

 $-\,7863\,7863^{\rm HD} - 7865\,7865^{\rm HD}\,7865^{\rm HDT2} - 7866\,7866^{\rm HD}\,7866^{\rm HDT2} -$

7863 7863^{HD}-7865 7865^{HD} 7865^{HDT2} 7866 7866^{HD} 7866^{HDT2} FIELD STRENGTH METER

USER MANUAL

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M7865001A/08

Manual modification

Date version	Page or §	Modification
January 2010 version 6		
October 2010	P2	Add page Manual modification
version 7	§20.1	Max voltage on RF input
	§16	Add « Link Margin » « Noise Margin »
	§15	Add satellite measurement map (column H/V et Hi/Lo)
May 2011	§2	Add DVB-T2 standard
version 8	§3.1 §4.4 §4.5.4 §5 §6.3 §9.2 §9.4	Add level audio beep
		Add MPEG rate
		Add DVB-S2+ 45 MSymbols
		Add reset function On/Off key
		Add Wi-Fi 802.11 B/G/draft N specification
	§10	Add ASI in / out
	§16 §17	Add 24V
	§20	

Thank you for purchasing this SEFRAM product and therefore trusting our company. Our different teams (research department, production, sales department, after-sales service...) are aiming at satisfying your wishes by designing and updating very advanced appliances.

To obtain the best performance from this product please read this manual carefully.

For more information please contact our different services



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After-sales service	e-mail: sav@sefram.fr
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GARANTEE

Your instrument is guaranteed for two years in parts and work time against any default of manufacture and/or contingencies in the functioning. This guaranty starts at the date of delivery and ends 730 calendar days later.

If the appliance is subject to a guaranty contract, this contract cancels and replaces the above mentioned conditions of guaranty.

This guaranty does not include any fault of use and/or error of handling.

In case of use of the guaranty, the user must send back, with its expenses, the concerned appliance to our factory:

SEFRAM Instruments & Systèmes Service Après-vente 32, rue Edouard MARTEL BP 55 42009 SAINT-ETIENNE CEDEX 2

The accessory items furnished as standard with the appliance (cables, plugs...), consumable items (battery...) and the optional accessory items (bag, case...) are guaranteed for 3 months against any default of manufacture.

The warranty does not apply to LCD, pouch, keypad, etc. Please check our warranty conditions with our sales department. The warranty does not apply when the instrument is shocked.

The factory options in the appliance are guaranteed for the same time as the appliance.

Customer is responsible of shipping back the instrument to the factory. Special care must be taken in the packaging of the instrument to be sure that it will not be damaged during transportation. All necessary insurance must be taken by the customer.

SEFRAM can reject any instrument damaged.

What to do in case of malfunction?

In case of malfunction or for any problem of use, please join the technical assistance by SEFRAM Instruments & Systems. A technician will take your call in charge and will give you any necessary information to solve your problem.

What to do in case of crash?

In case of crash of the appliance, please join our after-sales service.

<u>Some advice?</u> <u>Some technical help required?</u>

SEFRAM Instruments & Systems commits itself to help you by phone for the use of your appliance. Please phone:

(00 33) 825 56 50 50

Technical help for products

or send an e- mail to:

support@sefram.fr

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1 Important information

Please read carefully the following instructions before using your appliance.

1.1 Precautions

- Do not use your appliance for any other use that it is described in the manual.
- Use the charger block provided to avoid any deterioration of the appliance and to protect its measurement characteristics.
- Do not use in a wet environment.
- Do not use in an explosive environment.
- In case of defect or for the maintenance of the appliance, please contact our service department.
- Do not open the appliance, risk of electric shock.
- You must use the BNC/F adaptor supplied with the TV Meter. Using another adaptor may damage the instrument and will not be covered by the guarantee.

1.2 Safety instructions

For a correct use of the appliance, you have to respect the safety instructions and directions for use described in this manual.

Specific warnings are provided all along this user manual.

You can also find caution symbols on the appliance:



1.3 Symbols and definitions

Symbols appearing in this manual:



Remark: indicates important information.

Symbols appearing on the appliance:



Caution: see user manual. Indicates a risk of deterioration for the equipment connected to the appliance or for the appliance itself.



Ground: accessible parts connected to the appliance's metallic chassis.



Product to be recycled.

1.4 Conformity and appliance limits

See chapter « Declaration of CE conformity ».

2 Quick start guide





Field strength meter 786X

So much easier to use with the AUTOSET key!





Important keys:



: AUTOSET

: PARAMETERS



In terrestrial mode

: SPECTRUM



: LNB-DiSEqC

: MEASUREMENTS



I want to work:



In satellite mode



In any case, the AUTOSET key guides you! ! !



AUTOSET:

This mode permits to perform an automatic setup search and to inform the current place.



Caution This function will replace all previous information (Programs) in the Places (list of Programs).

Before starting the search of channels, select an empty **Place**; see chapter 6 « **Configuration of places** ».

Caution: Your antenna or your dish must be correctly positioned before you press the AUTOSET key. (Please see CHECKSATELLITE to see how you can correctly position a dish).

1/ Press the AUTOSET key:





2/ Select mode (**Terrestrial**, **Satellite** or **Cable**) according to your search. The frequencies map (in terrestrial or cable mode) is already pre-selected according to your country.

If you need to, you can change the frequencies map by selecting « frequencies map ».

3/ the direction keys (up/down and left/right) permit to move in the parameters table. The central key permit to confirm / cancel a parameter.



4/ when you have correctly informed the table press the « Scan » key to launch search.

 $-7863\ 7863^{HD}$ -7865 7865 $^{HD}\ 7865^{HDT2}$ -7866 7866 $^{HD}\ 7866^{HDT2}$ -

5/ a warning message indicates that the current place will be erased. The current place will be replaced then by the found setups. Press "Yes" for the following message:



6/ the Autoset is in progress:

Caution: this operation can take a few minutes!

Autose	t				1 (S	T ETIEN	INE)
Mode			: Tei	restrial			
Freque	ncy ma	р	: Fra	nce Cab	le		
			Autoset	in progress.			
		S	Standard DV	B-T/H, chann	el 26		
			Number o	f channels :	0		
	Stop						

7/ once the search is completed, the appliance automatically goes to the Measurement Map mode. It displays different measurements (Level, MER...) for the found setups.

The current place is now correctly informed with the found setups!

M	easuren	nent	map				1 (ST	ETIEN	NE)	-+)
Se	etup #			: 0	(C0)				
	(MHz)			(dBµV)	(dB)				(dB)	
#	freq.	ch	std	VIDEO	C/N	CBER	VBER	UNC	MER	
0	490.000	E23	DVB-T	70.3	40.9	1.9E-4	<1E-8	<9E-6	29.2	
1	514.000	E26	DVB-T	68.1	29.5	3.0E-4	<1E-8	<9E-6	27.0	
2	618.000	E39	DVB-T	65.9	33.0	5.4E-5	<1E-8	<9E-6	31.4	
3	706.000	E50	DVB-T	69.3	40.4	3.0E-4	<1E-8	<9E-6	27.4	
4	738.000	E54	DVB-T	61.3	38.7	4.4E-6	<1E-8	<9E-6	36.6	
										_
										_
										-8
										-81
L										-
								1/5		
Re	eset D	elete	List	Sort	<u> </u>				Init.	

Level measurement

This function permits to perform a level measurement on a setup.

1/ Press the



key to access to the LEVEL measurement function.

2/ select a setup number (among the setups found before) by using the sensitive wheel or by using the alphanumerical keyboard. (Line "Setup N°")

Signal level					
Setup # Frequency Channel Standard Audio	: 1 (C1 : 514.000 : 26 (E26) : DVB-T/H :) MHz 8 MHz I	M	·····	
2 <u>0</u>	40	60	80	100	120
V 69.3dBµV					
0	10	20	30	40	50
✓// 39.6dB					
		List			

The level is indicated on a bargraphe. A mini-spectrum is also displayed on this page.

ព្រុ	In terrestrial band, for a user socket the level must lie : - between 50 and 66 dB μ V in FM - between 35 and 70 dB μ V in DVB-T/H and DVB-T2 - Between 57 and 74 dB μ V in any other case.
	In satellite band, for a user socket the level must lie : - Between 47 and 77 dBµV.

<u>TV:</u>

Once the setup is selected in the LEVEL measurement page, press the key:



A few seconds later, the screen displays a TV picture.





If the screen is still black and the " ${\bf conditional\ access}$ » message is indicated, the channel is encrypted. You can :

-Insert the subscription card (if you have subscribed to this channel).
-Or change Service by pressing the Serv key.
-Or change setup number (LEVEL Measurement or by pressing OSD).

CheckSat:

1/ Go to the **PARAMETERS** page by pressing the key:



• Select the "satellite" **frequency bandwidth**.

2/ connect the dish to the appliance.

- 3/ Confirm remote supply by pressing the key:
 - Then press « **ON** ».



The « **VDC** » LED on the front panel flashes.

Please check the « LNB-DiSEqC » setup is compliant to your system.

To align a dish antenna with universal (standard) LNB, parameters must be:

LN	IB - DiSEqC
Remote supply	: On
LO1 frequency LO2 frequency	: 9750.000 MHz : 10600.000 MHz
LO selection Polar selection	: 0/22kHz : 13/18V
(Committed) Switch Uncommitted Port	i: No : No
Positioner	: No
SatCR	: No

4/ to access to the CheckSat mode, press twice the SPECTRUM key:

лШ

(The appliance has already a list of pre-selected satellites. See user manual for more information.)



 $5\!/$ select the satellite that you want to check (by using the sensitive rotary wheel).

6/ Slowly direct the dish until you can hear the locking melody and you get the best quality.



No transponder found \rightarrow red smiley

Medium reception quality (< 50%) \rightarrow orange smiley

Good reception quality (> 50%) \rightarrow green smiley

Reminder: transponder = satellite channel

Caution :

115

To identify a satellite correctly, the appliance must be synchronised on the 4 transponders. (Quality >0)

However certain transponders are modified regularly. Please see the satellite's frequency map when it seems that a transponder is not working.

Some switches or LNB work only with DiSEqC. In this case, position the band (LO) and the DiSEqC polarisation on the LNB-DiSEqC configuration page (Caution: By using DiSEqC, CheckSat is slowed down).

You can then perform an « AUTOSET » the same way as in terrestrial band.

For any additional information, please contact our technical support service:



E-mail: support@sefram.fr

3 Presentation

3.1 General

Field strength meters **7863**, **7865 and 7866** are hand-held instruments dedicated to the installation and the maintenance of all broadcast and reception systems of analogue, digital terrestrial and digital satellite televisions.

The entire bandwidth covers from **5 MHz to 2150 MHz**, (from 5 to 865 MHz for model 7863). Field strength meters 7863, 7865 and 7866 permit to perform precise measurements on all analogue television standards, FM carriers and different digital standards DVB-C, DVB-T/H, DVB-T2, DVB-S, DSS and DVB-S2.

They perform **Level measurement** (peak, average and power) according to the chosen standard, on the video carrier and audio carriers (if they exist).

In the **Measurement map** function, they scan up to 100 setups simultaneously and compare them to threshold levels (min/max).

With an efficient **Error Rate** measurement (BER, MER), they permit to validate entirely DVB-C, DVB-T/H, DVB-T2, DVB-S, DSS and DVB-S2 digital transmissions.

A digital display of **Constellation** in DVB-C, DVB-T/H, DVB-T2, DVB-S, DSS, and in DVB-S2 and of **Con-fidence**, **Frequency response** and **Impulse response** in DVB-T/H and DVB-T2 permits to complete this analysis.

The fast and precise **Expert Spectrum** analysis permits to display subversive elements and to perform C/N measurements, power measurements...

The display of **analogue**, **digital terrestrial and digital satellite TV** images has an OSD function (inlay of measures on image), and a Scope Mode with Top Synch and test lines. (No display of analogue satellite TV)

Sound (FM, TV) is audible through a built-in loudspeaker and video signals (image and sound) are available on 3 RCA jacks on the top of the instrument. (Video output becomes an input when external video mode is selected.)

Every type of measure comes with a **graphic recording** over time (it can go until a few days), in order to trap fleeting perturbations.

High capacity memory (312 Kbytes) permits to store a large number of configurations, measures and spectrum curves.

Each instrument can be entirely remote controlled through USB interface via a computer.

Designed for field measurement, all instruments are compact (2.1 kg with the battery), autonomous (pack with battery and fast charger) and are equipped with a bright colour LCD graphic display with backlight for better readability.

	Model 7863 :
	Terrestrial and cable compatible
	Analogue and digital measurements
	• DVB-C, MCNS
	Analogue Terrestrial TV picture
	Digital picture (free to air channels)
	Model 7865 :
	Terrestrial, satellite and cable compatible
	Analogue and digital measurements
	• DVB-T/H, DVB-T2 (HDT2 model), DVB-C, MCNS, DVB-S, DSS et DVB-S2
115	Analogue Terrestrial TV picture
	ASI input output (digital video stream))
	Digital picture free to air channels and pay TV (with valid access card)
	Model 7866 :
	Terrestrial, satellite and cable compatible
	Analogue and digital measurements
	• DVB-T/H, DVB-T2 (HDT2 model), DVB-C, MCNS, DVB-S, DSS et DVB-S2
	Analogue Terrestrial TV picture
	Digital picture free to air channels and pay TV (with valid access card)
	ASI input output (digital video stream))
	GPS function for level signal mapping.

3.2 Description

3.2.1 Front panel



The front panel is equipped with an ultra-flat sensitive wheel with direction keys. For selection keys see below.



3.2.2 Function keys



AUTOSET: Automatic mode of program search: permits to display measurement maps automatically for any type of TV reception.



PARAMETERS: Initialisation of places (Frequency band, Programs...) and choice of a current place.



SPECTRUM: fast spectrum analysis, single LNB CheckSat and double LNB CheckSat (by pressing this key twice).



TV: display of analogue and digital images, measurement in OSD, Top Sync and video Scope.



LEVEL: measures of level (peak, average and power); Graphic recording by pressing this key twice.



GPS: GPS mode, positioning by satellite. (7866 only)



CONFIGURATION DiSEqC: On/Off remote supply, selection of bandwidth / polarisation configuration. Start up and configuration of switch or positioner.

CONFIGURATION: language, date, hour, unit of measure, volume, brightness, coefficients of correction, memory space management and initialisation of the number of places used in the appliance.



SAVE / RECALL: used to store or recall measures, records and configurations.



MEASUREMENT MAP: scan of the level of 100 setups (maximum), graphic display by pressing this key twice.



BER / MER: BER and MER measurements (according to the current standard); graphic recording by pressing this key twice.



CONSTELLATION: display of the DVB-T/H, DVB-T2, DVB-C, DSS, DVB-S and DVB-S2 constellation; display of Confidence, Frequency response and Impulse response in DVB-T/H, DVB-T2.

3.2.3 Connectors (upper panel)



3.2.4 Measurements input

The input for RF signal is located on the left of the upper panel.

The TV cable can go through the pouch to ease measurements and use the sun protector.



3.2.5 Use of the straps

A special strap is provided and will allow you to have your hands free. This feature is very important for safety.



Thus, position the satellite dish with the hands, and at the same time, you can see the effects on the equipment.

3.2.6 Man-machine interfacing

Selection and modification of the parameters of measurement:

Signal level Setup #				1 (ST E	TIENNE)		Title of the current page, Current place, Battery level
Frequency Channel Standard Audio		583.250 35 (E35) L 6.5 MHz	MHz Mono	N	<u>~1/</u> /	V.	
	20	40	60	80	100	120	
V 78.8d	Bµ√				100		
-	0	10	20	30	40	50	
C/N 48	.1dB						
	-10	0	10	20	30	40	
V/A 10	.1dB						manu
			Мар				menu

When a line is highlighted (reverse video), the appropriate menu is displayed.

To move from one line to another, use the UP and DOWN keys on the front panel.

Some menus display 2 keys:



Modification of a numerical value using the sensitive wheel:



When a line is highlighted (reverse video) for a numerical parameter, use the sensitive wheel to modify the value.

You can also use the directions keys right/left to change a digital value.

Selection from a list:

Para	ameters					1 (ST ETI	ENNE)
Plac Frec Frec Thre Mes	e # quency band quency map esholds ssages		: 1 (<mark>ST</mark> :5-865 N :France	ETIEN_ 1Hz Cable)	
#	name	freq.	chan.	standard	c	onst.	rate 🔺
0							
1	TF1	583.250	E35	L NICAM			
2	A 2	543.250	E30	L NICAM			
3	FR3	567.250	E33	L Mono			
4	C +	607.250	E38	L Mono			
5	5 ARTE	823.250	E65	L Mono			
6	M 6	743.250	E55	L NICAM			
7	FR INTER	88.000		FM			
8	EUROPE 1	104.800		FM			
	+	-	#	1	_	*	

Some parameters can be chosen from lists (frequency maps, Setups, Places, Channels...).

To move the reverse video, press the UP and DOWN keys on the front panel or use the sensitive wheel. The menu displays 2 keys:



confirms your choice and erases the list.



cancels your choice and erases the list.

Alphanumerical data input:

Para	ameters							1 (ST E	TIE	NNE) 🗖	Ð
Plac Frec	e # quency band			: 1 (ST :5-865	ETIENNE MHz	E)					
Frec	uency map		FREQU	JENCY MAP							
Thre	esholds		Frai	nce Cable							
Mes	sages		Euro	оре							
#	name	freq.	Euro	ope Cable				const.	r	ate	
0				N A Cable							
1	TF1	583.25	lan	an							
2	A 2	543.25	lan	an Cahle							
3	FR3	567.25	Kon	ea							
4	C +	607.25	OTR	T							
5	5 ARTE	823.25	Ital	ia		-					
6	M 6	743.25	U	E33		9					
7	FR INTER	88.00	D		FM						
8	EUROPE 1	104.80	0		FM						-
							×		>		

For some parameters you can enter alphanumerical data from the keyboard and the menu keys +, -, #, /, _. This action begins by pressing a key from this keyboard for numerical values (program number, frequency...) and also by pressing a menu key for texts (place name, setup name...).

The data-entering field appears in colour, you can confirm your action only by pressing \checkmark the key on the alphanumerical keyboard.



