1.4.1.21678.311.2.3.1	ocEntry		
1.3.6.1.4.1.21678.311.2.3.1.1	ocIndex	R	
1.3.6.1.4.1.21678.311.2.3.1.2	ocDescr	R	Description of output channel
1.3.6.1.4.1.21678.311.2.3.1.3	ocStatus	R	Tansmission state
1.3.6.1.4.1.21678.311.2.3.1.4	ocDestIpAddr	RW	Destination IP address
1.3.6.1.4.1.21678.311.2.3.1.5	ocDestPhysAddr	R	Destination MAC address
1.3.6.1.4.1.21678.311.2.3.1.6	ocDestPort	RW	Destination port
1.3.6.1.4.1.21678.311.2.3.1.7	ocInputSelector	RW	Input selector
1.3.6.1.4.1.21678.311.2.3.1.8	ocProtocol	RW	Transmission protocol
1.3.6.1.4.1.21678.311.2.3.1.9	ocPckFormat	RW	Packet format
1.3.6.1.4.1.21678.311.2.3.1.10	ocPckPerFrame	RW	Number of TS packets per frame (when the packet format is 204, the maximum number of packets per frame is 6)
1.3.6.1.4.1.21678.311.2.3.1.11	ocSsrc	RW	SSRC identifier
1.3.6.1.4.1.21678.311.2.3.1.12	ocSourceClkReference	RW	Source clock reference selector
1.3.6.1.4.1.21678.311.2.3.1.13	ocEnable	RW	Transmission enable
1.3.6.1.4.1.21678.313	ssbtT2Modulation		
1.3.6.1.4.1.21678.313.1	t2mSettings		
1.3.6.1.4.1.21678.313.1.1	t2msUseT2Mi	RW	T2-MI enable 0: disabled 1: enabled
1.3.6.1.4.1.21678.313.1.2	t2msMiPid	RW	T2-MI PID setting
1.3.6.1.4.1.21678.313.1.3	t2msNetworkMode	RW	Transmitter mode selection 0 : MFN 1: SFN
1.3.6.1.4.1.21678.313.1.4	t2msPresetConfig	RW	Enables the use of preset configurations when the T2-MI is disabled
1.3.6.1.4.1.21678.313.1.5	t2msPresetConfigNum	RW	Configuration number selector
1.3.6.1.4.1.21678.313.1.6	t2msConfigChanged	R	Shows the status of the configuration
1.3.6.1.4.1.21678.313.1.7	t2msLoadConfig	W	Load configuration command
1.3.6.1.4.1.21678.313.1.8	t2msAutoRegen	RW	Enables the Automatic Regeneration function. This funcion allows to retrieve the configuration data from the input demodulator and to automatically increment the REGEN_FLAG field of the L1-Pre signalling."

OID	Name	R/W	Description
1.3.6.1.4.1.21678.313.1.9	t2msAutoRfLoop	RW	Enables the Automatic Frequency Loop function. This funcion allows to automatically set the FREQUENCY field of the L1-Post signalling to the currently used RF output frequency."
1.3.6.1.4.1.21678.313.1.10	t2msPidMode		
1.3.6.1.4.1.21678.313.1.10.1	t2mspmAutoPidEn	RW	Enables the automatic detection of the T2-MI PID
1.3.6.1.4.1.21678.313.1.10.2	t2mspmDetectedPid	R	Shows the detected T2-MI PID
1.3.6.1.4.1.21678.313.1.10.3	t2mspmUsedPid	R	Shows the currently used T2-MI PID
1.3.6.1.4.1.21678.313.1.10.4	t2mspmStatus	R	Shows the status of the T2-MI PID mode
1.3.6.1.4.1.21678.313.1.10.5	t2mspmError	R	Automatic T2-MI PID mode error
1.3.6.1.4.1.21678.313.2	t2mCurrentParameters		
1.3.6.1.4.1.21678.313.2.1	t2mcpSource	R	Current parameters source
1.3.6.1.4.1.21678.313.2.2	t2mcpL1Pre		
1.3.6.1.4.1.21678.313.2.2.1	t2mcpL1PreType	R	Input stream type
1.3.6.1.4.1.21678.313.2.2.2	t2mcpL1PreBwt	R	BWT extension indicator
1.3.6.1.4.1.21678.313.2.2.3	t2mcpL1PreS1	R	S1 field
1.3.6.1.4.1.21678.313.2.2.4	t2mcpL1PreS2	R	S2 field
1.3.6.1.4.1.21678.313.2.2.5	t2mcpL1PreFftSize	R	FFT size
1.3.6.1.4.1.21678.313.2.2.6	t2mcpL1PreMixed	R	Mixed indicator
1.3.6.1.4.1.21678.313.2.2.7	t2mcpL1PreL1Repeat	R	L1 repeat enable flag
1.3.6.1.4.1.21678.313.2.2.8	t2mcpL1PreGuardInterval	R	Guard Interval
1.3.6.1.4.1.21678.313.2.2.9	t2mcpL1PrePapr	R	PAPR
1.3.6.1.4.1.21678.313.2.2.10	t2mcpL1PreL1Mod	R	L1 modulation scheme
1.3.6.1.4.1.21678.313.2.2.11	t2mcpL1PreL1CodeRate	R	L1 code rate
1.3.6.1.4.1.21678.313.2.2.12	t2mcpL1PreL1Fec	R	L1 FEC Type
1.3.6.1.4.1.21678.313.2.2.13	t2mcpL1PreL1PostSize	R	L1 Post Size
1.3.6.1.4.1.21678.313.2.2.14	t2mcpL1PreL1PostInfoSize	R	L1 Post Info Size
1.3.6.1.4.1.21678.313.2	t2mCurrentParameters		
1.3.6.1.4.1.21678.313.2.1	t2mcpSource	R	Current parameters source
1.3.6.1.4.1.21678.313.2.2	t2mcpL1Pre		
1.3.6.1.4.1.21678.313.2.2.1	t2mcpL1PreType	R	Input stream type
1.3.6.1.4.1.21678.313.2.2.2	t2mcpL1PreBwt	R	BWT extension indicator
1.3.6.1.4.1.21678.313.2.2.3	t2mcpL1PreS1	R	S1 field
1.3.6.1.4.1.21678.313.2.2.4	t2mcpL1PreS2	R	S2 field
1.3.6.1.4.1.21678.313.2.2.5	t2mcpL1PreFftSize	R	FFT size
1.3.6.1.4.1.21678.313.2.2.6	t2mcpL1PreMixed	R	Mixed indicator

OID	Name	R/W	Description
1.3.6.1.4.1.21678.313.2.2.7	t2mcpL1PreL1Repeat	R	L1 repeat enable flag
1.3.6.1.4.1.21678.313.2.2.8	t2mcpL1PreGuardInterval	R	Guard Interval
1.3.6.1.4.1.21678.313.2.2.9	t2mcpL1PrePapr	R	PAPR
1.3.6.1.4.1.21678.313.2.2.10	t2mcpL1PreL1Mod	R	L1 modulation scheme
1.3.6.1.4.1.21678.313.2.2.11	t2mcpL1PreL1CodeRate	R	L1 code rate
1.3.6.1.4.1.21678.313.2.2.12	t2mcpL1PreL1Fec	R	L1 FEC Type
1.3.6.1.4.1.21678.313.2.2.13	t2mcpL1PreL1PostSize	R	L1 Post Size
1.3.6.1.4.1.21678.313.2.2.14	t2mcpL1PreL1PostInfoSize	R	L1 Post Info Size
1.3.6.1.4.1.21678.313.2.2.15	t2mcpL1PrePilotPattern	R	Pilot Pattern
1.3.6.1.4.1.21678.313.2.2.16	t2mcpL1PreTxIdAvailability	R	TX Id
1.3.6.1.4.1.21678.313.2.2.17	t2mcpL1PreCellId	R	Cell Id
1.3.6.1.4.1.21678.313.2.2.18	t2mcpL1PreT2NetworkId	R	T2 Network Id
1.3.6.1.4.1.21678.313.2.2.19	t2mcpL1PreT2SystemId	R	T2 System Id
1.3.6.1.4.1.21678.313.2.2.20	t2mcpL1PreNumT2Frames	R	Number of T2 frames
1.3.6.1.4.1.21678.313.2.2.21	t2mcpL1PreNumDataSymb	R	Number of data symbols
1.3.6.1.4.1.21678.313.2.2.22	t2mcpL1PreRegenFlag	R	Regeneration count indicator
1.3.6.1.4.1.21678.313.2.2.23	t2mcpL1PreL1PostExt	R	L1 Post extension enabled
1.3.6.1.4.1.21678.313.2.2.24	t2mcpL1PreRfIndex	R	The current RF index
1.3.6.1.4.1.21678.313.2.2.25	t2mcpL1PreT2Version	R	T2 version
1.3.6.1.4.1.21678.313.2.3	t2mcpL1Post		
1.3.6.1.4.1.21678.313.2.3.1	t2mcpL1PostSubSliceNum	R	Number of sub-slices per frame
1.3.6.1.4.1.21678.313.2.3.2	t2mcpL1PostFefType	R	The type of the associated FEF part
1.3.6.1.4.1.21678.313.2.3.3	t2mcpL1PostFefLength	R	FEF length
1.3.6.1.4.1.21678.313.2.3.4	t2mcpL1PostFefInterval	R	FEF interval
1.3.6.1.4.1.21678.313.2.3.5	t2mcpL1PostAux		
1.3.6.1.4.1.21678.313.2.3.5.1	t2mcpL1PostAuxNum	R	Number of AUXs
1.3.6.1.4.1.21678.313.2.3.5.2	t2mcpL1PostAuxTable	NA	
1.3.6.1.4.1.21678.313.2.3.5.2.1	t2mcpL1PostAuxEntry		
1.3.6.1.4.1.21678.313.2.3.5.2.1.1	t2mcpL1PostAuxIndex	R	
1.3.6.1.4.1.21678.313.2.3.5.2.1.2	t2mcpL1PostAuxStreamType	R	The type of the current auxiliary stream
1.3.6.1.4.1.21678.313.2.3.5.2.1.3	t2mcpL1PostAuxPrivateConf	R	RFU
1.3.6.1.4.1.21678.313.2.3.6	t2mcpL1PostRf		
1.3.6.1.4.1.21678.313.2.3.6.1	t2mcpL1PostNumRf	R	The number of RF frequencies in use
1.3.6.1.4.1.21678.313.2.3.6.2	t2mcpL1PostRfTable	NA	
1.3.6.1.4.1.21678.313.2.3.6.2.1	t2mcpL1PostRfEntry		
1.3.6.1.4.1.21678.313.2.3.6.2.1.1	t2mcpL1PostRfIndex	R	

OID	Name	R/W	Description
1.3.6.1.4.1.21678.313.2.3.6.2.1.2	t2mcpL1PostRfIdx	R	RF index
1.3.6.1.4.1.21678.313.2.3.6.2.1.3	t2mcpL1PostFrequency	R	Frequency
1.3.6.1.4.1.21678.313.2.3.7	t2mcpL1PostPlp		
1.3.6.1.4.1.21678.313.2.3.7.1	t2mcpL1PostPlpNum	R	Number of PLPs
1.3.6.1.4.1.21678.313.2.3.7.2	t2mcpL1PostPlpTable	NA	
1.3.6.1.4.1.21678.313.2.3.7.2.1	t2mcpL1PostPlpEntry		
1.3.6.1.4.1.21678.313.2.3.7.2.1.1	t2mcpL1PostPlpIndex	R	
1.3.6.1.4.1.21678.313.2.3.7.2.1.2	t2mcpL1PostPlpId	R	PLP ID
1.3.6.1.4.1.21678.313.2.3.7.2.1.3	t2mcpL1PostPlpType	R	PLP type
1.3.6.1.4.1.21678.313.2.3.7.2.1.4	t2mcpL1PostPlpPayloadType	R	PLP payload type
1.3.6.1.4.1.21678.313.2.3.7.2.1.5	t2mcpL1PostFfFlag	R	FF flag
1.3.6.1.4.1.21678.313.2.3.7.2.1.6	t2mcpL1PostFirstRfIdx	R	First RF index
1.3.6.1.4.1.21678.313.2.3.7.2.1.7	t2mcpL1PostFirstFrameIdx	R	First frame index
1.3.6.1.4.1.21678.313.2.3.7.2.1.8	t2mcpL1PostGroupId	R	PLP group id
1.3.6.1.4.1.21678.313.2.3.7.2.1.9	t2mcpL1PostPlpCod	R	The code rate used by the associated PLP
1.3.6.1.4.1.21678.313.2.3.7.2.1.10	t2mcpL1PostPlpMod	R	The modulation used by the associated PLP
1.3.6.1.4.1.21678.313.2.3.7.2.1.11	t2mcpL1PostPlpRotation	R	DVBT2 rotated constellation indicator
1.3.6.1.4.1.21678.313.2.3.7.2.1.12	t2mcpL1PostPlpFec	R	The FEC type used by the associated PLP
1.3.6.1.4.1.21678.313.2.3.7.2.1.13	t2mcpL1PostNumBlocksMax	R	Maximum number of PLP blocks
1.3.6.1.4.1.21678.313.2.3.7.2.1.14	t2mcpL1PostFrameInterval	R	Frame interval
1.3.6.1.4.1.21678.313.2.3.7.2.1.15	t2mcpL1PostTimeIntLength	R	Time interleaving length
1.3.6.1.4.1.21678.313.2.3.7.2.1.16	t2mcpL1PostTimeIntType	R	Time interleaving type
1.3.6.1.4.1.21678.313.2.3.7.2.1.17	t2mcpL1PostInbandA	R	In-band A flag
1.3.6.1.4.1.21678.313.2.3.7.2.1.18	t2mcpL1PostInbandB	R	In-band B flag
1.3.6.1.4.1.21678.313.2.3.7.2.1.19	t2mcpL1PostPlpMode	R	PLP mode
1.3.6.1.4.1.21678.313.2.3.7.2.1.20	t2mcpL1PostStaticFlag	R	Static flag
1.3.6.1.4.1.21678.313.2.3.7.2.1.21	t2mcpL1PostStaticPaddFlag	R	Static padding flag
1.3.6.1.4.1.21678.313.3	t2mLocal		
1.3.6.1.4.1.21678.313.3.1	t2mlL1Pre		
1.3.6.1.4.1.21678.313.3.1.1	t2mlL1PreType	RW	Input stream type
1.3.6.1.4.1.21678.313.3.1.2	t2mlL1PreBwt	RW	BWT extension indicator
1.3.6.1.4.1.21678.313.3.1.3	t2mlL1PreS1	RW	S1 field
1.3.6.1.4.1.21678.313.3.1.4	t2mlL1PreS2	R	S2 field
1.3.6.1.4.1.21678.313.3.1.5	t2mlL1PreFftSize	RW	FFT size
1.3.6.1.4.1.21678.313.3.1.6	t2mlL1PreMixed	RW	Mixed indicator
1.3.6.1.4.1.21678.313.3.1.7	t2mlL1PreL1Repeat	RW	L1 repeat enable flag

OID	Name	R/W	Description
1.3.6.1.4.1.21678.313.3.1.8	t2mlL1PreGuardInterval	RW	Guard Interval
1.3.6.1.4.1.21678.313.3.1.9	t2mlL1PrePapr	RW	PAPR
1.3.6.1.4.1.21678.313.3.1.10	t2mlL1PreL1Mod	RW	L1 modulation scheme
1.3.6.1.4.1.21678.313.3.1.11	t2mlL1PreL1CodeRate	RW	L1 code rate
1.3.6.1.4.1.21678.313.3.1.12	t2mlL1PreL1Fec	RW	L1 FEC Type
1.3.6.1.4.1.21678.313.3.1.13	t2mlL1PreL1PostSize	R	L1 Post Size
1.3.6.1.4.1.21678.313.3.1.14	t2mlL1PreL1PostInfoSize	R	L1 Post Info Size
1.3.6.1.4.1.21678.313.3.1.15	t2mlL1PrePilotPattern	RW	Pilot Pattern
1.3.6.1.4.1.21678.313.3.1.16	t2mlL1PreTxIdAvailability	RW	TX Id
1.3.6.1.4.1.21678.313.3.1.17	t2mlL1PreCellId	RW	Cell Id
1.3.6.1.4.1.21678.313.3.1.18	t2mlL1PreT2NetworkId	RW	T2 Network Id
1.3.6.1.4.1.21678.313.3.1.19	t2mlL1PreT2SystemId	RW	T2 System Id
1.3.6.1.4.1.21678.313.3.1.20	t2mlL1PreNumT2Frames	RW	Number of T2 frames
1.3.6.1.4.1.21678.313.3.1.21	t2mlL1PreNumDataSymb	RW	Number of data symbols
1.3.6.1.4.1.21678.313.3.1.22	t2mlL1PreRegenFlag	RW	Regeneration count indicator
1.3.6.1.4.1.21678.313.3.1.23	t2mlL1PreL1PostExt	RW	L1 Post extension enabled
1.3.6.1.4.1.21678.313.3.1.24	t2mlL1PreRfIndex	RW	The current RF index
1.3.6.1.4.1.21678.313.3.1.25	t2mlL1PreT2Version	RW	T2 version
1.3.6.1.4.1.21678.313.3.2	t2mlL1Post		
1.3.6.1.4.1.21678.313.3.2.1	t2mlL1PostSubSliceNum	RW	Number of sub-slices per frame
1.3.6.1.4.1.21678.313.3.2.2	t2mlL1PostFefType	RW	The type of the associated FEF part
1.3.6.1.4.1.21678.313.3.2.3	t2mlL1PostFefLength	RW	FEF length
1.3.6.1.4.1.21678.313.3.2.4	t2mlL1PostFefInterval	RW	FEF interval
1.3.6.1.4.1.21678.313.3.2.5	t2mlL1PostAux		
1.3.6.1.4.1.21678.313.3.2.5.1	t2LL1PostAuxNum	RW	Number of AUXs
1.3.6.1.4.1.21678.313.3.2.5.2	t2LL1PostAuxTable	NA	
1.3.6.1.4.1.21678.313.3.2.5.2.1	t2LL1PostAuxEntry		
1.3.6.1.4.1.21678.313.3.2.5.2.1.1	t2LL1PostAuxIndex	R	
1.3.6.1.4.1.21678.313.3.2.5.2.1.2	t2LL1PostAuxStreamType	RW	The type of the current auxiliary stream
1.3.6.1.4.1.21678.313.3.2.5.2.1.3	t2LL1PostAuxPrivateConf	RW	RFU
1.3.6.1.4.1.21678.313.3.2.6	t2mlL1PostRf		
1.3.6.1.4.1.21678.313.3.2.6.1	t2LL1PostNumRf	RW	The number of RF frequencies in use
1.3.6.1.4.1.21678.313.3.2.6.2	t2LL1PostRfTable	NA	
1.3.6.1.4.1.21678.313.3.2.6.2.1	t2LL1PostRfEntry		
1.3.6.1.4.1.21678.313.3.2.6.2.1.1	t2LL1PostRfIndex	R	
1.3.6.1.4.1.21678.313.3.2.6.2.1.2	t2LL1PostRfIdx	RW	RF index

OID	Name	R/W	Description
1.3.6.1.4.1.21678.313.3.2.6.2.1.3	t2LL1PostFrequency	RW	Frequency
1.3.6.1.4.1.21678.313.3.2.7	t2mlL1PostPlp		
1.3.6.1.4.1.21678.313.3.2.7.1	t2mlL1PostPlpNum	RW	Number of PLPs
1.3.6.1.4.1.21678.313.3.2.7.2	t2mlL1PostPlpTable	NA	
1.3.6.1.4.1.21678.313.3.2.7.2.1	t2mlL1PostPlpEntry		
1.3.6.1.4.1.21678.313.3.2.7.2.1.1	t2mlL1PostPlpIndex	R	
1.3.6.1.4.1.21678.313.3.2.7.2.1.2	t2mlL1StreamFormat	RW	Input stream format
1.3.6.1.4.1.21678.313.3.2.7.2.1.3	t2mlL1SisMis	RW	Single or multiple input streams
1.3.6.1.4.1.21678.313.3.2.7.2.1.4	t2mlL1CcmAcm	RW	Input stream format
1.3.6.1.4.1.21678.313.3.2.7.2.1.5	t2mlL1Issyi	RW	Input stream sinchronization indicator
1.3.6.1.4.1.21678.313.3.2.7.2.1.6	t2mlL1Npd	RW	Null packet deletion
1.3.6.1.4.1.21678.313.3.2.7.2.1.7	t2mlL1PostPlpId	RW	PLP ID
1.3.6.1.4.1.21678.313.3.2.7.2.1.8	t2mlL1PostPlpType	RW	PLP type
1.3.6.1.4.1.21678.313.3.2.7.2.1.9	t2mlL1PostPlpPayloadType	RW	PLP payload type
1.3.6.1.4.1.21678.313.3.2.7.2.1.10	t2mlL1PostFfFlag	RW	FF flag
1.3.6.1.4.1.21678.313.3.2.7.2.1.11	t2mlL1PostFirstRfIdx	RW	First RF index
1.3.6.1.4.1.21678.313.3.2.7.2.1.12	t2mlL1PostFirstFrameIdx	RW	First frame index
1.3.6.1.4.1.21678.313.3.2.7.2.1.13	t2mlL1PostGroupId	RW	PLP group id
1.3.6.1.4.1.21678.313.3.2.7.2.1.14	t2mlL1PostPlpCod	RW	The code rate used by the associated PLP
1.3.6.1.4.1.21678.313.3.2.7.2.1.15	t2mlL1PostPlpMod	RW	The modulation used by the associated PLP
1.3.6.1.4.1.21678.313.3.2.7.2.1.16	t2mlL1PostPlpRotation	RW	DVBT2 rotated constellation indicator
1.3.6.1.4.1.21678.313.3.2.7.2.1.17	t2mlL1PostPlpFec	RW	The FEC type used by the associated PLP
1.3.6.1.4.1.21678.313.3.2.7.2.1.18	t2mlL1PostNumBlocksMax	RW	Maximum number of PLP blocks
1.3.6.1.4.1.21678.313.3.2.7.2.1.19	t2mlL1PostFrameInterval	RW	Frame interval
1.3.6.1.4.1.21678.313.3.2.7.2.1.20	t2mlL1PostTimeIntLength	RW	Time interleaving length
1.3.6.1.4.1.21678.313.3.2.7.2.1.21	t2mlL1PostTimeIntType	RW	Time interleaving type
1.3.6.1.4.1.21678.313.3.2.7.2.1.22	t2mlL1PostInbandA	RW	In-band A flag
1.3.6.1.4.1.21678.313.3.2.7.2.1.23	t2mlL1PostInbandB	RW	In-band B flag
1.3.6.1.4.1.21678.313.3.2.7.2.1.24	t2mlL1PostPlpMode	RW	PLP mode
1.3.6.1.4.1.21678.313.3.2.7.2.1.25	t2mlL1PostStaticFlag	RW	Static flag
1.3.6.1.4.1.21678.313.3.2.7.2.1.26	t2mlL1PostStaticPaddFlag	RW	Static padding flag
1.3.6.1.4.1.21678.313.3.3	t2mlFunctions		
1.3.6.1.4.1.21678.313.3.3.1	t2mlfTxIdentifier	RW	Transmitter identifier
1.3.6.1.4.1.21678.313.3.3.2	t2mlfTxMisoGroup		
1.3.6.1.4.1.21678.313.3.3.2.1	misoGroup	RW	MISO group
1.3.6.1.4.1.21678.315	ssbtMeasure		