3.2.7 Structure of Places, Setups and Frequency bands

In order to simplify the access to the memorised information on the field, the internal software uses **Places** and **Setups**.



Places can also be created with the TR7836 transfer software and downloaded in the appliance.

A **Place** is structured as follow:

- a name (with 10 characters)
- a frequency band (Terrestrial or Satellite)
- a list of Setups
- a Measurement map (data logger)
- a list of thresholds (min/max for each standards)
- 6 messages of 24 characters printed on the header of the measurement ticket (printable with the TR7836 software)

A Setup is structured as follows:

- a name : 8 characters
- a frequency
- a standard
- a bit rate or a bandwidth and a constellation mode for digital standards and for a Satellite bandwidth setup
- status of the LNB (polarisation-band)
- an audio mode and an audio frequency



Selecting a **Place** on the **Parameters** screen restores automatically all the information concerning this place.



Selecting a setup on one of the measurement screen restores automatically all the information concerning this setup.

The choice of the **Frequency band** automatically selects the standards available:

- Terrestrial band 5 / 865 MHz: terrestrial analogue TV standards, FM, DVB-C, DVB-T/H and DVB-T2.
- Satellite band 900 / 2150 MHz: DVB-S, DSS and DVB-S2.
- Wi-Fi 2.45GHz band : measure Wi-Fi signals with optional accessory (P/N 978651000)



Caution: Changing a **Band** on a **Place** erases all data linked to this place (a pop up window will ask for confirmation).

All this information can be entered on the **Parameters** screen, or transferred from a computer using the **TR7836** Windows [™] software.

3.2.8 Number of places and Setups

The number of **Places** and the number of (factory) **Setups** can be chosen between:

- 10 places / 100 setups
- 20 places / 50 setups
- 50 places / 20 setups
- 100 places / 10 setups

This choice is available on the CONFIGURATION screen, menu "Initialisations ",



Caution: Changing the number of Places and Setups will erase all information linked to all **Places** and **Setups**.

4 Operating the appliance

All our appliances are controlled before shipment and are delivered in an appropriate package. There are no particular instructions for unpacking.

The appliance is equipped with Lithium-ion (Li-ion) battery. The battery is charged before shipment.

However if the instrument is stored more than one month without being used, the battery might be discharged. Please recharge it if necessary.

4.1 Battery



Caution: For any action on the battery it is required to take the appliance to pieces and this must be done by a SEFRAM technician.

Only batteries provided by SEFRAM must be used.

Safety instructions:

- -Do not throw to fire or warm up the battery pack.
- -Do not short the battery cells: risk of explosion!
- -Do not pierce.
- -Do not disassemble the battery pack.
- -Do not reverse the battery polarities.
- -This battery pack includes a protection component that must not be deteriorated or taken out.
- -Please store the pack in a cool place.
- -Do not deteriorate the pack's protection shaft.
- -Do not store the appliance in a vehicle overheated by sunbeams.

The battery has 200 charge / discharge cycles' life span (or 2 years).

Tips to make your battery last longer:

- -Do not discharge deeply
- -Do not store batteries for too long without using them
- -Store your battery when around 40% of it is charged
- -Do not completely charge or completely discharge the battery before storing it.

When your battery is almost completely discharged, the appliance will indicate « battery discharged », and it will automatically power off after a few minutes.

4.2 Charging the battery



Caution: When the charger is connected to the appliance, the metallic chassis is connected to the ground of the wiring.

To charge the battery in the appliance:

- Plug the external power supply provided on the Jack plug of the appliance (see on the top).
- Plug the power supply into the main supply.

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The internal charger starts charging the battery, the « BATT » orange indicator light comes on.

You can charge your appliance this way either when **it is on** or when **it is off**. Charging takes longer when the appliance is on. So to charge quickly, you need to turn your appliance off. When the battery is charged, the « BATT » LED will automatically power off.

The battery charges to 80% in one hour with quick charge (2H30 standby time). The total charge (2 hours) gives a 3-hour standby time (with 100% brightness, when power supply is on, digital picture); the « BATT » orange indicator powers off when the charge is completed.

4.3 External power supply

The appliance can be powered by an external continuous voltage power supply. The appliance works with a 15V voltage (5 amperes). The charger block provided when purchasing the appliance also serves as an external power supply.

4.4 **Powering up the appliance**

Press the central key on the front panel:



The presentation screen appears on the display and the « ON » orange indicator light comes on.

The message « Autotest: in progress » appears for a short instant and then disappears.



A long key press (more than 6 seconds) to force the shutdown of the device in case of locking

4.5 Connecting the appliance to a PC

The appliance has a USB interface that allows connecting it directly to a PC.

4.5.1 Necessary configuration

These drivers are compatible with the following operating systems: Windows Vista (TM), Windows XP (TM), Windows Server 2003 (TM), and Windows 2000 (TM).

For any other operating system please contact SEFRAM technical support. Your PC must also have a free USB port.

4.5.2 USB interface, installing the drivers

- Download the required driver (RNDIS.ZIP) (depending on your operating system) on our website (<u>www.sefram.fr</u>) or on theTR7836 CD.
- After unzipping the drivers, connect the appliance to the PC by using a type A to mini B USB cable (available as an extra from SEFRAM under the number 978551100).
- Switch on your appliance ; the following screen is displayed :



If Windows Update is searching the driver, click on « Not this time » and on « Next ».

- 1) Select « Install from a list or specific location » and click on « Next ».
- 2) The following screen appears :



- 3) Tick « Search for the best driver in these locations » and « Include this location in the search ».
- 4) With the « Browse » button, select the directory to which you extracted the drivers.
- 5) Click on « Next »

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6) Click « Continue » if the alert message is displayed. Note that the language of the message may depend of your system language and setup :



7) Click « Finish » to end the install process



4.5.3 ETHERNET interface

No driver is required to run the Ethernet interface.

Connect the TV Meter to a computer with an ETHERNET cable (crossed) (available as option with P/N 298504246. Contact our sales department).

4.5.4 Remote connection

Example: using the setup and report software TR7836 on a computer



<u>1stpossibility</sub>: Connect your instrument to the computer using the **USB** interface</u>

TR7836	786X
Parameters IP Address : 192 168 0 50 USB	Configuration 1 (ST-ETIENNE) Language ADJUSTMENTS Date Beep : 10% LCD : 100% Auto shutdown : No Expert Spectr Wheel threshold : 50% (1) Unit Graphic background : black Corrections Beep Signal Level : No Memories Ethernet IP address : 135.150.11.61 Ethernet IP mack : 255.255.25.0 Initialisations USB IP address : 135.150.11.61 Kementer Enable DHCP : Yes

2nd possibility: Connect your instrument to the computer using the Ethernet interface

Configuration Configuration 1 (ST-ETIENNE) Parameters 192 168 0 50 50 Ethernet Ethernet Beep : 10% LCD : 100% Auto shutdown : No Ethernet Ethernet Menu key threshold : 50% (I) Unit Graphic background : black Beep Signal Level : No Herenet : Rast (76Mb/s) Memories Initialisations USB IP address : 135.150.11.61 USB IP mask : 255.255.0 DK Cancel Adjustement Enable DHCP : Yes	TR7836			78	86X	
Memories Ethernet IP address : 135.150.11.61 Ethernet IP mask : 255.255.05 Initialisations USB IP address : 135.150.11.61 USB IP mask : 255.255.00 OK Cancel Adjustement Enable DHCP	Parameters IP Address : 192 168 0 50	Ethernet	Configuration Language Date Time Expert Spectr Unit Corrections	ADJU Beep LCD Auto shutdown Wheel threshold Menu key threshold Graphic background Beep Signal Level MPEG rate	1 (S STMENTS : 10% : No : 50% () : 75% : black : No : Fast (76Mb/s)	T-ETJENNE)
	OK Cancel		Memories Initialisations Adjustement	Ethernet IP address Ethernet IP mask USB IP address USB IP mask Enable DHCP	: 135.150.11.61 : 255.255.255.0 : 135.150.11.61 : 255.255.00 : Yes	

CAUTION: if your computer already used its Ethernet interface (network, modem...), you must restart your computer <u>before connecting your TV Meter</u>.

<u>3rd possibility</u>: Connect your instrument to a network using the Ethernet interface





Connecting your TV Meter to a network may cause problem if the DHCP server function is validated on the TV Meter.

Configuration		1 (S	T-ETIENNE)
Language	ADJU	STMENTS]
Date	Beep	: 10%	
Time	Auto shutdown	: 100% : No	
Expert Spectr	Wheel threshold	: 50% ()	
Unit	Menu key threshold	: 75%	
Corrections	Beep Signal Level	: No	
	MPEG rate	: Fast (76Mb/s)	
Memories	Ethernet IP address	· 135 150 11 61	
	Ethernet IP mask	: 255.255.255.0	
Initialisations	USB IP address	: 135.150.11.61	
	USD IP Mask	: 255.255.0.0	
Adjustement	Enable DHCP	: No	
	Yes No		

4.6 Updating the software

The embedded software can be updated to get new features developed by SEFRAM.

- download from our web site (www.sefram.fr), the update software 786X_vX.X.ZIP
- Connect a USB memory stick to your computer.
- Extract the file in the USB memory stick.

Verify the contents of your USB memory stick:



• Remove the USB memory stick



• Power on the instrument and check that the battery has a minimum 30% charge (if not please charge the battery before upgrading)

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 Connect the USB memory stick to the TV Meter : few seconds later, the updating process need to be validate



• Move the highlighted line (reverse video) with up/down keys of the sensitive wheel, and then press the central key : the updating process is running



Caution: do not power-off the instrument during firmware update

• When updating is completed, disconnect the USB memory stick and restart your TV Meter.



The software is loaded in your appliance.

Errors messages may appear do not take account of this.

At the end of the update, turn off and then turn on the appliance.

5 AUTOSET Mode

This mode permits to perform an **automatic program search** and to inform the current place. To access this mode, press the key:



The lines displayed on this page depend on the wanted frequency bandwidth (line MODE).

Autoset					1 (ST-	-ETIENNI	E)
Mode		: T	errest	rial			
Frequency	map	:E	urope				
		Sea	rch param	neters]
Standar DVB-T/H V	Is DVB-T2	BG	DK X	I	L	MN 🗙	
Bandwic 5 MHz	6 MHz	7 MHz	8 MHz				
Remote 5V	supply 13V X	18V					
Te	er. Cab	le Sa	it. S	ican			

e		: Si	atellite	
		Sear	ch parameters	
Standard	s			
DVB-S	DVB-S2	DSS		
LNB band	ls			
Low High				
Vert.	Hor.	R	L X	
Symbol R	ates	101010-010		
22.000	27.500 V	29.900	30.000	



Satellite Mode



Cable Mode

After you have chosen a mode, use the up/down and left/right keys to move in the table. **The central key** on the sensitive wheel permits to confirm or to cancel an option.

A red cross shows the parameters that are not taken into account in searching. A green tick shows that a parameter is taken into account.



Caution: The more options are selected, the longer the search time will be.

5.1 Terrestrial Mode

This mode permits automatic search on the terrestrial frequency bandwidth.

The table permits to choose:

- Standards.
- Bandwidths.
- Remote supply.

Auto	set					1 (ST-	ETIENNE) 🚥
Mode			: 1	: Terrestrial				
Frequency map			: E	Europe				
			Sea	arch paran	neters			
	Standards DVB-T/H	DVB-T2	BG	DK X	I	L	MN X	
	Bandwidths 5 MHz 6 MHz		7 MHz 8 MH					
	Remote s 5V X	upply 13V	18V					
	Ter	. Cat	ole S	at. S	Scan			

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5.2 Cable Mode

This mode permits automatic search on the cable frequency bandwidth.

The table permits to choose:

- Standards
- Constellations
- Symbol rates



5.3 Satellite Mode

This mode permits automatic search on the **satellite** frequency bandwidth.

The table permits to choose:

- Standards
- LNB bands
- LNB polarisations
- Symbol rates

Autose	et				1 (ST ETIENNE	
Mode	Mode			tellite		
			Searc	h parameters		
	tandards VB-S [VB bands NB bands DW [VB polariza	OVB-S2 ▼ High ▼ ations	DSS			
	Vert. Hor.		R	X		
21	2.000 2	27.500	29.900 💌	30.000 🔀		
	Ter.	Cable	e Sat	. Scan		

5.4 « Scan » menu key

When you have correctly informed the table (terrestrial, cable or satellite), click on the « scan » key to launch search.



A warning message indicates that the current place will be erased. If you want to keep the current place, modify the place number in the Parameters page.

Pressing **YES** deletes the current place. It will be filled with the new values of the found programs. The screen below shows the progressing search:

When search is in progress, pressing « **Stop** » interrupts search.

Autos	set					1 (ST	ETIEN	INE)
Mode	e		: Te	errestri	al			
Frequ	lency ma	р	:Fr	ance C	able			
			Autose	et in progr	ess			
		s	tandard D	VB-T/H, c	hannel 2	26		
			Number	ofchanne	els : O			
	Stop							

The appliance goes automatically to the **Measurement Map** mode when search is completed or when the user stops search.
6 Configuration of Places

Pressing the key



permits to access the PARAMETERS function:

- Initialisation of the data included in each Place
- Initialisation of the data included in each Setup
- Choice of a Place among n places during a measurement session

The lines displayed on the page below depend on the Frequency bandwidth selected for this place.

Para Plac Frec Frec Thre Mes	ameters i.e. # quency band quency map esholds isages		: 1 (ST :5-865 : France	-ETIENNE) MHz Cable	1 (ST-ET.	IENNE)
#	name	freq.	chan.	standard	const.	rate -
0						
1	R1 CH PU	706.000	E50 8M	DVB-T/H	auto	
2	R2 L P B	490.000	E23 8M	DVB-T/H	auto	
3	R3 CANAL	618.000	E39 8M	DVB-T/H	auto	
4	R4 M6 AB	738.000	E54 8M	DVB-T/H	auto	
5	R5 VIDE	538.000	E29 8M	DVB-T/H	auto	
6	R6 TF1 N	514.000	E26 8M	DVB-T/H	auto	
7						
8	TF1	583.250	E35	L NICAM		
			Name	List	*.ini	

Terrestrial Band 45 - 865 MHz

Para Plac Frec Thre Mes	ameters te # quency band esholds ssages	:	3 (ASTRA 900-2150 M	NUM) 1Hz	3 (ASTR	A NUM)
#	name	freq.	const.	rate	band	pol. 🔺
0						
1						
2						
3						
4	DAS ERST	11836.000	DVB-S	27.500	Lo	H
5	CAN ALG	11568.000	DVB-S	22.000	Lo	V
6	DW-TV	11597.000	DVB-S	22.000	Lo	V
7	BIBEL.TV	10832.000	DVB-S	22.000	Lo	H
8	EURONEWS	11817.000	DVB-S	27.500	Hi	v
		N	lame Li	st	*.ini	

Satellite Band 900 - 2150 MHz

Parameters				0 (0123456789) 🔜
Place # Frequency band		: 0 (01 :2412-2	.23456789) 2484 Mhz	
	#	chan.	freq.	<u> </u>
	0	1	2412	
	1	2	2417	-
	2	3	2422	
	3	4	2427	
	4	5	2432	
	5	6	2437	
	6	7	2442	
	7	8	2447	
	8	9	2452	
	9	10	2457	
	10	44	2462	-
		Name	List	*.ini

Wi-Fi band

6.1 Parameters

Selecting a **place**

This choice can be made through a **Place** number (sensitive wheel or keyboard) or through the list of Places.

Menu keys:

- Name : Place name input (10 characters maxi)
- List: Choice of the current Place among the list of Places.

> Selecting a Frequency bandwidth for a Place

Menu keys:

- Ter. : terrestrial 5 -865 MHz with all standards of terrestrial TV
- Sat. : satellite 900 2150 MHz with all standards of satellite TV
- Wi-Fi : Wi-Fi 2412 2484 MHz (option)

> Modification of **Thresholds** (min. /maxi) for each standard.

Menu keys:

Modif. : displays the list of Thresholds for modification

To move on this menu use the direction keys. To modify a **Threshold** use the sensitive wheel. Press a function key to complete modification.

Modification of the header Messages (that can be used with the TR7836 software). Menu keys:

Modif. : displays the list of Messages for modification

To move on this menu use the direction keys. Data input starts by pressing a key on the alphanumerical keyboard.

• Yes/No : validates the printing of each message

Press any function key to complete modification.

6.2 Selecting a Frequency Map used in the instrument (Terrestrial Band only).

Menu keys:

- Modif. : displays the list of channels for modification
- List : displays the list of the frequency maps predefined in the instrument

To change the frequency map: press the sensitive key « Change » to enter your own information (channels)

Para	ameters									- +)
Plac	:e#			: 1 (ST	ETIEN	INE)				
Free	quency band			: 5-865 1	ЧНZ					
Free	quency map	ĺ	INPUT CHA	NNELS						
Thre	esholds		# 41:	634.000		MHz				
Mes	sages		# 42:	642.000		MHz				
#	name	fro	# 43:	650.000		MHz		const	rate	-
#	Iname	Ine	# 44:	658.000		MHz		CONSL.	Tate	
0		50	# 45:	666.000		MHz				
1	111	58.	# 46:	674.000		MHz				
2	A 2	54:	# 47:	682.000		MHz				
3	FR3	561	# 48:	690.000		MHz				
4	C +	601	# 49	698 000		MHz				
5	5 ARTE	82:	# 50	706.000		MHZ				
6	M 6	743	5.250	E33	LNI					
7	FR INTER	88	.000		FM					
8	EUROPE 1	104	1.800		FM					•
							×			

The **Frequency** of each **Channel** can be modified either by using the rotary wheel or by the keypad. The **Frequency Map** will be named '**User defined**'.



It is necessary to choose the frequencies map corresponding to the area where the instrument is used so that you have the right correspondence frequency / channel.

Caution:

A change in a Frequency map will erase a possible **'User defined'** plan previously used: there is only one possible frequency <-> channel correspondence in the appliance.

6.3 Setup list

List of all Setups included in the current Place.