OID	Name	R/W	Description
1.3.6.1.4.1.21678.315.1	t2Measure		
1.3.6.1.4.1.21678.315.1.1	t2mStatistics		
1.3.6.1.4.1.21678.315.1.1.1	meas1RxLevel	R	Output RX level 127: over input -128: low power -63...62: power expressed in dB
1.3.6.1.4.1.21678.315.1.1.2	meas2RxLevel	R	Output RX level 127: over input -128: low power -63...62: power expressed in dB
1.3.6.1.4.1.21678.315.1.1.3	measCarrierOffset	R	Output carrier offset
1.3.6.1.4.1.21678.315.1.1.4	measIfAgc	R	Output IF AGC level
1.3.6.1.4.1.21678.315.1.1.5	measRfAgc	R	Output RF AGC level
1.3.6.1.4.1.21678.315.1.1.6	measTsLock	R	Demodulated TS Lock
1.3.6.1.4.1.21678.315.1.1.7	measSyncStat	R	Sync statistics
1.3.6.1.4.1.21678.315.1.1.8	measMer	R	Output MER [dBx1e3]
1.3.6.1.4.1.21678.315.1.1.9	measSnr	R	Output SNR [dBx1e3]
1.3.6.1.4.1.21678.315.1.1.10	measPreLdpcBer	R	Output Pre LDPC BER [1e7]
1.3.6.1.4.1.21678.315.1.1.11	measPostBchFer	R	Output Post BCH FER [1e6]
1.3.6.1.4.1.21678.315.1.1.12	measPreBchBer	R	Output Pre BCH BER [1e9]
1.3.6.1.4.1.21678.315.1.1.13	measDemodPpm	R	Demodulated PPM [ppmx1e2]
1.3.6.1.4.1.21678.315.1.1.14	measSignalQuality	R	Signal quality [%]
1.3.6.1.4.1.21678.315.1.1.15	measLdpcIter	R	LDPC iterations per minute
1.3.6.1.4.1.21678.315.1.2	t2mL1Pre		
1.3.6.1.4.1.21678.315.1.2.1	t2mL1PreType	R	Input stream type
1.3.6.1.4.1.21678.315.1.2.2	t2mL1PreBwt	R	BWT extension indicator
1.3.6.1.4.1.21678.315.1.2.3	t2mL1PreS1	R	S1 field
1.3.6.1.4.1.21678.315.1.2.4	t2mL1PreS2	R	S2 field
1.3.6.1.4.1.21678.315.1.2.5	t2mL1PreFftSize	R	FFT size
1.3.6.1.4.1.21678.315.1.2.6	t2mL1PreMixed	R	Mixed indicator
1.3.6.1.4.1.21678.315.1.2.7	t2mL1PreL1Repeat	R	L1 repeat enable flag
1.3.6.1.4.1.21678.315.1.2.8	t2mL1PreGuardInterval	R	Guard Interval
1.3.6.1.4.1.21678.315.1.2.9	t2mL1PrePapr	R	PAPR
1.3.6.1.4.1.21678.315.1.2.10	t2mL1PreL1Mod	R	L1 modulation scheme
1.3.6.1.4.1.21678.315.1.2.11	t2mL1PreL1CodeRate	R	L1 code rate
1.3.6.1.4.1.21678.315.1.2.12	t2mL1PreL1Fec	R	L1 FEC Type
1.3.6.1.4.1.21678.315.1.2.13	t2mL1PreL1PostSize	R	L1 Post Size
1.3.6.1.4.1.21678.315.1.2.14	t2mL1PreL1PostInfoSize	R	L1 Post Info Size
1.3.6.1.4.1.21678.315.1.2.15	t2mL1PrePilotPattern	R	Pilot Pattern
1.3.6.1.4.1.21678.315.1.2.16	t2mL1PreTxIdAvailability	R	TX Id

OID	Name	R/W	Description
1.3.6.1.4.1.21678.315.1.2.17	t2mL1PreCellId	R	Cell Id
1.3.6.1.4.1.21678.315.1.2.18	t2mL1PreT2NetworkId	R	T2 Network Id
1.3.6.1.4.1.21678.315.1.2.19	t2mL1PreT2SystemId	R	T2 System Id
1.3.6.1.4.1.21678.315.1.2.20	t2mL1PreNumT2Frames	R	Number of T2 frames
1.3.6.1.4.1.21678.315.1.2.21	t2mL1PreNumDataSymb	R	Number of data symbols
1.3.6.1.4.1.21678.315.1.2.22	t2mL1PreRegenFlag	R	Regeneration count indicator
1.3.6.1.4.1.21678.315.1.2.23	t2mL1PreL1PostExt	R	L1 Post extension enabled
1.3.6.1.4.1.21678.315.1.2.24	t2mL1PreRfIndex	R	The current RF index
1.3.6.1.4.1.21678.315.1.3	t2mL1Post		
1.3.6.1.4.1.21678.315.1.3.1	t2mL1PostSubSliceNum	R	Number of sub-slices per frame
1.3.6.1.4.1.21678.315.1.3.2	t2mL1PostFefType	R	The type of the associated FEF part
1.3.6.1.4.1.21678.315.1.3.3	t2mL1PostFefLength	R	FEF length
1.3.6.1.4.1.21678.315.1.3.4	t2mL1PostFefInterval	R	FEF interval
1.3.6.1.4.1.21678.315.1.3.5	t2mL1PostAux		
1.3.6.1.4.1.21678.315.1.3.5.1	t2mL1PostAuxNum	R	Number of AUXs
1.3.6.1.4.1.21678.315.1.3.5.2	t2mL1PostAuxTable	NA	
1.3.6.1.4.1.21678.315.1.3.5.2.1	t2mL1PostAuxEntry		
1.3.6.1.4.1.21678.315.1.3.5.2.1.1	t2mL1PostAuxIndex	R	
1.3.6.1.4.1.21678.315.1.3.5.2.1.2	t2mL1PostAuxStreamType	R	The type of the current auxiliary stream
1.3.6.1.4.1.21678.315.1.3.5.2.1.3	t2mL1PostAuxPrivateConf	R	RFU
1.3.6.1.4.1.21678.315.1.3.6	t2mL1PostRf		
1.3.6.1.4.1.21678.315.1.3.6.1	t2mL1PostNumRf	R	The number of RF frequencies in use
1.3.6.1.4.1.21678.315.1.3.6.2	t2mL1PostRfTable	NA	
1.3.6.1.4.1.21678.315.1.3.6.2.1	t2mL1PostRfEntry		
1.3.6.1.4.1.21678.315.1.3.6.2.1.1	t2mL1PostRfIndex	R	
1.3.6.1.4.1.21678.315.1.3.6.2.1.2	t2mL1PostRfIdx	R	RF index
1.3.6.1.4.1.21678.315.1.3.6.2.1.3	t2mL1PostFrequency	R	Frequency
1.3.6.1.4.1.21678.315.1.3.7	t2mL1PostPlp		
1.3.6.1.4.1.21678.315.1.3.7.1	t2mL1PostPlpNum	R	Number of PLPs
1.3.6.1.4.1.21678.315.1.3.7.2	t2mL1PostPlpTable	NA	
1.3.6.1.4.1.21678.315.1.3.7.2.1	t2mL1PostPlpEntry		
1.3.6.1.4.1.21678.315.1.3.7.2.1.1	t2mL1PostPlpIndex	R	
1.3.6.1.4.1.21678.315.1.3.7.2.1.2	t2mL1PostPlpId	R	PLP ID
1.3.6.1.4.1.21678.315.1.3.7.2.1.3	t2mL1PostPlpType	R	PLP type
1.3.6.1.4.1.21678.315.1.3.7.2.1.4	t2mL1PostPlpPayloadType	R	PLP payload type
1.3.6.1.4.1.21678.315.1.3.7.2.1.5	t2mL1PostFfFlag	R	FF flag

OID	Name	R/W	Description
1.3.6.1.4.1.21678.315.1.3.7.2.1.6	t2mL1PostFirstRfIdx	R	First RF index
1.3.6.1.4.1.21678.315.1.3.7.2.1.7	t2mL1PostFirstFrameIdx	R	First frame index
1.3.6.1.4.1.21678.315.1.3.7.2.1.8	t2mL1PostGroupId	R	PLP group id
1.3.6.1.4.1.21678.315.1.3.7.2.1.9	t2mL1PostPlpCod	R	The code rate used by the associated PLP
1.3.6.1.4.1.21678.315.1.3.7.2.1.10	t2mL1PostPlpMod	R	The modulation used by the associated PLP
1.3.6.1.4.1.21678.315.1.3.7.2.1.11	t2mL1PostPlpRotation	R	DVBT2 rotated constellation indicator
1.3.6.1.4.1.21678.315.1.3.7.2.1.12	t2mL1PostPlpFec	R	The FEC type used by the associated PLP
1.3.6.1.4.1.21678.315.1.3.7.2.1.13	t2mL1PostNumBlocksMax	R	Maximum number of PLP blocks
1.3.6.1.4.1.21678.315.1.3.7.2.1.14	t2mL1PostFrameInterval	R	Frame interval
1.3.6.1.4.1.21678.315.1.3.7.2.1.15	t2mL1PostTimeIntLength	R	Time interleaving length
1.3.6.1.4.1.21678.315.1.3.7.2.1.16	t2mL1PostTimeIntType	R	Time interleaving type
1.3.6.1.4.1.21678.315.1.3.7.2.1.17	t2mL1PostInbandA	R	In-band A flag
1.3.6.1.4.1.21678.315.1.3.7.2.1.18	t2mL1PostInbandB	R	In-band B flag
1.3.6.1.4.1.21678.315.1.3.7.2.1.19	t2mL1PostPlpMode	R	PLP mode
1.3.6.1.4.1.21678.315.1.3.7.2.1.20	t2mL1PostStaticFlag	R	Static flag
1.3.6.1.4.1.21678.315.1.3.7.2.1.21	t2mL1PostStaticPaddFlag	R	Static padding flag
1.3.6.1.4.1.21678.315.2	tMeasure		
1.3.6.1.4.1.21678.315.2.1	tmStatistics		
1.3.6.1.4.1.21678.315.2.1.1	tmsRxLevel	R	Output RX level 127: over input -128: low power -63...62: power expressed in dB
1.3.6.1.4.1.21678.315.2.1.2	tmsCarrierOffset	R	Output carrier offset
1.3.6.1.4.1.21678.315.2.1.3	tmsIfAgc	R	Output IF AGC level
1.3.6.1.4.1.21678.315.2.1.4	tmsRfAgc	R	Output RF AGC level
1.3.6.1.4.1.21678.315.2.1.5	tmsTsLock	R	Demodulated TS Lock
1.3.6.1.4.1.21678.315.2.1.6	tmsSyncStat	R	Sync statistics
1.3.6.1.4.1.21678.315.2.1.7	tmsMer	R	Output MER [dBx1e3]
1.3.6.1.4.1.21678.315.2.1.8	tmsSnr	R	Output SNR [dBx1e3]
1.3.6.1.4.1.21678.315.2.1.9	tmsPreVitBer	R	Output Pre LDPC BER [1e7]
1.3.6.1.4.1.21678.315.2.1.10	tmsPreRsBer	R	Output Post BCH FER [1e6]
1.3.6.1.4.1.21678.315.2.1.11	tmsRsErrCount	R	Output Pre BCH BER [1e9]
1.3.6.1.4.1.21678.315.2.1.12	tmsDemodPpm	R	Demodulated PPM [ppmx1e2]
1.3.6.1.4.1.21678.315.2.1.13	tmsSignalQuality	R	Signal quality [%]
1.3.6.1.4.1.21678.315.2.2	tmDemodParams		
1.3.6.1.4.1.21678.315.2.2.1	tmdpConstellation	R	Constellation for current modulation scheme
1.3.6.1.4.1.21678.315.2.2.2	tmdpHierMode	R	Hierarchy information for current modulation scheme
1.3.6.1.4.1.21678.315.2.2.3	tmdpHpCodeRate	R	High Priority Code Rate

OID	Name	R/W	Description
1.3.6.1.4.1.21678.315.2.2.4	tmdpLpCodeRate	R	Low Priority Code Rate
1.3.6.1.4.1.21678.315.2.2.5	tmdpFft	R	FFT size
1.3.6.1.4.1.21678.315.2.2.6	tmdpGuardInterval	R	Guard interval
1.3.6.1.4.1.21678.315.2.2.7	tmdpCellId	R	Cell identifier
1.3.6.1.4.1.21678.315.3	isdbtMeasure		
1.3.6.1.4.1.21678.315.3.1	imStatistics		
1.3.6.1.4.1.21678.315.3.1.1	imsMonTxLevel	R	Output TX level monitor 127: over input -128: low power -63...62: power expressed in dB
1.3.6.1.4.1.21678.315.3.1.2	imsIfLevel	R	Measured IF level
1.3.6.1.4.1.21678.315.3.1.3	imsIfAgcDac	R	Measured IF AGC output DAC value
1.3.6.1.4.1.21678.315.3.1.4	imsDemState	R	The state of the Meausure board sequencer
1.3.6.1.4.1.21678.315.3.1.5	imsMode	R	Mode
1.3.6.1.4.1.21678.315.3.1.6	imsGuardInterval	R	Guard interval
1.3.6.1.4.1.21678.315.3.1.7	imsSTRFreqErr	R	Frequency error detected by symbol timing recovery [Hz]
1.3.6.1.4.1.21678.315.3.1.8	imsCRFreqErr	R	Frequency error detected by carrier recovery [kHz]
1.3.6.1.4.1.21678.315.3.1.9	imsCN	R	Estimated Carrier to Noise ratio (dB x 10)
1.3.6.1.4.1.21678.315.3.2	imLayerStatistics		
1.3.6.1.4.1.21678.315.3.2.1	imlsNumber	R	The number of Layers
1.3.6.1.4.1.21678.315.3.2.2	imlsTable	NA	
1.3.6.1.4.1.21678.315.3.2.2.1	imlsEntry		
1.3.6.1.4.1.21678.315.3.2.2.1.1	imlsIndex	R	
1.3.6.1.4.1.21678.315.3.2.2.1.2	imlsDescr	R	Layer description
1.3.6.1.4.1.21678.315.3.2.2.1.3	imlsMod	R	Modulation scheme
1.3.6.1.4.1.21678.315.3.2.2.1.4	imlsCodeRate	R	Code rate
1.3.6.1.4.1.21678.315.3.2.2.1.5	imlsTILength	R	Time Interleaving length
1.3.6.1.4.1.21678.315.3.2.2.1.6	imlsSegNum	R	Number of segments
1.3.6.1.4.1.21678.315.3.2.2.1.7	imlsMer	R	MER [dB] (* 10)
1.3.6.1.4.1.21678.315.3.2.2.1.8	imlsPreVitBer	R	Pre-Viterbi BER (* 10^9)
1.3.6.1.4.1.21678.315.3.2.2.1.9	imlsPostVitBer	R	Post-Viterbi BER (* 10^9)
1.3.6.1.4.1.21678.315.3.2.2.1.10	imlsPktErrRate	R	Packet Error Rate (* 10^9)
1.3.6.1.4.1.21678.315.4	atscMeasure		
1.3.6.1.4.1.21678.315.4.1	amStatistics		
1.3.6.1.4.1.21678.315.4.1.1	amsFrequencyOffset	R	Output carrier offset
1.3.6.1.4.1.21678.315.4.1.2	amsDemodStatus	R	VSB demodulation status
1.3.6.1.4.1.21678.315.4.1.3	amsEqStatus	R	Equalizer status
1.3.6.1.4.1.21678.315.4.1.4	amsDemLock	R	Demodulator lock status

OID	Name	R/W	Description
1.3.6.1.4.1.21678.315.4.1.5	amsAgcLock	R	Digital AGC lock status
1.3.6.1.4.1.21678.315.4.1.6	amsFrameLock	R	Frame lock status
1.3.6.1.4.1.21678.315.4.1.7	amsCarrierFreqLoopLock	R	Carrier frequency loop lock status
1.3.6.1.4.1.21678.315.4.1.8	amsTimingFreqLoopLock	R	Timing frequency loop lock status
1.3.6.1.4.1.21678.315.4.1.9	amsSnr	R	Signal to Noise Ratio [dB]
1.3.6.1.4.1.21678.315.4.1.10	amsSer	R	Segment Error Rate
1.3.6.1.4.1.21678.315.4.1.11	amsBer	R	Bit Error Rate
1.3.6.1.4.1.21678.317	ssbtCommon		
1.3.6.1.4.1.21678.317.1	info		
1.3.6.1.4.1.21678.317.1.1	infoName	RW	The station identifier
1.3.6.1.4.1.21678.317.1.2	infoManufacturer	R	Manufacturer name
1.3.6.1.4.1.21678.317.1.3	infoVersion		
1.3.6.1.4.1.21678.317.1.3.1	versionNumber	R	Number of software versions
1.3.6.1.4.1.21678.317.1.3.2	versionTable	NA	
1.3.6.1.4.1.21678.317.1.3.2.1	versionEntry		
1.3.6.1.4.1.21678.317.1.3.2.1.1	versionIndex	R	Software version index
1.3.6.1.4.1.21678.317.1.3.2.1.2	versionDescr	R	Software description
1.3.6.1.4.1.21678.317.1.3.2.1.3	versionVersion	R	Software version
1.3.6.1.4.1.21678.317.1.4	infoHw		
1.3.6.1.4.1.21678.317.1.4.1	hwNumber	R	Number of devices
1.3.6.1.4.1.21678.317.1.4.2	hwTable	NA	
1.3.6.1.4.1.21678.317.1.4.2.1	hwEntry		
1.3.6.1.4.1.21678.317.1.4.2.1.1	hwIndex	R	Device index
1.3.6.1.4.1.21678.317.1.4.2.1.2	hwDescr	R	Device description
1.3.6.1.4.1.21678.317.1.4.2.1.3	hwSerialNumber	R	Serial number
1.3.6.1.4.1.21678.317.1.4.2.1.4	hwUniqueId	R	Unique device ID
1.3.6.1.4.1.21678.317.2	settings		
1.3.6.1.4.1.21678.317.2.1	sDate	RW	Device date and time as specified in SNMPv2-TC
1.3.6.1.4.1.21678.317.2.2	sSystem		
1.3.6.1.4.1.21678.317.2.2.1	ssLoadConfig	W	Load configuration
1.3.6.1.4.1.21678.317.2.2.2	ssSaveConfig	W	Save configuration
1.3.6.1.4.1.21678.317.2.2.3	ssReset	W	Reset board
1.3.6.1.4.1.21678.317.3	events		
1.3.6.1.4.1.21678.317.3.1	evNumber	R	The total number of alarms
1.3.6.1.4.1.21678.317.3.2	evOverwritten	R	The events list has been overwritten. Obsolete events began to be overwritten."

OID	Name	R/W	Description
1.3.6.1.4.1.21678.317.3.3	evPageSel	RW	Events page selector
1.3.6.1.4.1.21678.317.3.4	evTable	NA	Events table
1.3.6.1.4.1.21678.317.3.4.1	evEntry		
1.3.6.1.4.1.21678.317.3.4.1.1	evIndex	R	Event index
1.3.6.1.4.1.21678.317.3.4.1.2	evNum	R	Event number.
1.3.6.1.4.1.21678.317.3.4.1.3	evDate	R	Event date and time as specified in SNMPv2-TC
1.3.6.1.4.1.21678.317.3.4.1.4	evCode	R	Event code
1.3.6.1.4.1.21678.317.3.4.1.5	evDescr	R	Event description
1.3.6.1.4.1.21678.317.4	alarms		
1.3.6.1.4.1.21678.317.4.1	alNumber	R	The total number of alarms
1.3.6.1.4.1.21678.317.4.2	alSeverityStatus	R	Maximum severity
1.3.6.1.4.1.21678.317.4.3	alThresholds		
1.3.6.1.4.1.21678.317.4.3.1	altNumber	R	Number of alarm thresholds
1.3.6.1.4.1.21678.317.4.3.2	altTable	NA	Alarm thresholds table
1.3.6.1.4.1.21678.317.4.3.2.1	altEntry		
1.3.6.1.4.1.21678.317.4.3.2.1.1	altIndex	R	Threshold index
1.3.6.1.4.1.21678.317.4.3.2.1.2	altDescr	R	Threshold description
1.3.6.1.4.1.21678.317.4.3.2.1.3	altAlarmCode	R	Code of the alarm this threshold is referred to
1.3.6.1.4.1.21678.317.4.3.2.1.4	altMeasUnit	R	Temperature unit of measurement
1.3.6.1.4.1.21678.317.4.3.2.1.5	altSetting	RW	Threshold setting
1.3.6.1.4.1.21678.317.4.4	alTable	NA	Alarms table. This table contains all alarms that can be managed by screen service devices"
1.3.6.1.4.1.21678.317.4.4.1	alEntry		
1.3.6.1.4.1.21678.317.4.4.1.1	alIndex	R	Alarm index
1.3.6.1.4.1.21678.317.4.4.1.2	alStatus	R	Alarm status
1.3.6.1.4.1.21678.317.4.4.1.3	alCode	R	Alarm code
1.3.6.1.4.1.21678.317.4.4.1.4	alDescr	R	Alarm description
1.3.6.1.4.1.21678.317.4.4.1.5	alSeverity	R	Severity associated to the alarm
1.3.6.1.4.1.21678.317.4.4.1.6	alTrapManager1	RW	Enables trap messages to be sent to the manager with IP address 1"
1.3.6.1.4.1.21678.317.4.4.1.7	alTrapManager2	RW	Enables trap messages to be sent to the manager with IP address 2"
1.3.6.1.4.1.21678.317.4.4.1.8	alTrapManager3	RW	Enables trap messages to be sent to the manager with IP address 3"
1.3.6.1.4.1.21678.317.4.4.1.9	alR0Enable	RW	Enables relay 0 to be switched on/off depending on the status of this alarm"

OID	Name	R/W	Description
1.3.6.1.4.1.21678.317.4.4.1.10	alR1Enable	RW	Enables relay 1 to be switched on/off depending on the status of this alarm"
1.3.6.1.4.1.21678.317.4.4.1.11	alR2Enable	RW	Enables relay 2 to be switched on/off depending on the status of this alarm"
1.3.6.1.4.1.21678.317.4.4.1.12	alR3Enable	RW	Enables relay 3 to be switched on/off depending on the status of this alarm"
1.3.6.1.4.1.21678.317.4.4.1.13	alFrontPanelEnable	RW	Enables this alarm to be notified on LCD display
1.3.6.1.4.1.21678.317.4.4.1.14	alJavaEnable	RW	Enables this alarm to be notified on the Java alarm page icon"
1.3.6.1.4.1.21678.317.4.4.1.15	alEventEnable	RW	Enables this alarm to be notified through an event
1.3.6.1.4.1.21678.317.4.4.1.16	alRfOffEnable	RW	Enables this alarm to switch off the output RF signal
1.3.6.1.4.1.21678.317.4.4.1.17	alAutoSwitchEnable	RW	Enables this alarm to trigger the automatic input switching
1.3.6.1.4.1.21678.317.5	snmp		
1.3.6.1.4.1.21678.317.5.1	managerTrapNumber	R	Number of manager Trap IP addresses
1.3.6.1.4.1.21678.317.5.2	managerTrapTable	NA	Manager Trap IP addresses table
1.3.6.1.4.1.21678.317.5.2.1	managerTrapEntry		
1.3.6.1.4.1.21678.317.5.2.1.1	managerTrapIndex	R	SNMP Manager index
1.3.6.1.4.1.21678.317.5.2.1.2	managerTrapIp	RW	SNMP Manager IP listening address
1.3.6.1.4.1.21678.317.5.3	traps		"Traps section"
1.3.6.1.4.1.21678.317.5.3.1	alarmTraps1		Traps definition for Trap Manager 1. An alarmTrap1 trap signifies that the sending protocol entity recognizes that some state transitions occurred in the alarms table."
1.3.6.1.4.1.21678.317.5.3.2	alarmTraps2		Traps definition for Trap Manager 2. An alarmTrap2 trap signifies that the sending protocol entity recognizes that some state transitions occurred in the alarms table."
1.3.6.1.4.1.21678.317.5.3.3	alarmTraps3		Traps definition for Trap Manager 3. An alarmTrap3 trap signifies that the sending protocol entity recognizes that some state transitions occurred in the alarms table."
1.3.6.1.4.1.21678.317.6	mode		
1.3.6.1.4.1.21678.317.6.1	transmissionMode	RW	The transmission mode of the device
1.3.6.1.4.1.21678.317.6.2	modesManagement		
1.3.6.1.4.1.21678.317.6.2.1	mmNumber	R	Number of available modes
1.3.6.1.4.1.21678.317.6.2.2	mmTable	NA	Modes management table
1.3.6.1.4.1.21678.317.6.2.2.1	mmEntry		