Par	amete	rs					1 (ST E	TIENNE)
Plac Free Free Thr Mes	ce # quenc quenc esholc ssages	y band y map Is		: 1 (S :5-865 :user	T ETIENNE 5 MHz defined	E)		
#	nam	2	freq.	chan.	standar	ď	const.	rate 🗅
0		-						
1	TF1		583.25	0 E35	L NICA	М		
2	A 2		543.25	0 E30	L NICA	4		
3	FR3	}	567.25	0 E33	L Mono			
4	C +		607.25	0 E38	L Mono			
5	5 AR	TE	823.25	0 E65	L Mono			
6	Μ6		743.25	0 E55	L NICA	4		
7	FR I	ITER	88.000)	FM			
8	EURO	DPE 1	104.80	0	FM			-
		Modify	Dele	te Reset	S ^	Sv	Init.	

Menu keys:

- Modif : data input in a Setup
- Delete. : to delete information for a Setup
- Reset : to erase all Setups
- S ^: to move the selected setup to the line above
- Sv: to move the selected setup to the line below
- Init : initialisation of all Setups
 - from the Frequency Map on Terrestrial band (one Channel per setup)
 - with 14,5MHz step from 10714 MHz on Satellite Band

Pressing 'Modif' key in the setup list will display all the information concerning the setup for modification.

Para	ameters					TIENNE)
Plac Free Free	e # quency ban quency map	d	: 1 (ST :5-865 :France	ETIENNE) MHz Cable		
Thre	esholds	S	ETUP MOD	IFICATION		
Mes	sages	Name	:	TF1		
#	name	Frequency Channel	:5	83.250 MHz 5 (E35)	st.	rate 🔺
0	0	Standard	: L	(200)	QAM	6.875
1	TF1	Audio	: 6	.5 MHz NICAM		
2	A 2	Modulation				
3	FR 3	Symbol rate				
4	C +	607.250	E38	L MONO		
5	5 ARTE	823.250	E65	L Mono		
6	M 6	743.250	E55	L NICAM		
7	FR INTER	88.000		FM		
8	EUROPE 1	104.800		FM		¥
	Nam	1e				

Press the direction keys to access the parameters of the Setup.

Each line corresponds to an initialisation menu of the parameter concerned in the Setup.

Each **Setup** is described according to its structure (see chapter 2) that depends on the **Frequency band** chosen for the **Place**.

Press any function key to complete modification.

6.4 Thresholds

To change the Threshold (min / max).

lar	~~ #			· 1 (ST	FTI	ENNE	•		
icic				. 1 (51			-)		
мел	SUREMENT THRES	IOLDS							
dB	βμV	Video	Vide	o V/A1(dB)	V/A1	(dB)	V/A2 (dB)	V/A2 (dB 🔺
sta	andard	min	max	min		max		min	max
BG	G,DK,I,L,MN	57	74	10		17		23	31
BG	GIL NICAM	57	74	10		17		23	31
М	CNS	57	74						
D١	/В-С	57	74						
D١	/B-T/H,T2	35	70						
FM	1	50	66						
Ca	rrier	50	66						
5	R5 HD	538.0	000	E29 8M	D١	/B-T/I	H	auto	
5	R6 TF1 N	514.0	000	E26 8M	D١	/B-T/I	н	auto	
7									
3	TE1	583.2	250	F35	11	NTCAN	1		

Para	meters							3 (ASTI	RA NUM) 🖚
Plac Frec	e # Juency band	ĺ	MEASUREMENT	3 (AS		UM)				
Mes	sages		dBµV standard		Video min	Video max	-			
#	name	frec	SECAM		50	100		LNB	pol	<u>^</u>
0			NTSC		50	100				
1			DVB-S2		40	100				
2			DVB-S		40	90				
3			DSS		20	120				
4	DAS ERST	118	30.000	DAR	5 /	27.500	100	L	н	
5	CAN ALG	115	68.000	DVB-	s a	22.000		L	V	
6	RTM	115	97.000	DVB-	S 2	22.000		L	V	
7	T TV	108	32.000	DVB-	S 2	22.000		L	н	
8	EURONEWS	118	17.000	DVB	S 2	27.500		Н	V	•
		1		_	Init	•	-			

Terrestrial Band

Satellite Band

Use the arrow to move into the table.

To change a **Threshold**, use the rotary sensitive encoder.

Pressing « Init » will reset all level to their default values: in $dB\mu V$

Standard	Min	Max
Analogue terrestrial	57	74
DVB-C, MCNS	57	74
DVB-T/H DVB-T2	35	70
FM, carrier	50	66
Analogue satellite	47	77
DVB-S, DSS	47	77
DVB-S2	47	77

Thresholds are used in « Level / Power » and « Measurement Map » functions:



6.5 Import « *.ini » file

What is an « *.ini » file?

An «*.ini » file contains place's parameters (terrestrial or satellite). File's data can be imported in the place's program table using a USB stick.

Where can be found « *.ini » files?

European satellite « *.ini » files can be downloaded at <u>http://en.kingofsat.net/</u>, in the directory called « Satellite Directory » (<u>http://en.kingofsat.net/satellites.php</u>). These files are updated regularly: So it's advised to go on this website to get the latest information.

How to process?

Click on the following link <u>http://en.kingofsat.net/satellites.php</u> to access the website.

It is advised to fill this tick box to get a better accuracy of the frequencies

irectory -	KingOfSa	t - Windows	In*	rnet Exp	lorer									
🚮 http://e	n.kingofsat.	net/satelitp	hp									- ++	× Live S	iearch
🔹 🏭 Sate	lite directo	v .king0 >		KingOfSat	- Annuaire	e & Zappi						11	a • 🔊	• 🖶 • 🔂 Bage
	N	enerate ini fil	es wi	th frequer	ncies in k	Hz (allow)	more com	nlete sc	ans for lo	w SRs_compatibility	denen	ding on s	software u	sed)
Orbital position •	Azimuth	ElevationNev	e .ini	Total Ku	Total C	Free To Air only		=0))	1221	Satellite	Incl.	Total	Free To Air only	Last updated
4.0°E		6	8	0	0	0	0	0	0	EuroBird 4	0.17*	-	-	2009-01-21 17:38
4.8°E		6	8	687	0	182	524	85	78	Sirius 4	0.03*	687	182	2009-01-22 13:51
										Astra 1C	2.20*	-	-	2009-01-19 17:28
5.0°E		6	S	11	0	7	11	0	0	Sirius 3	0.120		- 7	2008-01-24 08:24
7.0*5		-		206	0	107	100	70	50	Thor 2	0.72*	206	107	2009-01-09 22:33
7.0 E		6	*	320		12/	192	70	30	Euteisat W3A	0.06*	320	12/	2009-01-21 1914/
9.0 E		0	2	220	0	04	195	24	6	Europird 9	0.024	220	04	2009-01-22 23:00
10.0 E	-	0	8	- 33		24	24	3	0	Eutersat W1	0.064	33	24	2009-01-03 20:41
										Hotbird 5	0.06*	602	438	2009-01-22 21114
13.0°E		6	° 🗞	1933	0	1114	1294	497	142	Hotbird 8	0.079	773	437	2009-01-22 21:13
										Hotbird 9	3.884			2009-01-19 22:38
16.0°E			0	60.2	0	242	245	100	67	Eutelsat W2	0.04*	502	243	2009-01-23 10:19
10.0 E		*	•	502		245	343	100	57	Eutelsat W2M	0.08	-		2009-01-19 22:40
										Astra 1B	0.80*	-	-	2008-04-07 21:36
										Astra 1P	0.00*	03	30	2009-01-19 22:15
10 2°E		1		1606		052	1015	224	107	Astra 14	0.00	545	415	2009-01-22 21:15
19.2 E		~	~	1520	۲	900	1015	324	107	Astra 1KR	0.079	266	135	2009-01-21 16:55
										Astra 1L	0.06*	305	194	2009-01-22 21:15
										Astra 1M	0.09	81	37	2009-01-22 10:42
21.5°E		6	\$	31	0	28	13	3	15	Eutelsat W6	0.07*	31	28	2009-01-20 19:44
			-	100		477.4	077			Astra 1E	0.06*	125	59	2009-01-22 13:22
23.5°E		6	8	455	0	1/4	2//	140	38	Astra 3A	0.08*	330	115	2009-01-15 18:43
25.5°E		6	8	126	0	59	114	10	2	EuroBird 2	0.06*	126	59	2009-01-22 23:06
26.0*5		1	0	125	0	205	222	96	7	Badr 4	0.07*	261	260	2009-01-22 10:44
20.0 E		2		35	U U	395	332	90	· ·	Badr 6	0.04°	174	135	2009-01-22 15:03
26.2°E		6	\$		0	0	0	0	0	Badr C	0.00*	-	1.1	2008-08-19 21:41
											1		Intern	et

For example, to download Astra 23.5°E « *.ini » file, click here.





Note: The file which contains data for Astra 23,5°E is called « 0235.INI », the file for Astra 19,2°E would be called « 0192.INI », etc.

Then copy « *.ini » files in a directory called « INI », which is located at the root of a USB stick:

😂 INI				_ _ ×
<u>File Edit View Favorites Too</u>	ls <u>H</u> elp			
🔇 Back 👻 🕥 🖌 🏂 🔎 S	iearch 🔀 Folders	> 🗙 🖌 📖 -		
Address C K:\INI				💌 🛃 Go
Folders	× Name 🔺	Folder Size	Туре	Date Modified
	• 0192.ini	ЗКВ	Configuration Settings	1/23/2009 12:44 PM
1 objects			2.29 КВ 🛛 🛃 Му	Computer //

Put the USB stick in your equipment and press the « *.ini » button.

Place # : 1 (ST-ETIENNE) Frequency band : 5-865 MHz Frequency map : France Cable Thresholds	
Messages	
name freq. chan. standard cons	t. rate
0	
1 R1 CH PU 706.000 E50 8M DVB-T/H aut	0
2 R2 L P B 190.000 E23 8M DVB-T/H aut	0
3 R3 CANAL 618.000 E39 8M DVB-T/H aut	0
4 R4 M6 AB 738.000 54 8M DVB-T/H aut	0
5 R5 VIDE 538.000 E29 8 DVB-T/H aut	0
6 R6 TF1 N 514.000 E26 8M DVB-T/H aut	0
7	
8 T F 1 583.250 E35 L NICAM	
Name List	*.ini



Para	amete	ers						ENNE)
Plac	e #			: 1 (S	-ETIENNE	:)		
Free	quer	INI FILES						
The	esho	D130KHZ.	INI					
Mee	san	0192.001						_
mes	J			Current pla	ce will be d	eleted!		
#	nai			Plea	ase confirm			te –
1	D1							1
2	P2							
3	R3							
4	R4							
5	R5							
6	R6							
7	1							
8	TF	1	583.250	E35	L NICAN	1		
						No	Yes	

Warning: the « *.ini » file will be copied on the current place.

the « Copy » button.

Press « Yes » to fill the current place with the « *.ini » file (if not, the operation will be cancelled).

7 Spectrum Analyser

Pressing the

key gives access to the SPECTRUM ANALYSER function:

• Graphic representation of frequency / amplitude for signals present at the appliance input

2 modes are available: expert mode and normal mode. This selection is made at **Configuration** page and **Expert Spectrum** line.

7.1 Simple Spectrum



Satellite Mode



The modifiable parameters are the following:

- **Cursor** : Fast positioning of the cursor, search for peaks
- Span : Frequency span around the central frequency
- RefLevel : Reference level (scale of amplitudes maximum value)
- dB/div : Step of the amplitude scale 5 dB or 10 dB
- Setup: Pressing this key permit to switch from one setup to another by using the sensitive wheel.
- **Polar:** Change of polarisation (horizontal, vertical, right, left) (satellite mode).
- **Channel**: Pressing this key permit to switch from one channel to another by using the sensitive wheel (terrestrial mode).
- Full: Full span mode permitting to have a maximum frequency span.
- Auto : Automatic reference level

The measurement cursor can be moved by using the sensitive wheel or the direction keys (RIGHT and LEFT).

The input attenuator automatically positions itself according to the Reference level.

The filter automatically positions itself according to the « span ».

7.2 Expert Spectrum

7.2.1 Description



Satellite Mode



The modifiable parameters are classified by themes:

- → Freq. : gives access to the following parameters :
 - ✓ Fmin : frequency at the beginning of sweep
 - ✓ Fmax : frequency at the end of sweep
 - ✓ Fcenter : central frequency
 - ✓ Span : Frequency span around the central frequency
 - ✓ Full: « full span »; Positions automatically span at its maximum value.
 - ✓ Setup : recalls a setup

You can fit Fmin and Fmax or Fcenter and Span according to your needs.

For modification, use the sensitive wheel if the parameter is in reverse video.

- → Level : gives access to the following parameters :
 - ✓ RefLevel : reference level (maximum value of the amplitude scale)
 - ✓ Atten. : input attenuator
 - ✓ **dB/div** : step of the amplitude scale 2 dB, 5 dB or 10 dB
 - ✓ Auto : automatic reference level

For modification, use the sensitive wheel if the parameter is in reverse video. The input attenuator positions itself automatically according to the reference Level.



Pay attention to the risks of saturation, use the following formula :

Input attenuator = Reference level – 50 dBµV.

Cursor : fast positioning of the cursor, search for peaks :

- < < Peak : on the peak preceding the cursor</p>
- Peak > : on the peak following the cursor
- Min/Max : on the point on the screen, alternately Maximum and Minimum
- → Ref. : positioning of a Reference cursor (cross) for Delta or C/N measurement
- \checkmark \rightarrow Fcent : the cursor's frequency becomes the centre frequency (if possible)

-78637863^{HD} -78657865^{HD}7865^{HD}7865^{HDT2}-78667866^{HD}7866^{HDT2}-

- → Mode: functioning modes (max, average...):
 - ✓ Normal : sweep in service, instantaneous measurement
 - ✓ **MaxHold** : sweep in service, storage of the maximum level for every frequency
 - ✓ Average : sweep in service, averaging of level for every frequency
 - ✓ Single : single-shot mode, every press launches a new sweep mode
 - ✓ Fast: sweep in service, fast mode, without level measurement, with 350 points whatever the current Span is.
 - ✓ Fill : filled spectrum drawing, or only crest points (toggle)
- → Measure: automatic measures (power, C/N...):
 - ✓ Level: measurement of the signal's amplitude at the cursor.
 - ✓ Delta : measurement of the amplitude between the two cursors
 - ✓ **Power**: automatic measurement of the digital carriers' powers
 - ✓ C/N : automatic measurement of C/N
- → LNB: Band / polarisation adjustment + Remote supply on / off + positioner adjustment (only in Satellite band if there is a positioner).
 - ✓ Lo/Hi : high Band / low Band switch
 - ✓ **H/V/R/L** : horizontal, vertical, right, left polarisation switch
 - ✓ On/Off : remote supply on / off
 - ✓ Posit. : gives access for modification of positioner

The "Posit." menu key permits to control a positioner supporting a dish:

- ✓ **<West** : moves the dish westwards
- ✓ **East>**: moves the dish eastwards
- ✓ Stop : stops the movement
- ✓ **Store** : saves the current position in the position current number
- ✓ Calcul. : recalculation order of the positioner's other positions

A long press on the "<West "and "East> "keys launches a continuous movement. Press "Stop" to stop this action.

Automatic **Power** measurement:

- Positioning of the reference level
- Search for the noise before and after the cursor location
- Calculation of the area between these two limits
- Display of the value

Automatic **C/N** measurement:

- Positioning of reference level
- Search for Maximum peak level
- Search for noise level
- Display of level difference

These searches depend on the current Standard on the Spectrum:

- Analogue standards : maximum in **Max** mode (AM), noise level in **Average** mode (average)

- Digital standards : maximum in **Average** mode (average), noise level in **Average** mode (average) To get a coherent measure, it is necessary that you had recalled a Setup on the Spectrum; frequencies, Span and Standard are automatically positioned.

The measurement cursor can be moved by using the sensitive wheel or the LEFT and RIGHT cursor keys.

7.2.2 Operating the manual C/N measurement

Measurement on analogue carrier or on digital carrier.

To minimise the appliance's noise:

→ Program a reference level as low as possible (greater dynamic range).

Measurement:

- → for an AM modulated analogue video carrier, select Max mode
- → for a digital carrier, select MaxHold mode
- → position the cursor on the carrier (in the middle for a digital carrier)
- → shift to **Delta** measurement and put the reference (→ **Ref**) on the highest point
- → shift to MaxHold and move the cursor to an area with no carrier (Noise)
- → C/N is displayed at the top and in the middle of the screen

7.3 Satellite identification

In spectrum mode for satellite band, pressing the Autoset key



will valid the automatic recognition of the satellite by reading information of the MPEG NIT.

The recognition is made in several steps:

- The software try to identify a digital transponder close to the cursor
- The software try to be locked, using various symbol rates in DVB-S, DSS et DVB-S2
- When locked, the software waits for the MPEG NIT information
- It displays : satellite name, position, Network Name et Network ID

Messages are displayed if problem:



→ Impossible to lock: wrong frequency, wrong symbol rate, wrong standard...



→ Impossible to identify satellite: no valid NIT information, unlocked...



Many broadcasting companies does not give correct MPEG NIT information

Information displayed may have errors.



At the end of the process, the satellite information is displayed:

8 Check satellite for Single and Double LNB

Π

In Satellite band only. The check satellite mode allows a fast alignment of satellite dish by the initial choice of the satellite to be received.

Pressing the satellite band.



key twice gives access to the CHECKSAT function when the current Place is in



The appliance has 30 pre-programmed satellite orbital positions in storage. Each satellite possesses 4 transponders.

The TV Meter is supplied with 9 satellites installed (factory recovery)

8.1 SeframSat software

8.1.1 Installation

You can download the SeframSat software on our website (www.sefram.fr).

SeframSat software permits to inform correctly one or several satellites. Each satellite is characterised by 4 transponders.

- Double-click on setup.exe file to install the software on your PC.
- Launch **SeframSat** software (Start→Programs→SeframSat).

By default, the software is delivered with a valid satellite list installed in the SeframSat installation directory.

Example: how to open « europe.sat » file:

								satellit
		-						
		Fict	SeframSat version 2 nier/File Instrument F	AU Port Baud Données/Da	ta			
			TURKSAT 1C	ASTRA 2	ASTRA1			
			THUR 2	ATLANTIC3	ATLANI			
			Satellite	Position	Band			
			HISPASAT	30,0 West 💌	Ku Band 💌			
			Frequency (MHz)	Standard	Symbol rate (kS/s	Polarity		
1 transponders		-	11579	DVB-S 🔹	27500	H 🗉 🙂		
4 transponders	//		11931	DVB-S 💌	27500	н • 🙂		
	\sim		11682	DVB-S	3800		· +	
			11535	DVB-S	24500			
		L						

Every satellite is characterised by:

- its name
- its position
- its band (C or Ku)
- 4 transponders

Every transponder is characterised by:

- a frequency
- a standard
- a Symbol rate
- a polarity

8.1.2 How to use SeframSat

Set **SeframSat** software depending on the appliance you are using:

- → « **Instruments** » permits to choose the target appliance.
- → « TCPIP » permits to choose the address of the appliance (see paragraph « Connecting the appliance to a PC »).

The different controls permitted by SeframSat are:

- → « File » then « Open » permits to open a *.sat that includes a satellite list.
- → « File » then « Save » permits to save all the defined satellites.

SeframSat version 2 chier / File Instrument F	2.0 Port Baud Données/Da	ta				3	
TURKSAT 1C THOR 2	ASTRA 2 ATLANTIC 3	ASTRA 1 ATLANT	EUTEL W2	 HIS	HOT BIRD SPASAT		Sends the list of satel- lites contained in the appliance to SeframSat software.
Satellite HISPASAT Frequency (MHz) 11579	Position 30,0 West Standard DVB-S	Band Ku Band Symbol rate (kS/s 27500	Polarity H 💌	•			Sends the list of satel- lites contained in Se- framSat software to the appliance.
11931 11682 11535	DVB-S DVB-S DVB-S	27500 3800 24500	H • V •	() () () () () () () () () () () () () (+		Addition of a satellite to the current map.
							Deletes the selected satellite from the curren map.

SeframSat permits to characterise completely one or several satellites: each parameter can be modified either directly by keyboarding its value or by selecting from a drop-down list.

Example: How to send the « europe.sat » file to the 7855 appliance.

-Click on « instrument » and tick « 7851-7856 »

-Click on « port » and select the right COM port.

-Click on « file-> open » and search for the « europe.sat » file.

-Click on

:

to transmit the satellite list to the appliance.

8.2 CheckSat mode interface





8.3 CheckSat single LNB

Permits to direct a dish towards a satellite. Menu keys:

Alignment : Dish alignment parameters calculation

T1	T2	Т3	T4	•	:	Modifi-
cation of	paramete	ers for tra	ansponde	r 1, 2, 3 or 4.		
Double		•		: Double CheckSat mode.		

8.3.1 CheckSat information

Operating mode:

1/ Set your TV Meter in Satellite Mode: (see chapter « Places Parameters »)

2/ Connect the dish towards the appliance and turn it on.



5/ Slowly connect the dish until you get the maximum of level and you can hear the locking melody.

6/ Adjust the LNB to get the best quality (against polarisation).

You can hear a melody when the first transponder is found and then you can hear beeps. These beeps are becoming shorter when quality increases.

If the appliance is not synchronised on any transponder the smiley is red.

If the appliance is synchronised and if the reception quality is average the smiley is orange.

If the appliance is synchronised and if the reception quality is good the smiley is green.

Caution: To identify correctly a satellite, the appliance must be synchronised on the **4 transponders**.

However certain transponders are modified regularly. Please see the satellite's frequency map when some transponders are lost.

Some switches or LNB work only with DiSEqC. In this case, position the LO and the DiSEqC polarisation on the LNB-DiSEqC configuration page. (Caution: By using DiSEqC, CheckSat is slowed down).

8.3.2 Checking the satellite

П÷

You can verify that the satellite pointing is correct by pressing



The device will then search the table MPEG NIT on one of the 4 transponders and displays the name of the satellite:





8.3.3 Alignment of the dish

Pressing the sensitive key "**Alignment**" under the screen is used to calculate values Elevation, Azimuth and Polarization (LNB skew) of your dish:



Parameters:

- Satellite 1 : satellite pointer; 1st satellite on a multi-head dish
- Satellite 2 : 2nd satellite dish on a multi-head
- Latitude : latitude of your current location
- Longitude : longitude of your current location

Calculations:

- Satellite : satellite point closest to the middle position between Satellite1 and Satellite2
- Elevation : inclination of the parabola
- Azimuth : horizontal position of the parable in relation to North
- Polarization : rotation of the LNB from the vertical (skew)

Azimuth

That is the position of the dish on a horizontal plane relative to the north. Measured in degrees.



Elevation

It is the inclination with which the beam arrives from the satellite signal up to your antenna. Measured in degrees and using what is marked on the support of the dish.



Polarization

This is the rotation that must be the LNB from the vertical soil. It is measured in degrees.



To calculate the parameters of a simple head dish, enter the same satellite to point to the settings 'Satellite 1' and 'Satellite 2'.

Ш

Note: The list of satellites available for this calculation is the same list used in Check Sat.

Use the software SeframSat to change it (addition / removal of satellites).

8.4 CheckSat double LNB

This mode permits to direct a double LNB by checking 4 transponders on your 2 chosen satellites. It works the same way as the normal CheckSat Mode.



Satellite A is on the left side of the screen and Satellite B is on the right side.

Menu keys:

•	T1	T2	T3	T4	: Modification of parameters for Satellite A's transponder 1, 2, 3 or 4.
•	T5	T6	T7	Т8	: Modification of parameters for Satellite B's transponder 1, 2, 3 or 4.

The left/right direction keys permit to switch from Satellite A to Satellite B and vice versa.

The sensitive wheel permits to modify the current satellite (change of satellite according to the list sent by SeframSat software).

To exit from this mode, press any function key.

8.5 Modification of a transponder's parameters

Pressing one of the Tx keys permits to modify the transponder associated with the number x:

- T1 \rightarrow Modification of transponder 1 associated with satellite A.
- T2 \rightarrow Modification of transponder 2 associated with satellite A.
- T3 \rightarrow Modification of transponder 3 associated with satellite A.
- T4 \rightarrow Modification of transponder 4 associated with satellite A.
- T5 \rightarrow Modification of transponder 1 associated with satellite B.
- T6 \rightarrow Modification of transponder 2 associated with satellite B.
- T7 \rightarrow Modification of transponder 3 associated with satellite B.
- T8 \rightarrow Modification of transponder 4 associated with satellite B.

For every line there is a different menu:





key to go back to normal or double CheckSat.



Activating or deactivating a transponder permits to accelerate the search for active transponders.



Please, choose transponders with high rate in order to get a fast alignment of satellite dish.



9 Image and Sound

Pressing



the key gives access to the IMAGE AND SOUND function.

9.1 **Analogue TV**

- Display of terrestrial analogue images •
- FM radios
- Sound, brightness, colour, contrast controls
- Full screen mode, external video signal display
- Display of the top sync signal of the video lines
- Display of the entire video lines (video scope)



Settings of volume, brightness, contrast, colour and shade

Menu keys:

T٧ Ø0

:

:

:

:

:

- Measure
- OSD
- Top sync Scope
- Video oscilloscope 2
- Internal image source :

Full screen mode

external image source : input on audio/video connector ÷

Inlay of the level measurement bargraphe Inlay of the LEVEL MEASUREMENT function

Inlay of the Top of synchronisation

AV -> AV <-

9.1.1 Settings of volume, brightness, contrast, colour and shade



Settings of TV image parameters by using the sensitive wheel.

Menu keys:

- ۱

- Setting of volume with the sensitive wheel.
- Setting of brightness with the sensitive wheel.
- Setting of contrast with the sensitive wheel.
- : Setting of colour saturation with the sensitive wheel.

9.1.2 Full Screen Mode

The different full screen modes are described below:



Menu keys:

- Zoom +
- Preampli

IF

- : switch on and off 20 dB preamplifier (Analogue TV, DVB-T/H and DVB-T2)
- : spectrum inversion for a correct visualisation of IF signals (Analogue TV 5 45 MHz)

: full screen mode; erase menu keys drawing on screen

: full screen mode; with picture zoom in

9.1.3 Measurement

Inlay of level measurement



9.1.4 OSD (Inlay)

Inlay (On Screen Display) of the level measurement and of the associated parameters (Setup, Frequency, Channel, Standard...).



You can modify these parameters the same way as in the LEVEL MEASUREMENT page.

9.1.5 Top sync.

Inlay of the Top of Synchronisation of video lines.



9.1.6 Video scope

Obtaining and displaying video lines (video oscilloscope).



You can select the displayed video line by using the sensitive wheel or the L17... menu key that shows the most frequent test lines.

Menu keys:

- 200mV : set vertical gain to 200 mV
- Var : modify the vertical gain
- Var + : modify the vertical gain
- Hold : freezes sweep.

The information displayed on the right of the display window is:

- Synchronisation of the video line acquisition (Sync ? / Sync OK)
- Detected colour norm (PAL / SECAM / NTSC ?)
- Number of the line currently displayed
- Y : vertical scale (amplitude)

• X : horizontal scale (time)

The direction keys permit to centre the acquisition in the screen.

9.2 DIGITAL TV

- → MPEG DVB-T/H, DVB-T2, DVB-C, MCNS, DVB-S, DVB-S2 and DSS
- → Service table
- → Table lookup :PMT (PID) and NIT

The service's name and main characteristics are displayed at the top and on the right on the screen.

- MP@ML main profile main level 720 pixels, 576 lines.
- 25 Hz frame frequency
- 4:2:0 brightness and chrome encoding
- 48 kHz audio sampling frequency



For HD version

- 1440X1080i video format number of pixels, interlace mode
- 25 Hz frame frequency
- H.264 video compression
- 10.306 Mbits/s video rate
- Dolby Digital audio compression



$-\,7863\,7863^{\rm HD} - 7865\,7865^{\rm HD}\,7865^{\rm HDT2} - 7866\,7866^{\rm HD}\,7866^{\rm HDT2} -$

Menu keys:

T٧

- : Full screen mode (see 9.1.2)
- : Settings of volume, brightness, contrast, colour and shade (see 9.1.1)
- OSD : Inlay of the LEVEL MEASUREMENT function (see 16)
- **Serv**. : Service display
- **PID** : PMT table display (information on multiplex)
- : NIT table display (information on network)
- AV -> : Internal image source
- AV <- : External image source : input on audio/video connector

9.2.1 Service table

List and selection of the Services present in the multiplex The provider and the type of service (TV, Radio...) are also displayed:



	SERVICE LIST			5 112 11 264
	📑 RTL HD	CBC	MPEG4 HD	.576 Mbit/s
AST	📑 VOX HD	CBC	🔐 MPEG4 HD	ligital
	📕 ANIXE HD	BetaDigi	MPEG4 HD	*
and the second	ASTRA HD	BetaDigi	MPEG4 HD	
The second second				and the second second
and the				States and the
an and a post of				
				m
	and the second			

9.2.2 PMT table (PID)

Display of the « Program Map Table » of the multiplex The different PIDs are described.

In case of a multilingual transmission, language can be modified:

- move highlighting on desired PID
- press sensitive menu key 'Valid'

9.2.3 NIT table

Display of the « Network Information Table » of the multiplex

The network's name and other useful information are also displayed in this list.





9.2.4 Access rights / access card

Please find the access card at the back of the appliance (option according to appliance type).



When displaying an encrypted channel, the processor checks if there is a user card and if the encryption mode is compatible.

9.3 Sound

The instrument is able to demodulate sound of analogue TV for the systems:

BG, DK, I, L, MN and also FM audio

The instrument is able to decode digital sound for the following coding systems:

MPEG-1 L1/L2 AAC Advanced Audio Coding HE-AAC High Efficiency AAC Dolby Digital Dolby Digital Plus

License Via Licensing License Via Licensing License Dolby® License Dolby®

Manufactured under license from Dolby Laboratories Dolby and the double-D symbol are trademarks of Dolby Laboratories

9.4 ASI input output (for 7865HD, 7866 & 7866HD only)

The model 7866 is equipped with one MPEG ASI output and one ASI input (« Asynchronous Serial Interface »).

This is a transmission in serial, asynchronous at 270 MHz over a coaxial cable of the MPEG transport stream to input a digital modulator or a MPEG TS analyser for example.

10 Level / power measurement

Press the key



to access to the LEVEL MEASUREMENT function:

- Perform a level measurement for a specified frequency with detection and a filter appropriate to standard.
- Record level during a determined duration.
- A hearing aid is available to find the maximum reception without seeing the device.

•

llf

You can either perform measurements on a stored setup (see chapter « Configuration of Places »), or modify manually parameters for each parameter line.

In terrestrial band, for a user socket the level must lie :

- between 50 and 66 dBµV in FM
- between 35 and 70 dBµV in DVB-T/H and DVB-T2
- between 57 and 74 dBµV in any other case.

In satellite band, for a user socket the level must lie : • between 47 and 77 dBµV.

Signal level Setup # Frequency Channel Standard Audio	: 1 (T F 1 : 583.250 : 35 (E35) : L : 6.5 MHz	L) MHz NICAM	1 (ST E		+>	Signa Setup Frequ Band, Stanc Symb	l level # lency /Polar. lard ol rate	: 11863.0 : Low/Ver : DVB-S : 27.500 I	00 MHz tical Ms/s	3 (ASTI		
V 80.5dBuV	40	60	80	100	120	RF	20 76.3dBµV	40	60	80	100	120
	10	20	30	40	50	C/N	12.2dB	5	10	15		25
-1 <u>0</u>	0	<u>10</u>	20	30	40	VLNB	13.6V	5	10	15	20	25
V/A1 10.1dB							0	100	200	300	400	500
V/A2 28.1dB						ILNB	28.2mA					

Terrestrial Band





Wi-Fi band

10.1 Parameters

Every menu depends on the parameter in reverse video.

The different parameters are:

10.1.1 Terrestrial band

• Setup #: Selected setup.

Allows user to select **Programs** in the selected Place. This choice can be made by using the sensitive wheel, the keyboard or the list of Setups.

• Frequency: Selected frequency.

You can change the selected frequency by using the sensitive wheel, the keyboard or the $\ensuremath{\textit{frequency}}$ $\ensuremath{\textit{Map}}.$

Menu keys:

✓ **Map:** choice of a frequency in the frequency Map

Channel : Selected channel

This choice can be made by using the sensitive wheel, the keyboard or the **frequency Map**. Menu keys:

✓ 5 MHz, 6 MHz, 7 MHz, 8 MHz: choice of the DVB-T/H or DVB-T2 bandwidth.

✓ Map: choice of the Channel in the Frequency Map.

• Standard: Selected standard.

This choice is made by using the menu keys (they show all the available standards). Menu keys:

✓ All available standards on the Terrestrial Band.

• Audio: Selected audio Mode.

This choice is made by using the menu keys (they show all the available Modes). Menu keys:

✓ Mono, Stereo and NICAM

10.1.2 Satellite band

• Setup #: Selected setup.

Allows user to select **Programs** in the selected Place. This choice can be made by using the sensitive wheel, the keyboard or the list of Setups.

• Frequency: Selected frequency.

You can change the selected frequency by using the sensitive wheel or the keyboard.

- Band / Polar. : Choice of Bandwidth and LNB polarisation (Local Oscillator)
 - ✓ Low : set the LNB on LO1 (display of BIS frequency + LO1)

- ✓ **High** : set the LNB on LO2 (display of BIS frequency + LO2)
- ✓ Vert.: LNB Polarisation is switched to Vertical mode.
- ✓ **Hor.:** LNB Polarisation is switched to Horizontal mode.
- ✓ **Right:** LNB Polarisation is switched to Right mode.
- ✓ Left: LNB Polarisation is switched to Left mode.

This choice is made accordingly to the type of LNB that you have selected (Function key LNB-DiSEqC).



Caution: All information concerning LNB and positioner is transferred through the remote supply; 22 kHz modulation or DiSEqC is combined with the DC supply generated by the appliance.

• Standard: Selected standard.

This choice is made by using the menu keys (they show all the available standards). Menu keys:

✓ All available standards on the Satellite Band.

• Symbol rate: Symbol rate of the current setup. This choice can be made by using the sensitive wheel, the keyboard or the menu keys.

10.1.3 Wi-Fi band

- SSID Service Set Identifier : network name
- Channel : Wi-Fi channel
- Frequency : channel frequency
- Symbol rate : possible symbol rate of the network



Please remove the Wi-Fi adapter when you do not need it It reduces the battery life and slows down the operations

10.2 Measurements according to Standard

The appliance performs various measurements depending on the selected standard.

The possible measurements are as follows: Average measure, Peak measure and Power measure.

10.2.1 Terrestrial Band

The appliance automatically performs level measurements on **Video Carrier** and on 1 or 2 Audio **Carriers** (depending of the selected Audio mode).

Standard Video carrie		measure	Audio carriers		
			Mono	stereo	NICAM
BG	negative, AM	peak	FM	FM	DQPSK
			5,5 MHz	5,74 MHz	5,85 MHz
DK	negative, AM	peak	FM	FM	DQPSK
			6,5 MHz	6,258 MHz	5,85 MHz
I	positive, AM	peak	FM		DQPSK
			6,0 MHz		6.552 MHz
L	positive, AM	peak	AM		DQPSK
			6,5 MHz		5.85 MHz
MN	negative, AM	peak	FM	FM	
			4,5 MHz	4,72 MHz	
DVB-C	digital	power			
MCNS	digital	power			
DVB-T/H, T2	digital	power			
FM	FM	average			
Carrier	Non modulated	average			

The table below shows the different types of measures and the audio carriers frequencies for each Standard.

The appliance shows the Video carrier level, the Video-Audio ratio(s) and the C/N ratio.

The display is made of 1 to 4 measures and bargraphe.

The Audio carriers are always measured in Average measure.

10.2.2 Satellite Band

standard	Video carrier	measure
PAL	FM	peak
SECAM	FM	peak
NTSC	FM	peak
DVB-S	digital	power
DSS	digital	power
DVB-S2	digital	power

10.2.3 Wi-Fi Band

Measure the level in dBm received with the Wi-Fi adapter.