OID	Name	R/W	Description
1.3.6.1.4.1.21678.317.6.2.2.1.1	mmIndex	R	Mode index
1.3.6.1.4.1.21678.317.6.2.2.1.2	mmType	R	Mode type
1.3.6.1.4.1.21678.317.6.2.2.1.3	mmStatus	R	Mode status
1.3.6.1.4.1.21678.321	ssbtNetwork		
1.3.6.1.4.1.21678.321.1	netInterfaces		
1.3.6.1.4.1.21678.321.1.1	nifNumber	R	The number of network interfaces
1.3.6.1.4.1.21678.321.1.2	nifTable	NA	
1.3.6.1.4.1.21678.321.1.2.1	nifEntry		
1.3.6.1.4.1.21678.321.1.2.1.1	nifIndex	R	
1.3.6.1.4.1.21678.321.1.2.1.2	nifDescr	R	Interface description
1.3.6.1.4.1.21678.321.1.2.1.3	nifType	R	The type of interface
1.3.6.1.4.1.21678.321.1.2.1.4	nifIpAddr	R	The IP address of this entry
1.3.6.1.4.1.21678.321.1.2.1.5	nifPhysAddr	R	The physical address of this entry
1.3.6.1.4.1.21678.321.1.2.1.6	nifNetMask	R	The subnet mask associated with the IP address of this entry
1.3.6.1.4.1.21678.321.1.2.1.7	nifGateway	R	The gateway IP address of this entry
1.3.6.1.4.1.21678.321.1.2.1.8	nifSpeed	R	The current bandwidth of this interface
1.3.6.1.4.1.21678.321.1.2.1.9	nifInPkts	R	The number of packets delivered to higher-level protocol
1.3.6.1.4.1.21678.321.1.2.1.10	nifInErr	R	The number of inbound packets that contained errors
1.3.6.1.4.1.21678.325	ssbtTModulation		
1.3.6.1.4.1.21678.325.1	tmSettings		
1.3.6.1.4.1.21678.325.1.1	tmsNetworkMode	RW	Network mode
1.3.6.1.4.1.21678.325.1.2	tmsMip		
1.3.6.1.4.1.21678.325.1.2.1	tmsmHPStatus	R	High Priority MIP status
1.3.6.1.4.1.21678.325.1.2.2	tmsmLPStatus	R	Low Priority MIP status
1.3.6.1.4.1.21678.325.2	tmMipParameters		
1.3.6.1.4.1.21678.325.2.1	tmmpModulationParameters		
1.3.6.1.4.1.21678.325.2.1.1	tmmpmpFft	R	MIP FFT size
1.3.6.1.4.1.21678.325.2.1.2	tmmpmpConstellation	R	MIP Constellation
1.3.6.1.4.1.21678.325.2.1.3	tmmpmpBandwidth	R	MIP bandwidth
1.3.6.1.4.1.21678.325.2.1.4	tmmpmpFecHp	R	MIP High Priority Code Rate
1.3.6.1.4.1.21678.325.2.1.5	tmmpmpFecLp	R	MIP Low Priority Code Rate
1.3.6.1.4.1.21678.325.2.1.6	tmmpmpAlpha	R	MIP hierarchy information for current modulation scheme
1.3.6.1.4.1.21678.325.2.1.7	tmmpmpGuardInterval	R	MIP guard interval
1.3.6.1.4.1.21678.325.2.2	tmmpDvbhParameters		
1.3.6.1.4.1.21678.325.2.2.1	tmmpdpTimeSlicingHp	R	MIP High Priority Time Slicing

OID	Name	R/W	Description
1.3.6.1.4.1.21678.325.2.2.2	tmmpdpTimeSlicingLp	R	MIP Low Priority Time Slicing
1.3.6.1.4.1.21678.325.2.2.3	tmmpdpMpeFecHp	R	High Priority MPE-FEC
1.3.6.1.4.1.21678.325.2.2.4	tmmpdpMpeFecLp	R	Low Priority MPE-FEC
1.3.6.1.4.1.21678.325.2.2.5	tmmpdpInterleaver	R	MIP native/in-depth symbol interleaver selector
1.3.6.1.4.1.21678.325.2.3	tmmpMipFunctions		
1.3.6.1.4.1.21678.325.2.3.1	tmmpmfTxId		
1.3.6.1.4.1.21678.325.2.3.1.1	tmmpmftiNumber	RW	Transmitter identifier
1.3.6.1.4.1.21678.325.2.3.1.2	tmmpmftiEnableTxId0	RW	Enables the TX ID 0
1.3.6.1.4.1.21678.325.2.3.2	tmmpmfCellId		
1.3.6.1.4.1.21678.325.2.3.2.1	tmmpmfciEnable	RW	Enables the Cell ID function
1.3.6.1.4.1.21678.325.2.3.2.2	tmmpmfciFunctionEnable	R	Enable function status
1.3.6.1.4.1.21678.325.2.3.2.3	tmmpmfciFunctionTag	R	Cell id function tag detection status
1.3.6.1.4.1.21678.325.2.3.2.4	tmmpmfciStatus	R	Cell id function
1.3.6.1.4.1.21678.325.2.3.2.5	tmmpmfciWaitForEnable	R	Cell id function wait for enable status
1.3.6.1.4.1.21678.325.2.3.3	tmmpmfMaxDelay	R	MIP maximum delay [100ns]
1.3.6.1.4.1.21678.325.2.3.4	tmmpmfFrequencyOffset		
1.3.6.1.4.1.21678.325.2.3.4.1	tmmpmffoEnable	RW	Enables the MIP frequency offset function
1.3.6.1.4.1.21678.325.2.3.4.2	tmmpmffoStatus	R	MIP frequency offset function [Hz]
1.3.6.1.4.1.21678.325.2.3.5	tmmpmfTimeOffset		
1.3.6.1.4.1.21678.325.2.3.5.1	tmmpmftoEnable	RW	Enables the MIP time offset function
1.3.6.1.4.1.21678.325.2.3.5.2	tmmpmftoStatus	R	MIP time offset function [100ns]
1.3.6.1.4.1.21678.325.3	tmLocalParameters		
1.3.6.1.4.1.21678.325.3.1	tmlpModulationParameters		
1.3.6.1.4.1.21678.325.3.1.1	tmlpmpFft	RW	FFT size
1.3.6.1.4.1.21678.325.3.1.2	tmlpmpConstellation	RW	Constellation
1.3.6.1.4.1.21678.325.3.1.3	tmlpmpFecHp	RW	High Priority Code Rate
1.3.6.1.4.1.21678.325.3.1.4	tmlpmpFecLP	RW	Low Priority Code Rate
1.3.6.1.4.1.21678.325.3.1.5	tmlpmpAlpha	RW	Hierarchy information for current modulation scheme
1.3.6.1.4.1.21678.325.3.1.6	tmlpmpGuardInterval	RW	Guard interval
1.3.6.1.4.1.21678.325.3.2	tmlpDvbhParameters		
1.3.6.1.4.1.21678.325.3.2.1	tmlpdpTimeSlicingHp	RW	Enables the High Priority Time Slicing
1.3.6.1.4.1.21678.325.3.2.2	tmlpdpTimeSlicingLp	RW	Enables the Low Priority Time Slicing
1.3.6.1.4.1.21678.325.3.2.3	tmlpdpMpeFecHp	RW	Enables the High Priority MPE-FEC
1.3.6.1.4.1.21678.325.3.2.4	tmlpdpMpeFecLp	RW	Enables the Low Priority MPE-FEC
1.3.6.1.4.1.21678.325.3.2.5	tmlpdpInterleaver	RW	Symbol interleaver selector
1.3.6.1.4.1.21678.325.3.3	tmlpMipFunctions		

OID	Name	R/W	Description
1.3.6.1.4.1.21678.325.3.3.1	tmlpmfCellIdEnable	RW	Enables the use of the locally set Cell ID
1.3.6.1.4.1.21678.325.3.3.2	tmlpmfCellId	RW	Local cell id setting
1.3.6.1.4.1.21678.325.3.3.3	tmlpmflDelay	RW	User delay setting 100ns]
1.3.6.1.4.1.21678.325.3.3.4	tmlpmfFrequencyOffset	RW	Frequency offset setting [Hz]
1.3.6.1.4.1.21678.325.3.3.5	tmlpmfTimeOffset	RW	Time offset setting [100ns]
1.3.6.1.4.1.21678.325.4	tmCurrentParameters		
1.3.6.1.4.1.21678.325.4.1	tmcpModulationParameters		
1.3.6.1.4.1.21678.325.4.1.1	tmcpmpFft	R	Used transmission mode
1.3.6.1.4.1.21678.325.4.1.2	tmcpmpConstellation	R	Used constellation
1.3.6.1.4.1.21678.325.4.1.3	tmcpmpBandwidth	R	Used bandwidth
1.3.6.1.4.1.21678.325.4.1.4	tmcpmpFecHp	R	Used High Priority Code Rate
1.3.6.1.4.1.21678.325.4.1.5	tmcpmpFecLp	R	Used Low Priority Code Rate
1.3.6.1.4.1.21678.325.4.1.6	tmcpmpAlpha	R	Used hierarchical mode
1.3.6.1.4.1.21678.325.4.1.7	tmcpmpGuardInterval	R	Used guard interval
1.3.6.1.4.1.21678.325.4.2	tmcpDvbhParameters		
1.3.6.1.4.1.21678.325.4.2.1	tmcpdpTimeSlicingHp	R	Used High Priority Time Slicing
1.3.6.1.4.1.21678.325.4.2.2	tmcpdpTimeSlicingLp	R	Used Low Priority Time Slicing
1.3.6.1.4.1.21678.325.4.2.3	tmcpdpMpeFecHp	R	Used High Priority MPE-FEC
1.3.6.1.4.1.21678.325.4.2.4	tmcpdpMpeFecLp	R	Used Low Priority MPE-FEC
1.3.6.1.4.1.21678.325.4.2.5	tmcpdpInterleaver	R	Used symbol interleaver
1.3.6.1.4.1.21678.325.4.3	tmcpsMipFunctions		
1.3.6.1.4.1.21678.325.4.3.1	tmcpmfCellId	R	Used Cell ID
1.3.6.1.4.1.21678.325.4.3.2	tmcpmfSystemDelay	R	System delay indicator [100ns]
1.3.6.1.4.1.21678.325.4.3.3	tmcpmfFrequencyOffset	R	Used frequency offset
1.3.6.1.4.1.21678.325.4.3.4	tmcpmfTimeOffset	R	Used time offset [100ns]
1.3.6.1.4.1.21678.325.4.3.5	tmcpmfCentreFrequency	R	Centre frequency indicator (expressed in Hz)
1.3.6.1.4.1.21678.325.4.3.6	tmcpmfNetworkDelay	R	Network delay [100ns] indicator
1.3.6.1.4.1.21678.325.4.3.7	tmcpmfDeviceDelay	R	Shows the device delay [100ns]

7.3 Events Monitoring

In MIB *ssbtCommon* the *events* node allows the monitoring of events.

evNumber object specifies the total number of events stored in memory.

evOverwritten object notifies if the events list exceeded the memory limit. If this object returns “1”, obsolete events have begun to be overwritten.

evPageSel object selects which page has to be monitored through the events table. Each page is composed by 16 events.

The total number of entries of the *evTable* is fixed to 16. Each entry in the table is defined as follows:

```
EvEntry ::= SEQUENCE {
        evIndex INTEGER,
        evNum INTEGER,
        evDate DateAndTime,
        evCode EvType,
        evDescr DisplayString
        }
```

evIndex is the index of the specific entry.

evNum object specifies the numerical order of the specific entry.

evDate object provides the date and time of the event generation as specified in SNMv2-TC.

evCode object provides the Type of the specific entry (ref. to Events chapter for further information).

evDescr object provides the Description of the specific entry (ref. to Events chapter for further information).

7.4 Configuring alarm masks and alarm thresholds

In *ssbtCommon* MIB the *alarms* node allows the monitoring of alarms status, the setting of alarm masks and thresholds.

7.4.1 Alarms Table

The *alTable* table is used to monitor alarms status and to set alarm masks. *alNumber* object specifies the total number of entries in the alarms table. *alSeverityStatus* specifies the maximum severity of currently raised alarms. Each entry in the table is defined as follows:

```
AlEntry ::= SEQUENCE {
        alIndex INTEGER,
        alStatus OnOff,
        alCode INTEGER,
        alDescr DisplayString,
        alSeverity Severity,
        alTrapManager1 EnDis,
        alTrapManager2 EnDis,
        alTrapManager3 EnDis,
        alR1Enable EnDis,
        alR2Enable EnDis,
        alR3Enable EnDis,
        alR4Enable EnDis,
        alFrontPanelEnable EnDis,
        alJavaEnable EnDis,
        alEventEnable EnDis,
        alRfOffEnable EnDis,
        alAutoSwitchEnable EnDis
        }
```

alIndex is the index of the specific entry.

alStatus object shows the alarm status (on/off).

alCode object univocally identifies the alarm (refer to Alarms Code and Description table).

alDescr object provides a textual description of the specific entry (refer to Alarms Code and Description table for the complete list of alarms descriptions).

alSeverity defines the severity associated to the alarm.

alTrapManager1 object allows to *e*nable trap messages, associated to the entry, to be sent to the manager with IP address 1

alTrapManager2 object allows to *e*nable trap messages, associated to the entry, to be sent to the manager with IP address 2

alTrapManager3 object allows to *e*nable trap messages, associated to the entry, to be sent to the manager with IP address 3

alR0Enable, alR1Enable, alR2Enable, alR3Enable objects enable relay 0, 1, 2, 3 respectively, to be switched on/off depending on the status of this entry.

alFrontPanelEnable object enables the alarm to be notified on LCD display lighting the alarm button and listing the alarms in the Alarms menu.

alJavaEnable enables the alarm to be notified on the Java alarm page icon.

alEventEnable enables the alarm to be notified through an event.

alRfOffEnable enables the entry to switch off the RF output.

alAutoSwitchEnable enables the entry to trigger the automatic input switching.

Alarms are divided in two different classes: common alarms and mode-specific alarms. Common alarms are those which are HW dependant or are dependent on how the operating system has been designed. Common alarms are shared by all the operational modes. Mode-specific alarms are those which depend on the implemented functionalities and standards. Mode-specific alarms can be easily recognized thanks to the addition of the mode prefix enclosed in squared brackets.

The alarms table lists both common and mode-specific alarms. Indexes of alarms may change from one operational mode to another, but alarm codes do not. Alarm codes of common alarms are the same whatever the working mode. Alarm codes of mode-specific alarms uniquely identify the specific alarm and are not shared by operational modes.

Table 31. Alarms Code and Description

alDescr	Alarm Description	Alarm Code
Temp. High	Temperature High Alarm	0
Temp. High -3dB	Temperature Level -3db	1
Temp. High Warning	Temperature High Warning	2
Fans Speed Low	Fans Speed Low	3
Alim Dialog Err	Alim Dialog Err	4
FE Dialog Err	FE Dialog Err	5
Meas Dialog Err	Meas Dialog Err	6
GPS Dialog Err	GPS Dialog Err	7
GPS Not Locked	GPS Not Locked	8
120MHz Not Locked	120MHz Not Locked	9
960MHz Not Locked	960MHz Not Locked	10
Input PLL Not Locked	Input PLL Not Locked	11
Out PLL Not Locked	Output PLL Not Locked	12

alDescr	Alarm Description	Alarm Code
10MHz Not Locked	10MHz Not Locked	13
1PPS Not Locked	1 PPS Not Locked	14
FPGA Boot Err	FPGA Boot Error	15
FWD Power High	Forward Power High	16
FWD Pwr Low Warning	Forward Power Low Warning	17
FWD Pwr Low	Forward Power Low Alarm	18
Reflex Power High	Reflex Power High	19
File System Err	File System Error	20
File Err	Bad File In File System	21
PS1 V Out Of Range	PS Voltage Out Of Range	22
PS1 I Out Of Range	PS Current Out Of Range	23
CPU Fan Err	CPU Fan Error	24
Test Mode	Test Mode	25
FE S2 Not Locked	FE S2 not locked	26
FE S2 S/N Low	FE S2 SNR Low	27
FE S2 BER High	FE S2 BER high	28
[ATSC] No Input	[ATSC] Input not valid	1056
[ATSC] Input Overflow	[ATSC] Input overflow	1057
[ATSC] MH Err	[ATSC] MH Error	1058
[ATSC] MEAS Demodulator Not Locked	[ATSC] Meas Not Locked	1059
[ATSC] MEAS SNR Low	[ATSC] Meas SNR Low	1060
[ATSC] FE Demodulator Not Locked	[ATSC] FE Not Locked	1061
[ATSC] FE SNR Low	[ATSC] FE SNR Low	1062
[ATSC] TVCT Not Present	[ATSC] No TVCT	1063

7.4.2 Thresholds Table

The *alThresholds* subtree is used to set alarms thresholds. *altNumber* object specifies the total number of entries in the alarm thresholds table. Each entry in the table is defined as follows:

```
AltEntry ::= SEQUENCE {
        altIndex INTEGER,
        altDescr DisplayString,
        altAlarmCode INTEGER,
        altMeasUnit MeasureType,
        altSetting INTEGER
        }
```

altIndex is the index of the specific entry.

altDescr object provides a textual description of the specific entry (refer to Alarm Thresholds Description table for the complete list of thresholds descriptions).

altAlarmCode object univocally identifies the alarm this threshold refers to (refer to Alarms Code and Description table).

altMeasUnit object specifies the unit of measurement of the entry.

altSetting object is used to set the threshold.

The thresholds table lists both common and mode-specific alarm thresholds. Indexes of thresholds may change from one operational mode to another, but alarm codes of the alarms they refer to do not. Alarm codes of common alarms are the same whatever the working mode. Alarm codes of mode-specific alarms uniquely identify the specific alarm and are not shared by operational modes.

Table 32. Alarm Thresholds Description

altDescr	Threshold Description	Alarm Code
Temp. High -3dB	Temperature warning threshold expressed in °C.	1
Temp. High Warning	Temperature alarm threshold expressed in °C.	2
FWD Pwr Low Warning	Forward power warning threshold expressed in dB.	17
FWD Pwr Low	Forward power alarm threshold expressed in dB.	18
FE Squelch	[DVB-T2] FE Squelch alarm threshold expressed in dB.	1315
FE Pre LDPC BER	[DVB-T2] FE Pre LDPC BER alarm threshold expressed in dB*1e7.	1316
FE SNR Low	[DVB-T2] FE Signal to Noise alarm threshold expressed in dB*1e3.	1317
FE MER Low	[DVB-T2] FE MER alarm threshold expressed in dB*1e3.	1318
FE S.Quality Low	[DVB-T2] FE Signal Quality alarm threshold.	1319
Meas Pre LDPC BER	[DVB-T2] Measure Pre LDPC BER alarm threshold expressed in dB*1e7.	1321
Meas SNR Low	[DVB-T2] Measure Signal to Noise alarm threshold expressed in dB*1e3.	1322
Meas MER Low	[DVB-T2] Measure MER alarm threshold expressed in dB*1e3.	1323
Meas S.Quality Low	[DVB-T2] Measure Signal Quality alarm threshold.	1324
FE LDPC Mean Err	[DVB-T2] FE LDPC Mean Error alarm threshold	1330
MEAS LDPC Mean Err	[DVB-T2] Measure LDPC Mean Error alarm threshold	1331
FE Squelch	[DVB-T] FE Squelch alarm threshold.	809
FE Pre Viterbi BER	[DVB-T] FE PreViterbi BER High alarm threshold (expressed in dB*1e7).	810
FE SNR Low	[DVB-T] FE SNR Low alarm threshold (expressed in dB*1e3).	811
FE MER Low	[DVB-T] FE MER Low alarm threshold (expressed in dB*1e3).	812
FE S.Quality Low	[DVB-T] FE Signal Quality Low alarm threshold.	813
Meas Pre Viterbi BER	[DVB-T] MEAS PreViterbi BER High alarm threshold (expressed in dB*1e7).	815
Meas SNR Low	[DVB-T] MEAS SNR Low alarm threshold (expressed in dB*1e3).	816
Meas MER Low	[DVB-T] MEAS MER Low alarm threshold (expressed in dB*1e3).	817

altDescr	Threshold Description	Alarm Code
Meas S.Quality Low	[DVB-T] MEAS Signal Quality Low alarm threshold.	818
FE SNR Low	[ATSC] FE SNR Low alarm threshold (expressed in dB*1e3).	1062
Meas SNR Low	[ATSC] MEAS SNR Low alarm threshold (expressed in dB*1e3).	1060

7.5 Traps

While a management station can poll, at fixed time interval, all the agents it knows for some key information, each agent is responsible for notifying the management station of any alarm condition. These events are communicated in SNMP messages known as *traps*.

The following parameters shall be set in order to correctly configure traps:

- SNMP Agent Port: 162.
- SNMP Agent Transport protocol: IP/UDP.

7.5.1 SNMPv1

ARK6 devices transmit alarm-specific traps. For every Trap Manager there is a different SNMPv1 trap definition:

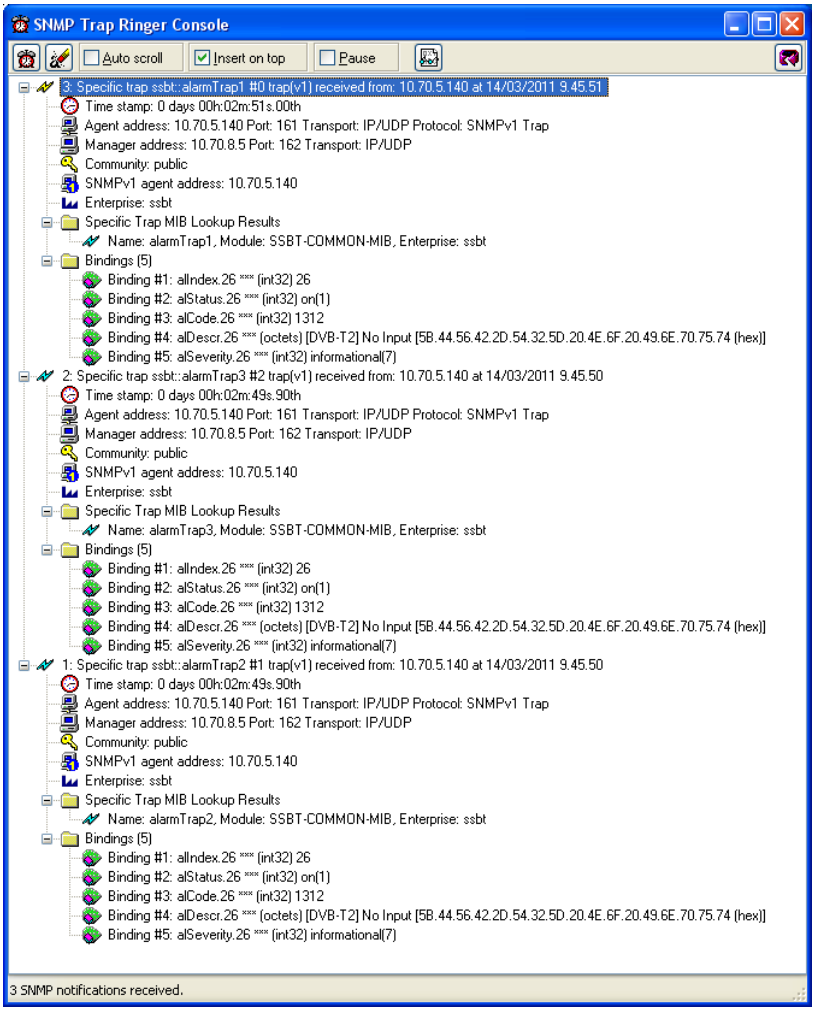
```
alarmTrap1 TRAP-TYPE
        ENTERPRISE  ssbt
        VARIABLES   { alIndex, alStatus, alCode, alDescr, alSeverity}
        DESCRIPTION
        "Traps definition for Trap Manager 1"
        ::= 0

alarmTrap2 TRAP-TYPE
        ENTERPRISE  ssbt
        VARIABLES   { alIndex, alStatus, alCode, alDescr, alSeverity}
        DESCRIPTION
        "Traps definition for Trap Manager 2"
        ::= 1

alarmTrap3 TRAP-TYPE
        ENTERPRISE  ssbt
        VARIABLES   { alIndex, alStatus, alCode, alDescr, alSeverity}
        DESCRIPTION
        "Traps definition for Trap Manager 3"
        ::= 2
```