10.3 Recording measures over time



Pressing twice the **LEVEL** function key permits to display the graphic recording of measures.

The legend shows by colours the measures being recorded.

You can set the recording time by using the menu keys (from 10 minutes to 7 days).

At the end of the chosen duration, record is stopped and is still displayed on the screen until you press a key.



Caution: Exiting from the Recording mode initialises record.
11 GPS Mode

Pressing the key



gives access to the GPS function (for 7856 only):

- * geographic co-ordinates (latitude, longitude)
- * Level or Map simultaneous measurement
- * position graphical display
- * record of measure and position in a file

At the beginning, the appliance searches for several satellites so that it can position itself correctly. The "GPS status" zone displays the GPS co-ordinates provided by the embedded GPS module. The "Signal level" or "Measurement map" zone displays the associated measure.

GPS		1 (ST-ETIENNE)
Cold Reset	. Invest	
Measure type	: level	
Display scale	· 100 m	
GPS File	: MEM16.GPS	
GPS status		Signal level
UTC time : 12:00:06	Setup	Frequency 607 250 MHz
Longitude: 4°22.658 E		82.0dBµV
Quality : GPS		
Satellite: 7		
		*

11.1 Parameters

The parameters of the GPS acquisition are displayed on this screen. You need to initialise them before Starting to record.

- → Type of measure: Type of measure recorded with the geographic position.
- → Acquisition: Acquisition mode to record a point in a file. (Manual, Timer, Distance).
- ➔ Datum: Selection of the Geodesic Datum corresponding to your country and to your GIS external software. You can change the Datum by using the sensitive key or by selecting a Datum from the list.
- → Display scale: Scale for the graphical display of GPS co-ordinates.
- ➔ File GPS: Name of the GPS file for recording positions and measures. Extension is always *.GPS. The records will be done only in the graphical GPS screen; see next chapter.

11.2 Graphical display

Pressing twice the GPS key permits to display the co-ordinates on a graph:



Menu keys:

- Init : resets the GPS display, the centre becomes the current position
- Start : opens the GPS file to start recording
- Stop : closes the GPS file
- Record : records a point (position/measure) in the GPS file

The graphical zone represents the display of the current co-ordinates from the original position (initialised by a press on the "Init" key)

The current position is displayed by a YELLOW cross.

The other crosses, representing the recorded points, are displayed in colour:

- RED, for Level Measurement outside the thresholds of the current Standard
- GREEN, for Level Measurement between the thresholds of the current Standard
- BLUE, in Measurement Map as an associated measurement

Caution:

- 'Init' does not close the current GPS file, it only resets display
- in Timer or Distance acquisition mode, the 'Record' key is always active so you can force
- a record (by pressing the key)

11.3 Saving a file

- → initialise the parameters described above
- ➔ enter a GPS file name; you cannot add records to a previously created GPS file, a warning message will be displayed
- ➔ wait for the GPS satellites search to be completed ; when a stable position is displayed, you can start recording
- → close the GPS file when acquisition is completed

The data saved in the file is:

- file's name, date and time
- measured setup(s) (frequency, standard, thresholds)

and for each point:

- date
- time
- latitude
- longitude
- number of satellites that can be seen
- level for each Setup

Caution:

- if the GPS positioning is interrupted (too few satellites to calculate co-ordinates for example), recording is suspended

- the file is still valid even if it has not been closed (power cut-off for example)

- the measurement time may be long; an hourglass is displayed when a point is being recorded

-if the measurement time is higher than the programmed rhythm (Timer mode); the recording period will be given by the time that measuring took

- when the number of records reaches the maximum (see Specifications), the file is automatically closed

11.4 Transfer software XFER2000

You can download on your PC the GPS files recorded in your appliance with the "XFER2000" software, to EXCEL:

- → copy XFER2000.XLS in your current working directory
- → open XFER2000.XLS with EXCEL software; the "XFER2000" macro software is automatically launched.
- → connect your appliance to your computer using the USB port
- ➔ configure the serial link
- → choose a file from the list of recorded files
- → click on XFER

A new EXCEL sheet is added after the existing sheets and is filled with the data saved in the selected GPS file.

2000:	XFER2000 v2.0		
	USB com port :		USB configuration
	C Com1	C Com5	
	Com2	C Com6	
	C Com3	C Com7	
	C Com4	C Com8	
	File name	•	GPS file to be trans-
	;	Xíer	Transfer button

Panel board XFER2000:

Caution:

- a new EXCEL sheet is added to the existing sheets every time you click on XFER; make sure not to exceed the maximum number of sheets in your spreadsheet.

- a tool button "XFER2000" is added to the EXCEL toolbar the first time you launch XFER2000;

click on this button if you want to transfer new files.

licrosol	ft Excel	- XFER20	00.xls						`
<u>F</u> ichier	Edition	<u>A</u> ffichage	Insertion	Forma <u>t</u>	<u>O</u> utils	Données	Fe <u>n</u> être	2 2 XFER 2000)
Ê.	. 6	a 🖤	X 🖻 🖬	l 💉	E) - (n 🗸 🏟	🖗 Σ	Jac & ZI	🔍 🚯

	A	В	С	D	E	F	G
1	File name		MEM1.GPS				
2	Date		04/06/2002				
3	Time		17:17:00				
4	Original Latitu	riginal Latitude		North			
5	Original Long	itude	4°22,669	East			
6	Place name						
7	Frequency ba	Frequency band					
8	Unity		d3µ∨				
9							
10					Set up	3	
11					Name	CANAL 3	
12					Frequency	163,125	
13					Standard	QAM	
14					High threshold	20,0	
15					Low threshold	20,0	
16							
17	Date	Time	Latitude	Longitude	Satellite	Measure	Meas⊫
18	06/04/2002	17:17:41	45°25,286	4°22,669	7	23,4	
19	06/04/2002	17:17:41	45°25,286	4°22,669	7	23,4	
20	06/04/2002	17:17:42	45°25,286	4°22,669	7	23,4	
21	06/04/2002	17:17:42	45°25,286	4°22,669	7	23,4	
22	06/04/2002	17:17:43	45°25,286	4°22,669	7	23,4	
23	06/04/2002	17:17:43	45°25,286	4°22,669	7	23,4	
24	06/04/2002	17:17:44	45°25,286	4°22,669	7	23,4	
25	06/04/2002	17:17:44	45°25,286	4°22,669	7	23,4	
26	06/04/2002	17:17:44	45°25,286	4°22,669	7	23,4	
27	06/04/2002	17:17:45	45°25,286	4°22,669	7	23,4	
28	06/04/2002	17:17:45	45°25,286	4°22,669	7	23,4	
29	06/04/2002	17:17:46	45°25,286	4°22,669	7	23,4	
30							
31							
32							
33							
34							
35							

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Printing example of EXCEL sheet of one GPS file: Positions and Measurement Map:

File name	MEM5.GPS	
Date	04/06/2002	
Time	17:28:00	
Original Latitude	45°25,286	North
Original Longitude	4 ° 22,668	East
Place name		
Frequency band	5-865MHz	
Unity	dBµ∨	

				Set up	0	1	2	3	4	5	6	7	8	9
				Name	CANALO	CANAL 1	CANAL 2	CANAL 3	CANAL 4	CANAL 5	CANAL 6	CANAL 7	CANAL 8	CANAL 9
				Frequency	139,125	147,125	155,125	163,125	171,125	179,125	187,125	195,125	203,125	211,125
				Standard	BG	QAM	COFDM	Porteuse	Porteuse	Porteuse	FM	FM	BG	BG
				High threshold	20 D	20 D	20 D	47 D	47 D	47 D	20 D	20 D	20 D	20,0
				Low threshold	20 D	20 D	20 D	20 D	20 D	20 D	20 D	20 D	20 D	20 D
Date	Time	Latitude	Longitude	Satellite	Measure	Measure	Measure	Measure	Measure	Measure	Measure	Measure	Measure	Measure
06/04/2002	17:28:50	45°25,286	4°22,668	6	13,3	23,3	21,3	3,6	3,6	3,6	2,2	2,2	13,1	14.0
06/04/2002	17:28:52	45°25,286	4°22,668	6	12,3	7,4	20,6	3,6	3,5	3,6	2,2	2,2	12,3	140
06/04/2002	17:28:56	45°25,286	4°22,668	6	12,5	14,4	14,9	3,7	3,6	3,6	2,2	2,2	14,1	14,1
06/04/2002	17:28:58	45°25,286	4°22,668	6	13,3	13,3	21,9	3,7	3,6	3,6	2,2	2,3	13,1	12,9
06/04/2002	17:29:00	45°25,286	4°22,668	6	13,3	13,3	18,1	3,7	3,6	3,6	2,2	2,2	14,1	13,6
06/04/2002	17:29:05	45°25,286	4°22,668	6	12,3	22,5	21,6	3,7	3,6	3,6	2,2	2,3	13,3	13,1
06/04/2002	17:29:07	45°25,286	4°22,668	6	11,6	23 D	19,6	3,7	3,6	3,6	2,2	2,2	13,5	15,7
06.04/2002	17:29:13	45°25,286	4°22,668	6	13,2	23,2	20 D	3,7	3,7	3,6	2,2	2,3	13,5	12,4
00/04/2002														

11.5 GIS software

The XFER2000 data format is compatible will most GIS (Geographical Information Software) softwares. In the EXCEL spreadsheet, data can be saved either in EXCEL format or in Text format to be exported to your GIS software.



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12 LNB - DiSEqC

Press the function key



to access to the installation configuration:

12.1 Satellite band

Para	ameters				3	(ASTRA	NUM)
Plac	e #		: 3 (ASTR/	NUM)			
Free	uency ba	nd	: 900-2150	MHz		_	
Thre	sholds		LNB - DiSEqC				
Mes	sages	Remote supply	: Off				
		1011		~~ • • • •			
#	name	LO1 frequency	: 9/50.0			hd	pol. 🔺
0	0	LO2 frequency	: 10600.0			w	Hor.
1		I O selection	· 0/22kHz				
2		Polar selection	· 13/18V				
3			. 10, 101				
4	DAS ERS	(Committed) Sv	witch : DiSEqC	Pos B		w	Hor.
5	CAN ALC	Uncommitted P	ort : DiSEqC	Pos 5		w	Vert.
6	DW-TV		•			w	Vert.
7	BIBEL.TV	Positioner	: No			w	Hor.
8	EURONEV	Satellite #	: 1			gh	Vert.
			Auto		On	Off	

Configuration parameters:

- Remote supply : remote supply on / off
- LO1 Frequency: LO frequency LNB low band
- LO2 Frequency: LO frequency LNB high band
- LO selection : band switching on the LNB (22 kHz, ToneBurst or DiSEqC)
- Polar selection : polarisation switching on the LNB (13/18V or DiSEqC)
 - Switch : type and position of switch (No, ToneBurst, 22 kHz, DiSEqC, PosA, B, C, D)
 - Uncommitted : type and position of uncommitted switch (No, DiSEqC, Pos 1 to 16)
- Positioner : presence of a positioner (Yes / No)
 - Satellite # : current position (from 1 to 127 positions precharged in the positioner)
 - SatCR : SatCR mode (single cable distribution)

12.1.1 Switchs



Switch for 2 satellites * 22 kHz

- * ToneBurst (MiniDiSEqC)
- * DiSEqC Committed or Uncommitted



Switch for 4 satellites * DiSEqC Committed or Uncommitted

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Switches for 16 Satellites * DiSEqC Committed + Uncommitted

	Line Switch		Line Uncommitted	
Satellite	Position	DiSEqC command	Position	DiSEqC command
1	Pos A	Option A + Position A	Pos 1	Input 1
2	Pos B	Option A + Position B	Pos 1	Input 1
3	Pos C	Option B + Position A	Pos 1	Input 1
4	Pos D	Option B + Position B	Pos 1	Input 1
5	Pos A	Option A + Position A	Pos 2	Input 2
6	Pos B	Option A + Position B	Pos 2	Input 2
7	Pos C	Option B + Position A	Pos 2	Input 2
8	Pos D	Option B + Position B	Pos 2	Input 2
9	Pos A	Option A + Position A	Pos 3	Input 3
10	Pos B	Option A + Position B	Pos 3	Input 3
11	Pos C	Option B + Position A	Pos 3	Input 3
12	Pos D	Option B + Position B	Pos 3	Input 3
13	Pos A	Option A + Position A	Pos 4	Input 4
14	Pos B	Option A + Position B	Pos 4	Input 4
15	Pos C	Option B + Position A	Pos 4	Input 4
16	Pos D	Option B + Position B	Pos 4	Input 4

12.1.2 SatCR

Description:

SatCR : Satellite Channel Router or Single Cable Distribution

Satellite signal distribution with only one coaxial cable for single-family dwelling to 8 different receivers.

Providing to several receivers full spectrum and polarizations access, required one coaxial cable to each receiver, and special equipments (multiple LNBs, multi-output LNBs, and multi-switch).

SatCR technology is a DiSEqC protocol extension which enables to connect several receivers over a single coaxial cable, making all Bands (H/L) and Polarizations (H/V) available.

An European industry standard for distributing satellite signals over a single coaxial cable has been developed - EN50494.

Functioning:

Each satellite receiver has a dedicated user band (Slot or Port) of a bandwidth approximately the same as one transponder.

The receiver asks for one transponder frequency (Ku frequency) via a DiSEqC compliant command.

A mixer in the dish-end equipment (LNB or SatCR switch) converts the received signal to the correct user band (Slot). The converted transponders of the various users are then combined, and sent via the single coaxial cable (up to 8 users).



Using:

Para	ameters			3 (ASTRA	NUM)	- +
Plac	e #		: 3 (ASTRA)	NUM)		
Free	uency b	a	LNB - DiSEqC			
Thre	sholds	Remote supply	: Auto			
Mes	sages	LO1 frequency	: 9750.000 : 10600.000	MHz MHz		
#	name				hd p	xol. ≜
0	ARTE	LO selection	: 0/22kHz		w	Hor.
1		Polar selection	: 13/18V			
2		(c)				
3	ANIXE	(Committed) Sw	ritch : No		w	Hor.
4	DAS ER	S Uncommitted PC	DIE : NO		w	Hor.
5	CAN A	G Positioner	: No		w	Vert.
6	DW-TV	rosiconel	. NO		w	Vert.
7	BIBEL 1	V SatCR	· No		w	Hor.
8	SEASO	S			lgh 👘	Vert. 🖵
No	0	Yes	Freq.	Slot -	Slot +	Pos

SatCR parameters:

- No/Yes:
- Freq. :
- enable / disable SatCR mode
- 8 user band centre frequencies adjustment (Slot)
- Slot-/Slot+ : active user band inside instrument (Slot 1 to 8)
- Pos

switches between Pos A and Pos B satellites

Slot frequencies adjustment:

	1	3	<u>əfra</u>	m	
		LNE	- DiSEqC		
Remote sup	oply	:	Off		
LO1 frequer	SLOT F	REOU		00 1411-	
LO2 frequer	Slot	1	1680	MHz	
	Slot	2	1420	MHz	
Polar selection	Slot	3	2040	MHz	
i olar beleet	Slot	4	1210	MHz	
(Committee					
Uncommitte					
Positioner		_			
SatCR		:	No		
		222	ww.senan	1.11	

Menu keys:

- Init: 8 user slots, predefined frequencies
- Detect : automatic detection of slots (numbering and frequencies)
- | X | close Slot frequencies window
- **Delete** : delete one slot (highlighted one)

You can adjust manually each frequency slot with the sensitive wheel.

Indications, spectrum analyzer:



12.2 Terrestrial band

Para	amete	rs					1 (ST	ETIE	ENNE) 📼	+
Place # : 1 (ST ETIENNE) Frequency band : 5-865 MHz Frequency map : user defined Thresholds										
#	nam	e [<u>,</u>	REMOTE	SUPPLY	•	ŀ		rate	_
0		R	emote supp	ly : Of	F					
2	A 2		543.250	E30	L NICA	4				-
3	FR3	3	567.250	E33	L Mono					
4	C +		607.250	E38	L Mono					
5	5 AR	TE	823.250	E65	L Mono					_
6	Μ6		743.250	E55	L NICA	4				
7	FR I	ITER	88.000		FM					-81
8	EURO	OPE 1	104.800		FM					-
		5V	13V	18V		On	0	ff		

Configuration parameters:

- Remote supply: remote supply on / off.
- Selections of the remote supply voltage among 5V, 13V, 18V et 24V.

13 Configuration

Press the



key to access to the appliance general CONFIGURATION:

- → language, date and time
- → Expert spectrum (see Spectrum mode)
- ➔ measurement unit,
- → corrections coefficients
- ➔ memories
- ➔ initialisations
- → adjustments : LCD lighting, beep volume, USB and ETHERNET interfaces

Configu	ration				1 (5	ST ETIEI	NNE)		
Languag Date Time Expert S Unit Correcti	je Spectrun ons	ı	: Englis : 6 Oc : 16h 2 : Yes : dBµV : No	sh tober 20 2mn 42	108 s				
Memorie	es								
Initialisations									
Adjustements									
De	Fr	En	It	NI	Sp	Sv			

13.1 Language, date, time

To change these parameters, use the menu keys.

13.2 Expert spectrum

Use the menu keys to activate / deactivate the expert spectrum mode.

13.3 Measurement unit

Menu keys:

- dBµV : 0 dBµV is equivalent to 1 µV
- **dBmV**: 0 dBmV is equivalent to 1 mV
- **dBm**: 0 dBm is equivalent to 274 mV: 1 mW in 75 ohms impedance.
- V: measurement in V, mV or µV depending on the level.

13.4 Correction coefficients

They are used to compensate for cable losses, to adjust an external attenuator, amplifier or antenna.

Menu keys:

- Modif : list of coefficients for modification
- Yes/No : activates / deactivates correction

Modification of coefficients:

Configuration				1 (S	T ETIENNE) 🚥
Language		· Fnalish			1
Date	CORRECTION FAC	FORS			
Date	Coeff.:	5 MHz	+	0.0 dB	
Time	Coeff.:	5 MHz	+	0.0 dB	
Unit	Coeff.:	5 MHz	+	0.0 dB	
Corrections	Coeff.:	5 MHz	+	0.0 dB	
COTTECTIONS	Coeff.:	5 MHz	+	0.0 dB	
	Coeff.:	5 MHz	+	0.0 dB	
Memories	Coeff.:	5 MHz	+	0.0 dB	
	Coeff.:	5 MHz	+	0.0 dB	
T 1.1 1	Coeff.:	5 MHz	+	0.0 dB	
Initialisations	Coeff.:	5 MHz	+	0.0 dB	
	Coeff.:	5 MHz	+	0.0 dB	
Adjustements	Coeff.:	5 MHz	+	0.0 dB	
rajastemento					
				Init.	×

User can move the cursor with the arrows.

Changing a **Coefficient** is possible with the rotary sensitive wheel.

Pressing « Init » forces all coefficients at: frequency 5MHz, 0 dB correction

Coefficients act in LEVEL MEASUREMENT and in MEASUREMENT MAP.

13.5 Memories

Configuration			3 (AST	TRA NU	м)==+
	Tetel				
Total	l otal	MEMO TYT	CAT	2/02/00	0:40
- Viace	# 0:		SAT	2/02/09	9:48
— 🥟 Measurement map					
- V Spectrum					
BER / MER					
Constellation					
Confidence					
— 🥖 Echo guard interval					
— — 🏏 Configuration					
GPS					
	1 / 0.0	34%			
Reset			×		

13.5.1 Folders

Files are divided into different folders so they are easier to manage.

The number of files in every folder and the percentage they occupy appear on the right.

The **'TOTAL** ' folder shows the whole internal memory occupied.

Menu keys:

• Reset : erases the folder

Erases all the folders with the line « Total »

13.5.2 File list

Configuration			3 (AST	ra nu	M)
Total	Level				
	# 0:	MEM0.TXT	SAT	2/02/09	9:48
— 🥟 Measurement map					
— 🥟 Spectrum					
— 🟏 BER / MER					
Constellation					
Confidence					
— 🧭 Echo guard interval					
— 🧭 Configuration					
GPS					
	1 / 0.0	84%			

Use the up/down arrow to change of directories:

The displayed information is as follows:

- File number
- File name and extension (type)
- Frequency bandwidth where the file has been saved
- Date and time of backup

Configuration		3 (ASTF	RA NU	М)	-
Total	Total				
	# 0:	MEM0.TXT	SAT	7/09/09	13:35
	# 1:	MEM1.TXT	SAT	7/09/09	16:18
	# 2:	MEM2.TXT	SAT	1/01/00	8:05
Level	# 3:	MEM3.TXT	SAT	1/01/00	5:57
	# 4:	MEM4.TXT	SAT	1/01/00	5:58
	# 5:	MEM5.DRW	SAT	1/01/00	5:59
	# 6:	MEM6.DRW	SAT	1/01/00	6:09
	# 7:	MEM7.DRW	SAT	1/01/00	6:09
	# 8:	MEM8.TXT	SAT	1/01/00	6:09
Constellation	# 9:	MEM9.DRW	SAT	1/01/00	6:20
	# 10:	MEM10.TXT	TER	1/01/00	6:21
	# 11:	MEM11.TXT	TER	1/01/00	6:21
Echo quard interval	# 12:	MEM12.TXT	TER	1/01/00	6:22
V ECHO guaru intervar	# 13:	MEM13.TXT	TER	1/01/00	6:26
Configuration	# 14:	MEM14.DRW	TER	1/01/00	6:26
GPS					
•	15 / 14.9	52%			
	Delete	1			
view	Delete	-> 0	SB		

Pressing the **right arrow** will display the list of files: Menu keys:

• View : displays the file selected

- **Delete** : deletes the file selected
- \rightarrow USB copy file to an USB memory stick (creates BMP file)

13.6 Initialisations

Configuration	1 (ST-E	TIENNE)
Language	: English	
Date	<u></u>	
Time	INITIALISATIONS	
Expert Spectr	Places nb. : 20 (50 setups)	
Unit	Reset actual place	
Corrections	Import/Export all configuration> USB	
	Copy channels -> setups Copy setups -> measurement map	
Memories		
	Reset all places	
Initialisations	Factory recovery	
Adjustements	6	

10 (100) 20 (50) 50 (20) 100 (10) 💥 🛛

Initialisations:

- → Places nb.: selection of the number of Places in the appliance
- → Reset actual place : erases all information about the current Place
- → Copy channels → setups : initialises the name of setups with ' CANAL xx '
- → Copy setups.→measurement map : copies all Setups in the Measurement map
- → Reset every place :
 → Factory recovery :
- reset all parameters with factory default (Places,

erases all information about all Places

Programs, Channels...)

→ Import/Export all configuration → USB :

Can send or read « *.CNG » file (equipment configuration) on a USB stick. These files can be modified with the software TR7836. The created files are called « config » + serial number of the equipment.

This functionality allows you to backup all places of your equipment in a USB stick.

Import « *.CNG » file allows you to restore configuration of another equipment. Then, select the file to be copied and press the « Copy » key:

Configuration		1 (ST-ETIENNE)
Language	: English	
Date	*.CNG FILES	
Time	CONFIG98.CNG	
Expert Spectr	P CONFIG74.CNG CONFIG52.CNG	
Unit	R	
Corrections	I	
Memories	C C Fi	
Initialisations		
Adjustements		
	Сору	\times



Caution

All these possibilities will erase the data you have entered in your TV Meter : Places, Programs, Channels ...

For a better security, all these operations must be **double confirmed**.

13.7 Adjustments

Configuration		1 (S	T-ETIENNE)
Language	ADJU	STMENTS	
Date	Веер	: 25%	
Time	LCD Auto shutdown	: 100% : No	
Expert Spectr Unit Corrections	Wheel threshold Menu key threshold Graphic background Beep Signal Level MPEG rate	: 75% () : 75% : black : No : Normal (54Mb/s)	
Memories	Ethernet ID address	125 150 11 61	
Initialisations	Ethernet IP address Ethernet IP mask USB IP address USB IP mask	: 135.150.11.61 : 255.255.255.0 : 192.168.0.50 : 255.255.0.0	
Adjustement	Enable DHCP	: No	
10% 25%	50% 75%	100% 🔀	No

Setup:

- Beep: activate an audible signal when pressing a push button
 - LCD: adjust the backlight intensity of the LCD
- Wheel threshold: adjust the sensitivity of sensitive encoder
- Menu key threshold : adjust the sensitivity of push button (Menu bar of the LCD)
- Graphic background: background colour of graphs (spectrum, recordings, constellations...)
- Beep Signal Level: audible indication, the frequency of beeps varies with the level measured
- MPEG rate: Normal or Fast
- IP Ethernet Address: Ethernet, TCP/IP network address
- IP Mask Ethernet: Ethernet, mask address
- IP USB Address: USB, address network TCP/IP
- USB Mask IP: USB, mask address

Changes can be entered with numerical keyboard or menu bar.

Remark: by reducing the screen brightness, you can gain autonomy.

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14 Save / Recall

To SAVE or RECALL configurations or measures, press the



Parameters Place # Frequency band Frequency map Thresholds Messages				: 1 (ST :5-865 :user de	ETIENNE MHz efined	1 E)	I (ST ETI	ENNE)	
Mess	sages	,							
#	name	e	freq.	chan. standard			onst.	rate	
0		-		Save/	Recall				
1	TF1	L	Place	:	MEM0.TX	Т			
2	A 2		5	L.30	E HIGH	•	J		
3	F R 3	3	567.250	E33	L Mono				
4	C +		607.250	E38	L Mono				
5	5 AR	TE	823.250	E65	L Mono				
6	Μ6		743.250	E55	L NICA	1			
7	FR IM	ITER	88.000	FM					
8	EURC	OPE 1	104.800					-	
		Name		Save	Recall		×		



After transfer, the saved measures will make it possible to create measurements reports on a PC by using the TR7836 transfer software.

A pop up window is displayed over the current screen and shows a file name by default 'MEM xxx'.

Menu keys:

- Name : change of the file name (alphanumerical data input : 8 characters max)
- Save : saves
- Recall : recalls

14.1 Save

You can **save** directly a file by using the 'MEM xxx ' name (number auto increment until 1000) or modify it.

After you input the file name, press the menu key' Save '.

Caution: Switching the appliance off may take a few seconds because information is saved on flash memory while shutting down the appliance.

14.2 Recall

You can **recall** directly a file by using its name or searching for it in the list of files through the ' **Dir** ' menu key.

The 'Recall 'menu key displays the list of files with the following characteristics:

- Files saved on the same page (Places on Parameters function, Level measurements on Level Measurement function, ...)
- Files saved on the same **Frequency bandwidth** (in order not to recall the files saved on another **fre-quency bandwidth**)

Select the file in the displayed list, and then recall it by pressing the validation menu key.

The file is recalled and the "Recall memory mode " message is displayed on the menu keys.

Press a function key to quit '**Memory mode'** and to restart measurements.

14.3 Save / Recall Measurement Map

Saving the **Measurement Map** is made up of:

- the list of **Setups** found in the Map
- associated with the measures (V, C/N, BER, MER).

<u>Only the numbers of Setups in the Place are saved:</u> Frequency information, Channel and Standard are displayed in the list of Setups and the Frequency map of the current Place.

Caution If you recall a Measurement Map saved under <u>another Place</u> or if you modify the <u>list of Setups</u> in the Place, the Setup - Frequency - Standard – measures correspondence will be lost! Besides, if the Measurement map for the Place has been modified, the displayed channels will not correspond to the measures.

15 Measurement map

To access to the **MESAUREMENT MAP** function, press the



Me	easuren	nent	map				1 (ST-	ETIEN	NE)	
Se	etup #									
	(MHz)			(dBµV)	(dB)			(dB)		
#	freq.	ch	std	VIDEO	C/N	BERi	BERo	UNC	MER	-
1	706.000	E50	DVB-T	68.9	>39.5	6.9E-5	6.9E-5	<3E-5	32.1	
2	490.000	E23	DVB-T	69.1	>39.7	5.4E-7	5.4E-7	<3E-5	31.0	
3	618.000	E39	DVB-T	68.3	>43.9	<3E-8	<3E-8	<3E-5	28.9	
4	738.000	E54	DVB-T	70.0	>40.6	<3E-8	<3E-8	<3E-5	34.1	
5	538.000	E29	DVB-T	63.8	>39.4	1.4E-5	1.4E-5	<3E-5	31.4	
6	514.000	E26	DVB-T	67.9	>38.5	<3E-8	<3E-8	<3E-5	29.6	
8	583.250	E35	L	77.2	>47.0					
9	543.250	E30	L	84.4	>48.9					
10	567.250	E33	L	78.2	>47.7					
		-					-	10/15		
Re	eset D	elete	List	Sort		-:	> USB		Init.	

M	easuremen	t map			3 (ASTRA NUM) 🗧				
Se	tup #								
	(MHz)		(dBµV)	(dB)				(dB)	
#	freq.	std	PWR	C/N	BERi	BERo	UNC/PER	MER	
4	11836.0 Hi H	DVB-S	68.9	16.2	3.8E-6	<5E-9	<9E-6	14.7	
5	11568.0 Lo V	DVB-S	63.0	13.3	<1E-7	<5E-9	<9E-6	16.9	
6	11597.0 Lo V	DVB-S	62.7	12.5	<1E-7	<5E-9	<9E-6	16.2	
7	11817.0 Hi V	DVB-S	67.1	15.8	<1E-7	<5E-9	<9E-6	15.2	
8	12552.0 Hi V	DVB-S	62.5	13.1	<1E-7	<5E-9	<9E-6	17.1	
9	11954.0 Hi H	DVB-S	65.5	17.7	3.8E-6	<5E-9	<9E-6	14.6	
10	12324.0 Hi V	DVB-S	60.2	15.2	2.1E-6	<5E-9	<9E-6	14.9	
11	11856.0 Hi V	DVB-S	68.4	15.1	<1E-7	<5E-9	<9E-6	15.3	
12	10832.0 Lo H	DVB-S2	66.7	17.4	5.0E-3	<5E-9	<9E-6	12.4	
									Ţ
							1/9		
							1, 2		
Re	eset Delete	e List	t Sc	ort		-> USB		Init.	

- Automatic measurements for different setups and out of tolerance measurements.
- Digital display



Important



User can view the progress of the measurement map scanning with the bargraphe located under the table.

The colour of the bargraphe indicates if a first scan is completed :

- red : the measurement map has not been scanned
- green : the whole measurement map has been scanned

The Level and C/N informations are updated during the first scan. Error rates are updated during 2^{nd} and further scans.

15.1 Entering / changing a setup number

You can select the **Setups** to be scanned by entering the Setups' numbers in the **Measurement map**. The selected line is displayed on the reverse video and is highlighted in the box" n° of the **Measurement map**.

The name and number of Setup are displayed on the first line of the page. Enter the **Setups** to scan in the list of setups or use directly the numerical keyboard.

You can move on the **Measurement map** by using the sensitive wheel or the direction keys.

Menu keys:

- **Delete** : deletes the Setup of the selected box
- List : selection of a Setup from the list of Setups
- Sort : sorts the Setups of the Measurement map (see below)
- \rightarrow USB : record measurements to an USB drive
- Reset : erases the whole map
- Init. : copies the setups of the place into the map

15.2 Automatic sorting

To sort the setups of the Measurement map, press the menu key "Sort ". They can be sorted out:

- In ascending Setup number order
- In ascending frequency order

Alternately every time you press the key.

15.3 Graphic display

By pressing twice the **MEASUREMENT MAP** function key, you can display the **Measurement map** in a graph.



It is displayed in one screen; the histogram widths are automatically fitted according to the number of **Setups** included in the **Measurement map**.

The blue cursor shows a **Setup** and displays its number and its name on the first line of the page.

This Setup's video carrier level is displayed at the bottom on the left.

You can move the cursor by using the sensitive wheel.

A "tilt" measure (attenuation in the bandwidth) can be performed by moving 2 cursors with the menu keys:

- *C***Ref.** : moves the tilt reference to the left
- **Ref.** : moves the tilt reference to the right
- **Curs.** : moves the tilt cursor to the left
- **Curs.** \rightarrow : moves the tilt cursor to the right

The "tilt" measure is displayed at the bottom and on the right of the page.

15.4 Out of tolerance values

Digital display:

Numerical values are displayed in colour according to the **Thresholds** programmed in **PARAMETERS**, line **Thresholds**:

- Red for values under the minimum Threshold
- Orange for values over the maximum Threshold

Me	easuren	nent	map				1 (ST-	ETIEN	NE)	+
Se	tup #			: 3	(R3 C	CANAL)			
	(MHz)			(dBµV)	(dB)				(dB)	
#	freq.	ch	std	VIDEO	C/N	BERi	BERo	PER	MER	
1	706.000	E50	DVB-T	68.5	>46.1	8.8E-5	<5E-8	<3E-5	30.5	
2	490.000	E23	DVB-T	67.2	>43.1	4.1E-5	<5E-8	<3E-5	30.8	
3	618.000	E39	DVB-T	67.2	>42.8	1.6E-5	<5E-8	<3E-5	33.0	
4	738.000	E54	DVB-T	66.6	>37.5	4.8E-7	<5E-8	<3E-5	>35.0	
5	538.000	E29	DVB-T	17.2	> 2.8	Sync?	Sync?	Sync?		
6	514.000	E26	DVB-T	65.3	>35.9	4.7E-5	<5E-8	<3E-5	29.7	
8	583.250	E35	L	79.2	>47.7					
9	543.250	E30	L	82.4	>46.2					
10	567.250	E33	L	79.3	>48.4					_
<u></u>		-		· ·				5/15		
Re	eset D	elete	List	Sort		->	> USB		Init.	

Graphical display:

The histograms are displayed in colour depending on the thresholds programmed in the **PARAMETERS** page, line **Thresholds**:

- Red for values lower than the minimum Threshold
- Green for values between these two Thresholds.
- Orange higher than the maximum Threshold.



The **audio carriers**' levels are added on the associated video carrier histogram, according to the colours in the legend at the top and on the right of the page.

If one of the Audio carriers is higher than the programmed minimum or maximum Threshold, the whole histogram is displayed in red or orange.

15.5 Recording on USB drive

You can store these measurements on an external USB drive Pressing the key \rightarrow USB opens a CSV file The file name is built according to the date and time of launch The recording takes place when all setups were scanned The date and time are stored at this time

Me	easurer	nent	map				1 (ST-	ETIEN	NE)	+	
Se	tup #			: 3 (R3 CANAL)							
	(MHz)			(dBµV)		(dB)					
#	freq.	ch	std	VIDEO	C/N	BERi	BERo	PER	MER		
1 2 3 4	706.000 490.000 618.000 738.000	E50 E23 E39 E54	DVB-T DVB-T DVB-T DVB-T	68.4 67.2 67.2 67.3	>45.6 >45.1 >42.8 >37.9	7.3E-5 4.4E-5 1.5E-5 1.7E-6	<5E-8 <5E-8 <5E-8 <5E-8	<3E-5 <3E-5 <3E-5 <3E-5	27.6 31.3 31.8 >35.0		
5 6	538.000 514.000	E29 E26	DVB-T DVB-T	17.6 65.6	> 3.8 >36.2	Sync? 4.4E-5	Sync? <5E-8	Sync? <3E-5	 30.3	-	
8 9 10	583.250 543.250 567.250	E35 E30 E33	L L L	78.7 82.3 79.2	>48.2 >46.4 >48.7						
	4/15										
Re	eset D	elete	List	List Sort -> USB					Init.		