VARIABLES clause defines the ordered sequence of MIB objects, belonging to the specific entry of the *alTable,* which are contained within every instance of the trap type. Each variable is placed, in order, inside the variable-bindings field of the SNMP Trap Message as shown in the following figure (refer to Alarms Table paragraph for further information about alIndex, alStatus, alCode, alDesc, alSeverity objects).

Figure 58. SNMPv1 Trap Messages



7.5.2 SNMPv2

ARK6 devices transmit alarm-specific traps. For every Trap Manager there is a different SNMv2 trap definition:

```
traps OBJECT IDENTIFIER ::= { snmp 3 }

        alarmTraps1 NOTIFICATION-TYPE
                OBJECTS {alIndex, alStatus, alCode, alDescr, alSeverity}
                STATUS current
                DESCRIPTION
                "Traps definition for Trap Manager 1. An alarmTrap1 trap signifies that the sending
                protocol entity recognizes that some state transitions occurred in the alarms
                table."
                ::= { traps 1 }


        alarmTraps2 NOTIFICATION-TYPE
                OBJECTS {alIndex, alStatus, alCode, alDescr, alSeverity}
                STATUS current
                DESCRIPTION
                "Traps definition for Trap Manager 2. An alarmTrap2 trap signifies that the sending
                protocol entity recognizes that some state transitions occurred in the alarms
                table."
                ::= { traps 2 }

        alarmTraps3 NOTIFICATION-TYPE
                OBJECTS {alIndex, alStatus, alCode, alDescr, alSeverity}
                STATUS current
                DESCRIPTION
                "Traps definition for Trap Manager 3. An alarmTrap3 trap signifies that the sending
                protocol entity recognizes that some state transitions occurred in the alarms
                table."
                ::= { traps 3 }
```

VARIABLES clause defines the ordered sequence of MIB objects, belonging to the specific entry of the *alTable,* which are contained within every instance of the trap type. Each variable is placed, in order, inside the variable-bindings field of the SNMP Trap Message as shown in the following figure (refer to Alarms Table paragraph for further information about alIndex, alStatus, alCode, alDesc, alSeverity objects).

Figure 59. SNMPv2 Trap Messages

7.5.3 Configuring traps

Use Java (refer to Network and Alarms paragraphs for further information) or SNMP user interfaces to configure traps.

The configuration of traps is performed through the setting of three different alarm masks, by means of *alTrapManager1, alTrapManager2, alTrapManager3* objects in the *alTable* (refer to Alarms Table paragraph), and through the setting of the destination IP Address of the receiving management stations, by means of the *managerTrapTable* in the *snmp* subtree in *ssbtCommon* MIB.

managerTrapNumber object specifies the total number of entries in the trap manager address table.

Each entry of the *managerTrapTable* is defined as follows:

```
ManagerTrapEntry ::= SEQUENCE {
        managerTrapIndex INTEGER,
        managerTrapIp IpAddress
        }
```

managerTrapIndex is the SNMP manager index.

managerTrapIp object allows the setting of the SNMP manager IP listening address. There are up to 3 different manager IP addresses that can be configured, one for each *alTrapManager* mask.

The Community shown in trap messages can be set from Java interface in the Community box within the Network window (refer to Network paragraph).

Appendix A. Automatic input source selection methods

A.1 Input Autoswitch

The SDT ARK62 series supports an automatic switching control mechanism between incoming signal sources.

The ARK6 is capable of switching between inputs on the basis of primary feed quality, depending on how it is presented to the transmitter (RF, ASI – Ethernet, SDI and CVBS feeds). The feed switching algorithm is irrespective of payload and bitrate of both primary and reserve feeds.

The primary input is selected from the drop-down list of Input Selector. It is not allowed to dynamically change the preferred input until the Input Autoswitch is enabled. Secondary inputs are checked in circular order, starting from the one that follows the primary input. The numerical order is:

DVB-T - T2 - ISDB-T - ATSC	ITU
1. ASI 1	1. SDI 1
2. ASI 2	2. SDI 2
3. ASI 3	3. SDI 3
4. ASI 4	4. SDI 4
5. Tuner 1/Tuner (if available)	5. CVBS 1
6. Tuner 2 (if available)	6. CVBS 2
7. GbE 2 ch1	
8. GbE 2 ch2	

E.g. In DVB-T2 mode, if Tuner is set to priority the algorithm for selecting secondary inputs starts with GbE 2 Ethernet channels and then works down all other ASI inputs starting from ASI 1.

If the reserve feed, the one being used, does not meet anymore the necessary quality requirements, the secondary to secondary input switch mechanism will start from the input that follows the primary input.

Input switching rules can be selected in the Alarms page through the SWITCH alarm mask and depend on the transmission standard. Here below the available rules for each operative mode:

ITU
[ITU] No Video Input
[ITU] Input wrong standard
ATSC
[ATSC] No Input: input Transport Stream not locked
[ATSC] Input Overflow: input TS overflow
[ATSC] MH Err
[ATSC] FE Demodulator Not Locked: input RF signal not locked
[ATSC] FE SNR Low: RF input SNR under the alarm threshold
[ATSC] No TVCT: TVCT table not present in the selected input stream

Feed selection and switching criteria are available via both transmitter SNMP and Java GUI interfaces.

A Finite State Machine has been used to give a description of the behaviour of the system. The FSM of the Input Autoswitch algorithm consists of:

- Four states:
    1. *Priority Input Locked*
        - Condition: the primary feed is the one being used.
    2. *Priority Input Not Locked*
        - Condition 1: the primary feed does not meet the necessary quality requirements as well as reserve feeds, if any.
        - Condition 2: the primary feed does not meet the necessary quality requirements and the FSM is waiting for the primary to secondary feed changeover timeout to elapse.
    3. *Searching First Locked Input*
        - Condition 1: the primary to secondary feed changeover timeout elapsed and the FSM is searching for a reserve feed.
        - Condition 2: the reserve feed, the one being used, does not meet anymore the necessary quality requirements, the secondary to secondary input switch timeout elapsed and FSM is searching for another reserve feed.
    4. *Checking Priority Input*
        - Condition: the reserve input is the one being used and FSM keeps checking the priority feed to trigger the secondary to primary changeover.
- Three countdowns to N seconds, where N is defined by default in the *.def file:
    1. *Primary to Secondary Switch Counter*
        - It starts when the primary feed does not meet anymore the necessary quality requirements and the system lay in waiting for the reserve feed to be checked.
    2. *Secondary to Secondary Switch Counter*
        - It starts when the secondary feed does not meet anymore the necessary quality requirements and the system lay in waiting for another reserve feed to be checked.
    3. *Secondary to Primary Switch Counter*
        - It starts when the input set to priority is found to meet again the necessary quality requirements and the system is waiting to switch back to the primary input.

Timeouts are reset when the actually used input, whether it is the preferred one or not, regain his quality requirements.

A.2 Seamless input switching

SDT ARK6 series supports a seamless input switching algorithm that increases the reliability of the system in a SFN environment. The developed algorithm is capable of changing input signal source on the basis of MIP packets within the incoming Transport Stream. The algorithm provides a reserve feed to the apparatus in a SFN environment in the event that the primary input signal source does not meet anymore the SFN constrains. The device is designed to manage the redundancy between two different sources in a SFN environment by seamless switching between them

Both HP and LP streams have two different selected inputs. The two selected input are real-time analyzed under some presence and validity rules. The inputs that are present and valid are eligible to be sent to output in dependence on the priority rule set. If only one input is present, then is sent to output without the application of any validity rule.

The presence of an input is evaluated under the following rules:

- The input is an ASI compliant (CEI EN 80083-9) encoded signal.
- The input transports an MPEG-2 TS (ITU.T 13818-1) with no Synchronization Error (as defined by ETSI ETR 290).

The validity of an input is evaluated under the following rules:

- The Transport Error flag (as defined by ITU.T 13818-1) does not rise in any packet.
- The timing of reception of each input packet is inside the standard boundaries (as defined by ETSI ETR 290).
- The SFN adaptation of the input TS is guaranteed by the presence of a correct MIP (as defined by ETSI TR 101 191), guaranteed by a CRC32 algorithm checking.
- The TS data validity is guaranteed by the presence of PAT (as defined by ETSI EN 300 468) correct after a CRC32 algorithm checking.
- The TS data validity is guaranteed by the presence of PMT (as defined by ETSI EN 300 468) correct after a CRC32 algorithm checking.
- The total delay applied by the distribution network to the input signal is not higher than the Max Delay set by the SFN adapter.
- The time window available to deliver the TS to the output is higher than the network margin applied.

When the used input check fails, the device seamlessly switches to the secondary input if present and valid, otherwise it continue to output the same flow despite of the validity rules check.

Appendix B. Java Virtual Machine

The Java interface requires a host computer connected via Ethernet to the board with the proper Java Machine version installed.

B.1 Ethernet connection

The host computer has to be connected via Ethernet to the board.

Direct or crossed UTP category 6 cable is recommended.

NOTE: for best performances, a fast connection (i.e. gigabit Ethernet) is required. After careful testing it was found that a slow connection makes it difficult the use of precorrection tools.

B.1.1 Configuration

In order to connect to the board trough a LAN, all the devices have to be on the same network.

The default IP address settings of the X-port are:

IP address: 10.77.xx.xx , where xx is the host address unique for each board.

Subnet mask: 255.255.0.0.

Remember to change these settings if they are not compatible with the LAN where the computer and the board are connected.

IP address and network parameters can be changed only using the local interface. Please refer to chapter 6 for the network setting commands.

B.2 Java(TM) Platform

B.2.1 Download

The Java Interface works with any Sun Java Virtual Machine after the 1.4.1 version.

If the computer has no Java Virtual Machine installed, the recommended 1.5.0 version can be downloaded from the Sun Server trough this link:

http://www.java.com/

B.2.2 Java Control Panel

Java caching must be disabled.

B.3 Supported Web Browsers

The Java GUI is designed to support every Web Browser that uses Sun Java Virtual Machine from 1.4.1 and newer.

Here's a list of Web Browsers where Java GUI has been tested and troubleshot: Microsoft Internet Explorer, version 5 and newer. Mozilla Firefox, version 1.5 and newer.

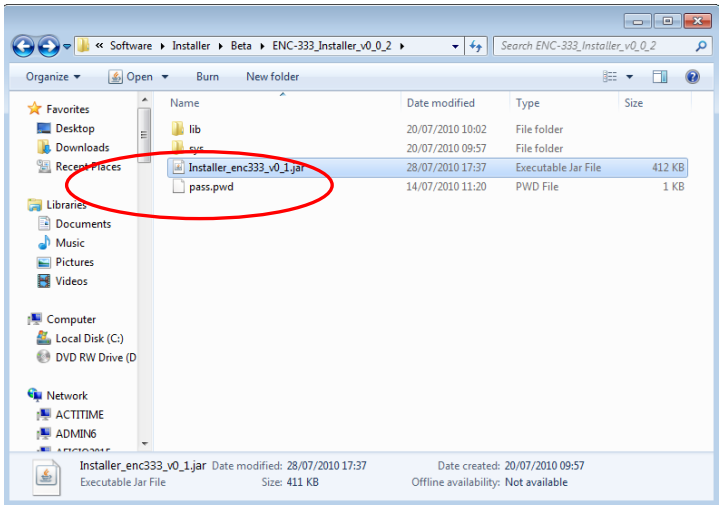
Appendix C. Application Note

Screenshots of this application note are used as an example and the shown file names are not related to ARK6-T2 device.

C.1 How to update

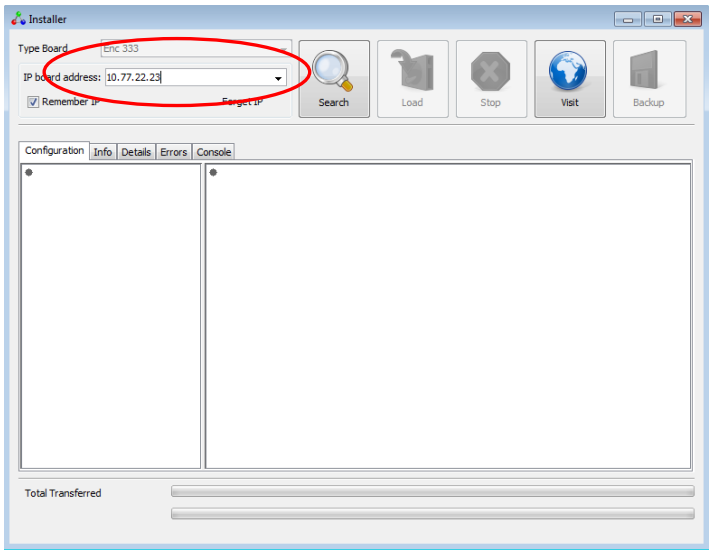
1. Launch the Java installer.

Figure 60. Java installer



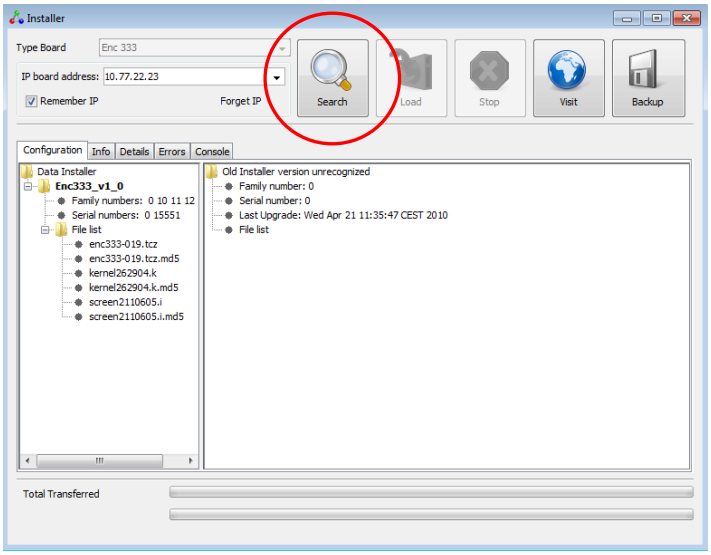
2. Insert the IRRM2 BTS Remux IP address into the numeric field.

Figure 61. Java installer – IP address insertion



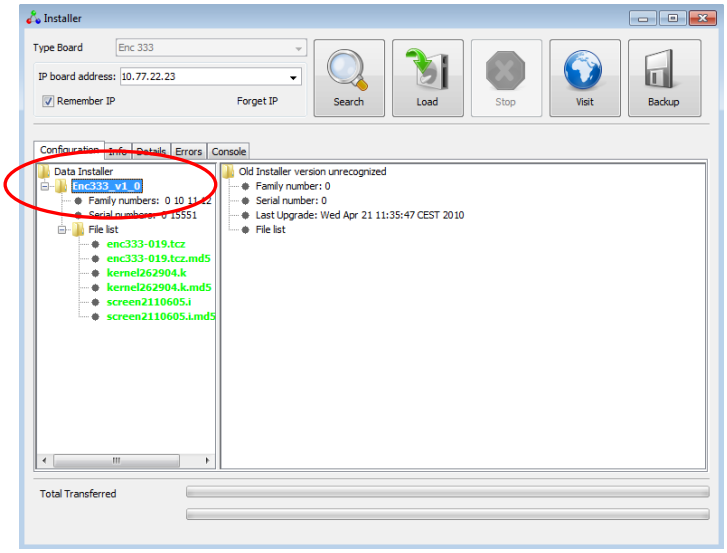
3. Click the Search button.

Figure 62. Java Installer – Search button



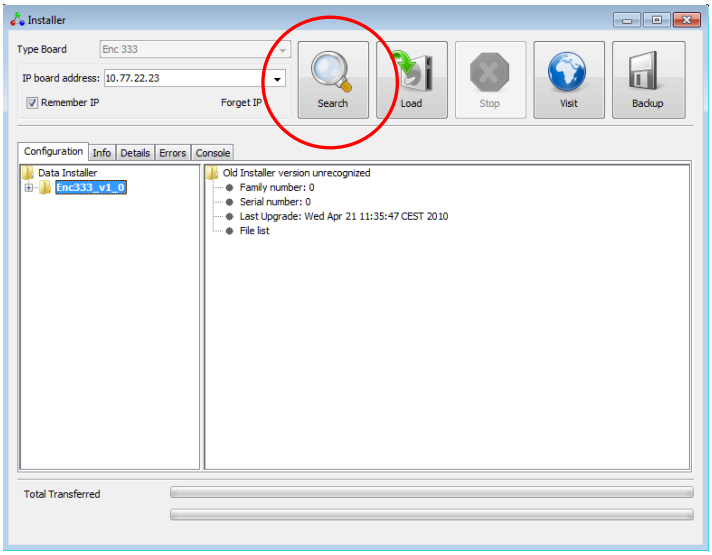
4. Select the device version you want to load.

Figure 63. Java Installer - Device selection



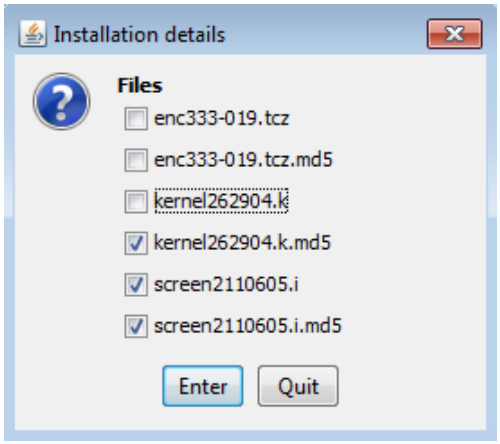
5. Click on the “Load” button.

Figure 64. Java Installer – Load button



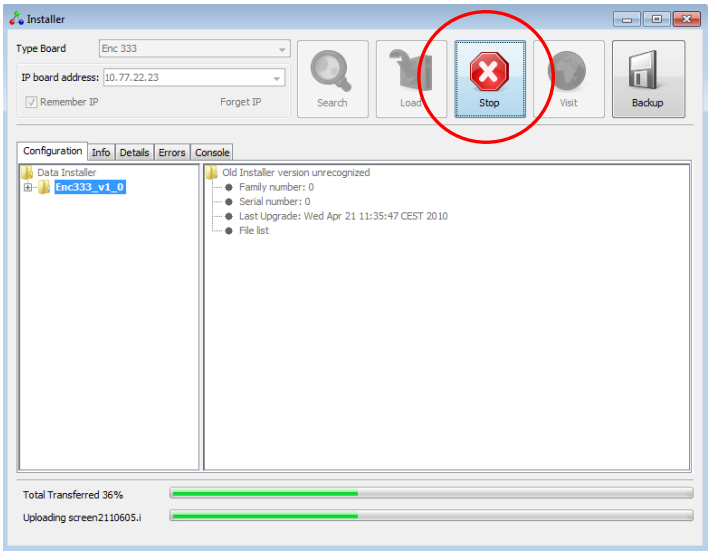
6. If you want to update only some software versions, click on the check boxes corresponding to the software version you want to load, otherwise click on the check box corresponding to the Load All option. Click on the “Enter” button to start the loading.

Figure 65. Java Installer – Software versions selection



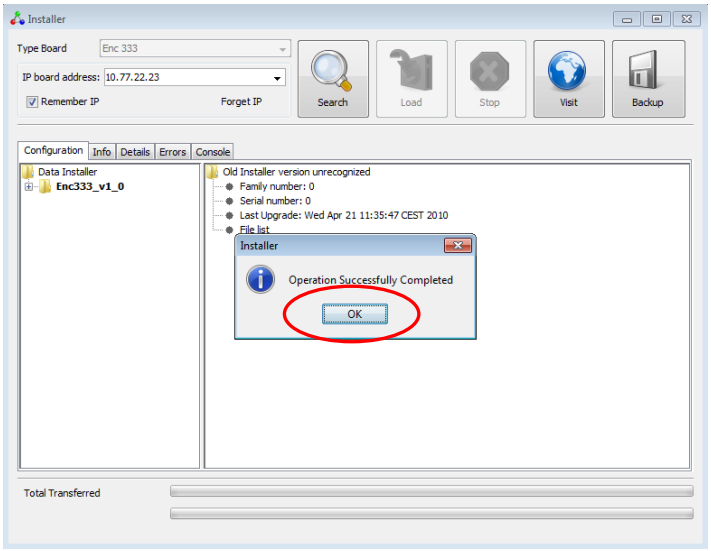
7. Once started the loading, the “Stop” button lights up. Click on this button to interrupt the programming.

Figure 66. Java Installer – Stop button



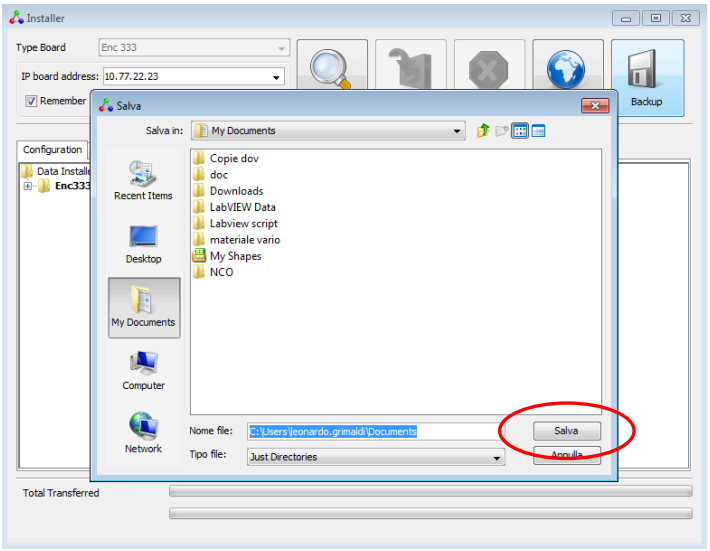
8. When the loading is complete, the pop-up window “Operation Successfully Completed” appears. Click on the “OK” button.

Figure 67. Java Installer – Operation Successfully Completed



9. To save a copy of the file system click on “Backup” button. A pop-up window “Salva” appears. Specify the saving path, then click on “Salva” button.

Figure 68. Java Installer – Backup Save button



Appendix D. Document versions

Table 33. Document Versions

Version	Author	Revised by	Date	Note
1.0	Di Biase		November 8th, 2011	First version with all the operative modes.
1.1	Di Biase		November 23rd, 2011	Updated paragraphs 4.2 and 4.4.

List of Tables

List of Figures