Pressing the Stop key ends the acquisition

The duration of the recording depends on the size of the USB drive (one channel measurement takes 72 bytes and lasts about 5 seconds for a digital channel)

Μ	Measurement map 1 (ST-ETIENNE)										+
S	etup :	#			: 3	(R3 C	ANAL))			
	(MH:			(dBµV)	(dB)				(dB)		
#	freq.		ch	std	VIDEO	C/N	BERi	BERo	PER	MER	
1	706.0	00	E50	DVB-T	67.7	>44.3	1.0E-4	<5E-8	<3E-5	28.6	
2	490.0	00	E23	DVB-T	67.3	>44.9	4.1E-5	<5E-8	<3E-5	29.5	
3	618.0	00	E39	DVB-T	67.2	>42.8	1.8E-5	<5E-8	<3E-5	31.9	
4	738.0	00	E54	DVB-T	67.0	>38.9	2.1E-6	<5E-8	<3E-5	>35.0	
5	538.0	00	E29	DVB-T	16.4	> 2.0	Sync?	Sync?	Sync?		
6	514.0	00	E26	DVB-T	65.8	>37.0	4.2E-5	<5E-8	<3E-5	30.3	
8	583.2	50	E35	L	79.2	>48.3					
9	543.2	50	E30	L	82.1	>46.9					
10	567.2	50	E33	L	79.3	>47.8					-
			-						1/15		
							·· .				
		S	top								



Do not use the USB drive that was used previously to make a software update without erasing or renaming the folder Autorun

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The USB drive can be extracted and inserted into a PC to use the values in a spreadsheet

Microsoft Ex	cel - 200901281	15931.CSV	Outile Doppi	éer Fenêtre 2 ⁄ YEED2(100									
n Eichier Eoli	aon Anchage In ⊕ D. ♥ 8	🗈 🖻 🚿			100	100% - 2								
Arial	- 10 -	GIS		🔤 🗑 % 000 % 4%	[健健 ⊞・	· 👌 • <u>A</u> •								
A1		C	D	E F	G	Н	1	J	K	L	M	N	0	
Place	SI-ETIENNE													
		R1 CH PU VIDEO	706.000 MI C/N	Hz E50 DVB-T/ BERi BERo	H PER	MER	R2 L P B VIDEO	490.000 MH C/N	z E23 BERi	DVB-T/H BERo	PER	MER	R3 CANAL VIDEO	618.0 C/N
28/01/20	09 12:00:25 09 12:01:05	69.6 dBµ∨ 69.6 dBu∨	>46.8 dB >40.2 dB	8,80E-05 <5E-8 9.00E-05 <5E-8	<3E-5 <3E-5	29.7 dB 28.4 dB	68.4 dBµ∨ 68.7 dBu∨	>44.0 dB >41.6 dB	8,20E-05 7.90E-05	<5E-8 <5E-8	<3E-5 <3E-5	29.4 dB 29.5 dB	66.6 dBµ∨ 66.5 dBµ∨	>42.2
28/01/20	09 12:01:45	69.7 dBµ∨	>40.3 dB	9,50E-05 <5E-8	<3E-5	30.6 dB	68.6 dBµ∨	>40.8 dB	9,10E-05	<5E-8	<3E-5	30.3 dB	66.6 dBµ∨	>42.2
28/01/20	109 12:02:27 109 12:03:09	69.7 dBµ∨ 69.4 dBµ∨	>40.3 dB >45.0 dB	7,60E-05 <5E-8	<3E-5 <3E-5	28.9 dB 29.4 dB	68.6 dBµ∨	>40.3 dB >40.8 dB	9,80E-05	<5E-8	<3E-5 <3E-5	29.0 dB 29.0 dB	66.7 dBµ∨	>42.8
28/01/20	09 12:03:50	69.7 dBµV	>40.3 dB	9,00E-05 <5E-8	<3E-5	29.7 dB	68.7 dBµV	>40.6 dB	7,40E-05	<5E-8	<3E-5	30.5 dB	66.6 dBµV	>42.2
28/01/20	09 12:05:14	69.8 dBµV	>40.2 dB	1,10E-04 <5E-8	<3E-5	29.4 dB	68.8 dBµ∨	>40.7 dB	9,60E-05	<5E-8	<3E-5	28.9 dB	66.8 dBµV	>42.4
3 28/01/20 4 28/01/20	09 12:05:56 09 12:06:38	69.8 dBµV	>40.4 dB >40.2 dB	8,80E-05 <5E-8 6,40E-05 <5E-8	<3E-5 <3E-5	30.3 dB 28.7 dB	68.8 dBµV	>41.0 dB >40.2 dB	7,70E-05 Sync?	<5E-8 Sync?	<3E-5 Sync?	29.2 dB >35.0 dB	66.7 dBµV	>42.3
5 28/01/20	09 12:07:19	69.8 dBµ∨	>40.4 dB	7,70E-05 <5E-8	<3E-5	30.5 dB	68.7 dBµ∨	>40.9 dB	8,50E-05	<5E-8	<3E-5	28.7 dB	66.6 dBµ∨	>42.2
7 28/01/20	12:08:02 109 12:08:41	69.7 dBµ∨ 69.9 dBµ∨	>40.3 dB >40.5 dB	9,00E-05 <5E-8	<3E-5	29.2 dB 29.7 dB	68.5 dBµV	>39.4 dB	7,50E-05	<5E-8	<3E-5	28.9 dB 31.1 dB	66.7 dBµ∨	>42.3
3 28/01/20 3 28/01/20	09 12:09:20	69.7 dBµV	>40.3 dB	1,30E-04 <5E-8 8 10E-05 <5E-8	<3E-5	29.4 dB	68.8 dBµ∨ 68.7 dBu∨	>41.0 dB	8,00E-05 7 90E-05	<5E-8	<3E-5	31.9 dB 30.5 dB	66.8 dBµ∨ 66.7 dBu∨	>42.4
28/01/20	09 12:10:48	69.7 dBµV	>40.3 dB	7,80E-05 <5E-8	<3E-5	30.2 dB	68.8 dBµV	>41.7 dB	1,00E-04	<5E-8	<3E-5	29.0 dB	66.7 dBµV	>42.3
1 28/01/20 2 28/01/20	09 12:11:28 09 12:12:11	69.8 dBµ∨ 69.7 dBµ∨	>40.4 dB >40.3 dB	9,70E-05 <5E-8 1,10E-04 <5E-8	<3E-5 <3E-5	30.3 dB 28.4 dB	68.9 dBµ∨ 68.9 dBµ∨	>40.5 dB >41.5 dB	7,70E-05 7,40E-05	<5E-8 <5E-8	<3E-5 <3E-5	29.5 dB 30.2 dB	66.8 dBµ∨ 66.6 dBµ∨	>42.4
3 28/01/20	09 12:12:53	69.9 dBµV	>40.5 dB	7,90E-05 <5E-8	<3E-5	31.4 dB	68.7 dBµV	>39.9 dB	8,20E-05	<5E-8	<3E-5	30.5 dB	66.5 dBµV	>42.7
4 28/01/20 5 28/01/20	09 12:13:34 09 12:14:17	69.9 dBµV	>40.8 dB >40.5 dB	9,70E-05 <5E-8 9,20E-05 <5E-8	<3E-5 <3E-5	29.4 dB 29.8 dB	68.8 dBµV 69.0 dBµV	>41.0 dB >39.6 dB	4,50E-05	<pre>Sync? <5E-8</pre>	<3E-5	>35.0 dB 30.3 dB	66.7 dBµV	>42.5
5 28/01/20 7 28/01/20	09 12:14:59	69.8 dBµV	>40.4 dB	9,70E-05 <5E-8	<3E-5	27.6 dB	68.9 dBµV	>40.5 dB >39.6 dB	4,80E-05	<5E-8	<3E-5	30.3 dB 28 9 dB	66.7 dBµ∨	>42.3
3 28/01/20	09 12:16:22	69.5 dBµ∨	>40.1 dB	9,10E-05 <5E-8	<3E-5	29.0 dB	68.9 dBµ∨	>40.5 dB	4,20E-05	<5E-8	<3E-5	31.0 dB	66.8 dBµ∨	>42.4
28/01/20	09 12:17:03	69.7 dBµ∨ 69.2 dBµ∨	>40.3 dB >44.8 dB	9,60E-05 <5E-8	<3E-5 <3E-5	28.9 dB 29.4 dB	68.8 dBµ∨ 68.8 dBµ∨	>39.4 dB >39.7 dB	4,30E-05 4,70E-05	<5E-8	<3E-5 <3E-5	29.8 dB 29.4 dB	67.0 dBµ∨ 67.4 dBµ∨	>44.2
1 28/01/20 2 28/01/20	09 12:18:26	68.9 dBµV	>44.5 dB	1,00E-04 <5E-8	<3E-5	30.3 dB	68.1 dBµV	>44.3 dB	4,70E-05	<5E-8	<3E-5	30.5 dB	67.1 dBµV	>42.7
8 28/01/20	09 12:19:47	68.9 dBµ∨	>44.8 dB	8,00E-05 <5E-8	SE-5	29.5 dB	68.1 dBµV	>46.0 dB	4,50E-05	<5E-8	SE-5	28.7 dB	67.2 dBµV	>45.1
4 28/01/20 5 28/01/20	09 12:20:34 09 12:21:15	68.9 dBµ∨ 68.4 dBu∨	>46.8 dB >44.0 dB	8,10E-05 <5E-8 1.00E-04 <5E-8	3E-5	28.7 dB 29.2 dB	68.1 dBµ∨ 68.0 dBu∨	>45.0 dB >45.9 dB	5,10E-05 5.00E-05	<5E-8 <5E-8	3E-5	29.5 dB 30.3 dB	67.0 dBµ∨ 67.1 dBu∨	>43.6
5 28/01/20	09 12:22:00	68.5 dBµV	>46.1 dB	8,80E-05 <5E-8	<3E-5	30.5 dB	68.1 dBµV	>44.0 dB	4,80E-05	<5E-8	<3E-5	29.7 dB	67.0 dBµV	>43.6
28/01/20 3 28/01/20	12:22:41 109 12:23:25	68.4 dBµ∨	>45.7 dB >45.0 dB	1,40E-04 <5E-8	<3E-5	28.1 dB 29.0 dB	68.0 dBµ∨ 68.0 dBµ∨	>44.6 dB >43.9 dB	4,60E-05 9,20E-03	<9E-0	<3E-5	28.7 dB 21.3 dB	66.9 dBµV	>42.6
3 28/01/20 0 28/01/20	09 12:24:09 09 🔀 Microsol	68.5 dBuV ft Excel - 2009	>44.7 dB 0128115931.	7.90E-05 <5E-8	<3E-5	28.1 dB	68.1 dBu∨	>45.7 dB	3.80E-05	<5E-8	<3E-5	31.6 dB	67.2 dBuV	>44.1
1 28/01/20	09 Eichier	Edition Afficha	age Insertion	Forma <u>t</u> <u>O</u> utils <u>G</u> raphique	Fenêtre ?									
2 28/01/20 3 28/01/20	09 🗋 🗅 🛩 🖡	i 🖉 🖪 🖏	× 🗈 🕻	🖥 🚿 🗠 🗠 🦓	$\langle {\bf F} \rangle = f_{\rm H} \langle {\bf F} \rangle$	ZI 🛍 🖤 🕯	8 • {	2						
1 28/01/20 5 28/01/20	09 Arial	•	16 • G	<i>I</i> § ■ ■ ■	₩ % 	部作作	🖽 • 🕭 • <u>A</u>	•						
28/01/20	09 A	B	C D	E F G I	H I J	K L	M N	0 P	Q R	S T	UV	W	X Y Z	AA AE
28/01/20	09 1 <u>Place</u>	ST-ETIENNE												
28/01/20	109 4 19012 5 28/01/20	VII 109 12:00:25	DEO C/N 63,6 >46,8	BERI BERo PER M 8,80E-05 (5E-8 (3E-5 2	ER VIDEO C/N (3,7 68,4 >44,0	BERi BERo 8,20E-05 (5E-8	PER MER VIE <3E-5	EO C/N 66,6 >42,2	BERi BERo 1,70E-05 <5E-8	PER MER <3E-5 32,7	VIDEO C/N 67,9 >39,8	BERi BE 3,10E-07 (5E	Ro PER MER -8 <3E-5 >35,0	VIDEO C/N 18,7 >6,6
e <u>s</u> sin • 🗟 (b 28/01/20 7 28/01/20	03 12:01:05 03 12:01:45	63,6 >40,2 63,7 >40,3	3,00E-05 (5E-8 (3E-5 2 3,50E-05 (5E-8 (3E-5 3 9,50E-05 (5E-8 (3E-5 3	8,4 68,7 >41,6 0,6 68,6 >40,8	7,30E-05 <5E-8 3,10E-05 <5E-8	(3E-5 29,5 (3E-5 30,3	66,5 >42,1 66,6 >42,2	1,60E-05 <5E-8 1,40E-05 <5E-8	<3E-5 33,5 <3E-5 32,2 <2E-5 22	67,7 >38,3 67,9 >39,5 67,9 >39,5	1,50E-06 <5E 2,80E-06 <5E	-6 (3E-5)35,0 -8 (3E-5)35,0	17,5 >5,4 19,1 >6,3
êt	9 28/01/20 IU 28/01/20	009 12:03:09			7	06,000 MHz	490,000 MHz -	-618,000 MHz	738,000 MHz		00 MHz			8
	12 28/01/20	03 12:05:14 03 12:05:56												6
	14 28/01/20 15 28/01/20	109 12:06:38 109 12:07:19 109 12:08:02	74											8 4
	17 28/01/20 10 28/01/20	103 12:08:41 103 12:03:20	(*											1
	ZU 28/01/20 ZI 28/01/20	103 12:10:05 103 12:10:48 103 12:11:28												1
	22 28/01/20 23 28/01/20	109 12:12:11 109 12:12:53	72											4
	24 28/01/20 25 28/01/20 25 28/01/20	103 12:13:34 103 12:14:17 103 12:14:59												8
	2/ 28/01/20 20 28/01/20	03 12:15:33 03 12:16:22												8
	JU 28/01/20 JI 28/01/20	103 12:17:45 103 12:18:26	<i>"</i>	$\sim\sim\sim\sim$	~~			<u>`</u>						1
	32 28/01/20 33 28/01/20 34 28/01/20	103 12:13:06 103 12:13:47		$\sim\sim$	\sim	7	\sim		\sim	\sim	٨٨	~~~~	~~~	2
	35 28/01/20 35 28/01/20 35 28/01/20	103 12:20:34 103 12:21:15 103 12:22:00	68	\sim	art	$\overline{\sim}$	7			<u> </u>	AAA	-0-0	~~~	~
	37 28/01/20 30 28/01/20	109 12:22:41 109 12:23:25	- T			\sim	y and		tout.			~~~	~	
	4U 28/01/20 4 I 28/01/20	103 12:24:57 103 12:25:44			\sim	~ V	T I							5
	42 28/01/20 43 28/01/20	03 12:26:27 03 12:27:14	66				$\overline{}$							2
	40 28/01/20 40 28/01/20	109 12:28:38 109 12:29:19						\sim	\sim	\sim	MA		- ~~	0
	4/ 28/01/20 40 28/01/20	03 12:30:03 03 12:30:46	64								VV	$\mathbf{v} = \mathbf{v}$	\vee \vee	> <u>8</u>
	5U 28/01/20 51 28/01/20	103 12:32:07 109 12:32:50												6
	52 28/01/20 53 28/01/20	109 12:33:28 109 12:34:08												5
	04 28/01/20 00 28/01/20 00 28/01/20	103 12:35:30 103 12:35:30 103 12:36:12	62											3
	57 28/01/20 50 28/01/20	09 12:36:57												3
	59 28/01/20 50 28/01/20 51 28/01/20	103 12:38:24 103 12:33:07 103 12:33:43	eo 📙		Zone de traça	ige								0 3 5
	b2 28/01/20 b3 28/01/20	109 12:40:28 109 12:41:10	125	4:32 5:38 5:41 1:48	53 203	1:15 3:25 3:25	7.56	*12 *12	3:24 1:28 1:28	4:36 844	8:51 1:00	5:11 7:18 1:24	130 138 130	339
	04 28/01/20 00 28/01/20 hh 28/01/20	09 12:4152 09 12:42:32 09 12:43:12	12:00	1200 1206 1210 1210	1214 1213 1219	1221 1223 1225	1227 1230	12.34 12.36 12.36	123(124(1242	12:44 12:46	12.51 12.51 12.53	1255 1257 1259	13:01	13:07
	00 28/01/20 07 28/01/20 00 28/01/20	109 12:43:55 109 12:44:36	67,8 >45,0	3,60E-05 <5E-8 <3E-5 3	0,3 68,8 >40,4	4,20E-05 <5E-8	<3E-5 32,1	67,8 >43,4	1,30E-05 <5E-8	<3E-5 30	65,1>40,7	2,80E-06 <5E	-8 <3E-5 >35,0	3 17,9 >5,8
	09 28/01/20 7 U 28/01/20	103 12:45:13 103 12:46:03	67,8 >43,4 67,6 >44,8 67,7 >44,5	1,50E-04 (SE-8 (3E-5) 1,00E-04 (SE-8 (3E-5) 1,50E-04 (SE-8)	0,5 69,1 >39,7 30 69,1 >39,7	4,00E-05 <5E-8 4,10E-05 <5E-8	(3E-5 23,4 (3E-5 23,2 (3E,5 23,2	68 >43,6 67,8 >43,4 67,9 >43,4	6,50E-06 <5E-8 1,60E-05 <5E-8	<3E-5 >35,0 <3E-5 33,2	64,8 >40,4 65,1 >40,7	4,20E-07 <5E	-8 (3E-5)35,0 -8 (3E-5)35,0	18,3 >4,9 18,5 >6,4
	/ 28/01/20 / 2 28/01/20 / 3 28/01/20	103 12:47:27 103 12:48:03	67,8 >43,4 67,7 >44,6	1,40E-04 (SE-8 (SE-5 3 1,20E-04 (SE-8 (SE-5 2 1,20E-04 (SE-8 (SE-5 2	31,1 69,1 >40,0 8,9 69 >39,6	3,40E-05 (5E-8 3,80E-05 (5E-8	(3E-5 23,7 (3E-5 23)	67,8 >43,4 67,7 >43,3	1,00E-05 (5E-8 3,30E-06 (5E-8	<pre><3E-5 32, <3E-5 32,3 </pre>	64,3 >40,5 65 >40,6 64,7 >40,3	3,60E-06 <5E	-8 (3E-5)35,0 -8 (3E-5)35,0 -8 (3E-5)35,0	17,3 >5,2 17,7 >5,6
	/ 4 28/01/20 / 5 28/01/20	03 12:48:51 03 12:49:34	67,7 >43,6 67,6 >43,8	1,20E-04 (5E-8 (3E-5) 1,00E-04 (5E-8 (3E-5)	31,3 69,1 >39,7 31 69,1 >39,7	3,80E-05 <5E-8 3,80E-05 <5E-8	(3E-5 29,8 (3E-5 30,8	68,3 >41,1 67,3 >43,5	1,10E-05 <5E-8 1,40E-05 <5E-8	<3E-5 32,1 <3E-5 31,5	64,4 >40,0 65,1 >40,7	3,00E-06 <5E	-8 <3E-5 >35,0 -8 <3E-5 >35,0	17,4 >5,3 18 >3,6
		20090128115	i931 /		4 3 4	A _ = =	≠ ■ <i>⊂</i>		1					
	Prêt	vs 🕒 Forme	s aucomatiques		au <mark>∽ • - 2</mark> •	<u>⊷</u> • — • • • ‡	→ ♥ ♥							

16 Error rate measurement

To access to the ERROR RATE MEASUREMENT function,



press the function key.

The displayed measures are **BER** (Bit Error Rate), **UNC** (Uncorrected Packets) and **MER** (Modulation Error Rate) in **DVB-T/H**, **DVB-T2**, **MCNS**, **DVB-C**, **DVB-S** or **DSS**.

In DVB-S2, LDPC, BCH, PER and MER are displayed.

It is also displayed **NM:x.xdB** (Noise Margin for terrestrial channel) and **LKM:x.xdB** (Link Margin for satellite transponders)

This indicates in dB the difference between the measured MER and the limit MER before picture freeze: it is the margin we have before picture problem.



- Bargraphes for error rates use colours to differentiate values:
 - GREEN : correct bit error rates
 - ORANGE : VBER (or BER) > 1^E-4 (QEF : quasi error free) with no lost packet
 - RED: lost packets (UNC).

You can access to these measurements if one of the following standards is in progress in **the LEVEL MEASUREMENT** page:

- ✓ DVB-S, DSS
- ✓ DVB-S2
- ✓ DVB-T/H
- ✓ DVB-T2
- ✓ DVB-C, MCNS

16.1 Parameters

The number and the meaning of the displayed parameters depend on the **Standard** selected.

The Setup, Frequency, Channel, LNB Band and LNB Polarisation parameters are the same as in the LEVEL MEASUREMENT screen (see chapter « Level / power measurement »).

The Frequency parameter also gives access to:

- A "Scan+" and "Scan-" function that searches for channels for the current standard.
- And in Satellite band if there is a positioner, functions linked to the "Posit." Positioner :
 - **<West:** moves the dish westwards.
 - East>: moves the dish eastwards.
 - Stop: no move.
 - Store: saves the current position in the current position number.
 - **Calcul.** : recalculation order of other positions by the positioner.

A long press on the " **<West** " and " **East>** " keys launches a continuous movement. Press " **Stop** " to stop this action. The other parameters depend on the type of digital standard DVB-S, DVB-S2, DSS, DVB-T/H or DVB-C.



"Sync ?" shows that the signal is missing or non-locked, check that the signal and the remote supply are not missing, the modulation parameters and the LNB and DiSEqC parameters in satellite band.



The "<" sign precedes an error rate value if there is no error (for example when the error rate is lower than 1^{E-8}).

16.2 DVB-S, DSS



Display of the following measures:

- **CBER** : error rate before Viterbi
- VBER : error rate after Viterbi
- UNC : error rate after Reed Solomon (lost packets)
- MER : modulation error rate

xBER: 'bit' error rate

Number of wrong bits / number of transmitted bits ratio during measuring time.

UNC: 'packet' error rate

Number of wrong packets / number of transmitted packets ratio during measuring time.

Note: A QPSK (DVB-S) packet is made of 204 bytes; a packet is 'wrong' if it has more than 8 wrong bytes (correction with Reed Solomon coding).

16.3 DVB-S2



Display of the following measures:

- LDPC : error rate before LDPC
- BCH : error rate after LDPC
- PER : error rate after BCH (lost packets)
- MER : modulation error rate

Note:

LDPC: low-density parity check

BCH: Bose Chauhuri Houquenohem

The Viterbi + Reed Solomon concatenation of the correction of the DVB-S is replaced in DVB-S2 by the LDPC and BCH concatenation.

16.4 DVB-T/H



Display of the following measures:

- CBER : error rate before Viterbi
- VBER : error rate after Viterbi
- UNC : error rate after Reed Solomon (lost packets)
- MER : modulation error rate

xBER : 'bit' error rate

Number of wrong bits / number of transmitted bits ratio during measuring time.

UNC : 'packet' error rate

Number of wrong packets / number of transmitted packets ratio during measuring time.

Note: a DVB-T/H packet is made of 204 bytes; a packet is 'wrong' if it has more than 8 wrong bytes (correction with Reed Solomon coding).

Parameter:

- Modulation : Type of detected Modulation Automatically displays:
 - ✓ the number of carriers (2K / 8 K)
 - ✓ the constellation (QPSK, 16QAM, 64QAM)
 - ✓ the guard rate (1/32, 1/16, 1/8, 1/4 auto or not)
 - ✓ the Viterbi rate (1/2, 2/3, 3/4, 5/6, 7/8)
 - ✓ the spectral inversion of the signal

In case of hierarchical modulation use the **HP** and **LP** keys to select the stream to be measured. In case of bad reception or co-frequency analogue channel the guard interval can be set to manual.

• **Preamplifier**: switch ON the internal preamplifier.



Use the preamplifier only if signal level is < 40 dBµV.

If signal level is > 60 dBµV, errors due to saturation, interferences may occur.

The Info+ menu key (modulation parameter) gives access to the following additional information:

• offset in frequency

- the HP stream's Viterbi rate
- the LP stream's Viterbi rate
- the hierarchical mode level
- the spectral inversion of the signal
- the presence and relative level of a co-frequent analogue channel (except HDT2 models)
- the presence and relative levels of echoes out of the guard rate (except HDT2 models
- the cell identifier



16.5 DVB-T2 (HDT2 models)



Display of the following measures:

- LDPC : error rate before LDPC
- BCH : error rate after LDPC
- FER : frame error rate, error rate after BCH (lost packets)
- MER : modulation error rate

Note:

LDPC: low-density parity check

BCH: Bose Chauhuri Houquenohem

The Viterbi + Reed Solomon concatenation of the correction of the DVB-S is replaced in DVB-S2 by the LDPC and BCH concatenation.

Parameters:

Modulation : Type of detected Modulation

Automatically displays:

- ✓ The number of carriers (1k, 2k, 4k, 8k, 16k, 32k)
- ✓ The extended bandwidth or not
- ✓ The constellation QPSK, 16QAM, 64QAM, 256QAM)
- ✓ The guard interval (1/128,1/32, 1/16, 19/128, 1/8, 19/256, 1/4)
- ✓ The Viterbi rate (1/2, 3/5, 2/3, 3/4, 4/5, 5/6)

The spectral inversion of the signal

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In case of multi-PLP modulation use PLP - PLP + keys to select the stream to be measured.

• **Preamplifier**: switch ON the internal preamplifier.



Use the preamplifier only if signal level is < 40 dBµV.

If signal level is > 60 dBµV, errors due to saturation, interferences may occur.

The Info+ menu key (parameter modulation) gives access to the following additional information:

- ✓ the structure of the layer 1
- ✓ the structure of the frames
- ✓ the different identifiers
- ✓ the number of PLP and the number of the selected PLP
- ✓ the structure of the PLP
- ✓ the structure of the Time Interleaving

DVB-T2	2:BER/	MER		1 (ST-E	TIENNE)	- +
Setup 7	#					
Freque	ncv	• 474	000 MH:	z (+0 kHz	7)	_
Ch	-	IN	FO+			
C+ Layer	<u>1</u>	: 32k ext SISO	64QAM 1/2 P	P8 TR-PAPR		
Ju Frame	structure ication (hex)	: 2 frames 7	system 80	; 100 cell.000	٥	
PLP		: 1 PLPs PLP() active		Ŭ	Å I
Pr Active	PLP	: 256QAM Rot 3	2/3 64k LDPC	itr 7 id 0 grp	80 type 1	
Time I	nterleaving	: frame interva	l1 type 0	length 0		9
LDPC	Sync ?					
BCH	Sync ?					
FER	Sync ?					
		L <u>5 20</u>	25	30	35	40
MER	dB				NM:0	.0dB

16.6 DVB-C, MCNS



Display of the following measures:

- BER : error rate before Reed Solomon
- UNC : error rate after Reed Solomon (lost packets)
- MER : modulation error rate

BER: 'bit' error rate

Number of wrong bits / number of transmitted bits ratio during measuring time.

UNC: 'packet' error rate

Number of wrong packets / number of transmitted packets ratio during measuring time.

Note: A QAM (DVB-C) packet is made of 204 bytes; a packet is 'wrong' if it has more than 8 wrong bytes (correction with Reed Solomon coding).

16.7 Recording measures over time

Pressing twice the **MER BER** function key permits to display the graphic recording of measures.



The legend shows by colours the measures being recorded.

You can set the recording time by using the menu keys (from 10 minutes to 7 days).

At the end of the chosen duration, record is stopped and is still displayed on the screen until you press a key.

17 Constellation / Confidence-Frequency response / Impulse response (DVB-T/H, DVB-T2)

To access to the CONSTELLATION function in DVB-T/H, DVB-T2, DVB-C, MCNS, DVB-S,

DVB-S2 and DSS, press the key:



These measures are accessible if one of these standards is in progress in the **LEVEL MEASUREMENT** page.

In DVB-T/H and DVB-T2 standards:

- press twice this key, you get access to the IMPULSE RESPONSE
- Press this key one more time, you get access to the CONFIDENCE-FREQUENCY RESPONSE.

17.1 Constellation

The appliance displays the **Constellation** of the signal in progress.



The information displayed on the right of the **Constellation** graph is the same as in **ERROR RATE** function:

- ➔ current frequency
- ➔ constellation
- → symbol rate
- ➔ error rates and MER

Use the menu keys to modify the **Constellation** display:

- 🔍 X 1 🛛 🔍 X 2 🗄 zoom in X1 or X2
- Change of quadrant
- 1s 3s 10s 30s : refreshing time
- Hold : fixed picture

17.2 Confidence-frequency Response (DVB-T/H except HDT2 models)

The appliance displays **Confidence** and **Frequency Response** (FR) for the signal in progress.



Confidence represents the confidence rate for each carrier by the **DVB-T/H** demodulator.

A carrier with a low **Confidence** will be rejected; the transferred data is already included on other carriers (redundancy).

The frequency response is the reception relative amplitude for every measured carrier (FR).

You can change the number of carriers used for display by using the menu keys:

•	 	one in one : all carriers are used
•		one in two
•	🞯 X 4 :	one in four
•	🞯 X 8	one in eight
•	🞯 X 16 :	one in sixteen
•	Max :	maximum speed measured on 240 carriers only

17.3 Confidence-MER / carrier (DVB-T/H and DVB-T2 HDT2 models)

The appliance displays Confidence MER/ carrier for the signal in progress.



Confidence or MER/carrier represents the confidence rate for each carrier by the **DVB-T/H** DVB-T2 demodulator.

A carrier with a low **MER** will be rejected; the transferred data is already included on other carriers (redundancy).

You can change the number of carriers used for display by using the menu keys:

•	🗑 X 1 🗄	one in one : all carriers are used
•		one in two
•	3 X 4 :	one in four
•	🞯 X 8 🗄	one in eight
•	🞯 X 16 :	one in sixteen
•	🎯 Max 🗄	maximum speed measured on 240 carriers only

17.4 Impulse response, echoes (DVB-T/H and DVBT2)

This function is available only for DVB-T and DVB-T2 standards (selected in Level function).



Information:

In digital terrestrial, echoes are the result of multi path of the signal due to obstacles between the transmitter and the receiver:



In analogue TV, echoes affect the picture quality.

In digital TV (DVB-T or DVB-T2), echoes can affect in a different way the picture depending of the delay.

DVB-T and DVB-T2 standards define the guard interval. During this laps of time echoes do not affect the signal quality and the picture.

During the guard interval, the signal is not transmitted: it is a dead period (no signal)

When a symbol is delayed for **less** than the guard interval, the signal is **not affected** and the receipt is correct.

When a symbol is delayed for **more** than the guard interval, the signal is **affected** and the receipt is not correct.



Using a more directional antenna reduce the echoes.

The Impulse response function allows the measurement of echoes on the signal.

Relative amplitude in dB and the delay in μs (or distance in km or mile) compared to the main signal are calculated.

The yellow line shows the end of the guard interval.

Echoes above this limit affect the reception, so they must be as lowest as possible.

The wheel and arrow keys move the red cursor corresponding to the maxi-zoom window.

The maxi-zoom window allows to display, in real time, an echo and to act on the pointing of the antenna to minimize it

Push buttons make zooming possible:

- <u>\ <-- \ \ --></u>

: display full range or details (zoom)
: find next / previous echo, enable / disable maxi-zoom
: select the unit (km or mile).

• km/miles

18 Messages

The appliance displays messages while it is working.

18.1 Warning messages

	Para	mete	rs						1	(ST ET	IENNE)	+
[Plac Freq Freq Thre Mes	e # luenc luenc sholo sages	y band y map Is			: 1 (S ⁻ :5-865 :France	Г ETIENN MHz e Cable	E)				
	#	nam	e	freq.	8	Battery	: DISCHAR	RGED	co	onst.	rate	^
	0		-									
	1	TF:	L	583.2	250	E35	L NICA	м				
	2	A 2		543.2	250	E30	L NICA	м				
	3	FR3	3	567.2	250	E33	L Mono	,				
	4	C +		607.2	250	E38	L Mono	,				
I.	5	5 AR	TE	823.2	250	E65	L Mono	,				
I.	6	Μ6		743.2	250	E55	L NICA	м				
	7	FR II	NTER	88.0	00		FM					
	8	EUR	OPE 1	104.8	300		FM					-
						Name	List					

The battery is discharged; the appliance will automatically go off in a few minutes.

Para	meters		3 (AST	FRA NUM)
Place Freq Thre Mess	e # uency banc sholds sages	: 3 (ASTRA NUM) : 900-2150 MHz LNB - DiSEqC Remote supply : On		
# 0	name	LO1 freq 😧 Remote supply fault] [pol _
1 2 3		LO selection : DiSEqC Polar selection : DiSEqC		
4 5 6	DAS ERST CAN ALG RTM	Switch : DiSEqC Satellite : Pos A		H V V
7 8	t tv Euronews	Positioner : No Satellite # : 1		H V
		Auto	On C	Off

Confirmation request for important action.

Param	eters		3 (AS	STRA NUM) 🚥
Place : Freque Thresh Messa	# ency banc nolds ges	: 3 (ASTRA NUM) : 900-2150 MHz LNB - DiSEqC Remote supply : On		
# n	ame	LO1 freq 🔀 Remote supply fault		pol _
1 2 3		LO selection : DiSEqC Polar selection : DiSEqC		
4 D 5 C	AS ERST	Switch : DiSEqC Satellite : Pos A		H V
6 R 7 T 8 E	TV URONEWS	Positioner : No Satellite # : 1		H V
		Auto	Dn	Off

Remote supply fault: a voltage is already on the cable or current is exceeding the maximum value.

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18.2 Error messages

Para	ameters				1 (ST ET	IENNE)
Place #		: 1 (ST	ETIENNE)			
Frec	luency band	cy band		1117 Calala		
Frequency map			: France	Cable		
Mee	esnoias					
mes	sages				L	
#	name	freq. 🚺	GPS optio	on not present	const.	rate
0						
1	TF1	583.250	E35	L NICAM		
2	A 2	543.250	E30	L NICAM		
3	FR3	567.250	E33	L Mono		
4	C +	607.250	E38	L Mono		
5	5 ARTE	823.250	E65	L Mono		
6	M 6	743.250	E55	L NICAM		
7	FR INTER	88.000		FM		
8	EUROPE 1	104.800		FM		•
			Name	List		

Pressing a function key that is not available in the appliance

Signal	level			1 (ST E		
Setup ; Freque Channe Standa Audio	# ncy el rd	: 865.000 : : I 	MHz ase frequency		<u>1</u>	
v	20 13.6dBµV	40	60	80	100	120
	- 0	10	20	30	40	50
	3.1dB					
	-10	0	10	20	30	40
V/A	14.7dB					
			Map			

The appliance tries to perform a level measurement out of these possibilities (for example an Audio measurement with an 865 MHz video carrier).

Configuration	1 (ST ETIENNE)
Configuration	1 (ST ETIENNE)
GPS	
	0 / 0.000%
Reset	

Impossible to Save/Recall here.



The appliance tries to perform an error rate measurement with a **Standard** different from **DVB-C**, **MCNS**, **DVB-S**, **DSS**, **DVB-S2 DVB-T/H** or **DVB-T2**.
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18.3 Failure messages

Signal level Setup # Frequency Channel Standard		: 25 (R1 C : 706.000 : 50 (E50)	H PU) MHz 8 MHz	1 (ST E	TIENNE)
Audio	8	Overheating Allow	protection a unit to coo	ctivated		
V 68.84B	20	40	60	80	100	120
• 00.0UD	µ••[0	10	20	30	40	50
C/N 43.5	dB					
			List			

If the internal temperature in the appliance is over 60°C: change to protection mode.



A message in red appears on the menu keys,

It may appear once after updating the software else contact SEFRAM technical support:



E-mail: support@sefram.fr

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19 Maintenance

In order to comply with the use requirement ad in order to preserve the whole characteristics, this equipment needs a minimum of maintenance.

	Consequence	Recommended checking pe-	Recommended
	1	riodicity	limit of use
BATTERY	Reduction autonomy duration		200 cycles
			charge/discharge
			or 2 years
Protection bag	Bad protection and equipment	-For each use.	
	breaking	-check of the strap's posture.	
Backlight screen	Reduction of visual level		2 years
Metrological fit-	Wrong or erroneous measures	Once a year	18 months
ting/checking			
CONNECTIQUE	Wrong or erroneous measures	At every measure	

The manufacturer's recommendations do not commit SEFRAM I.S.'s responsibility.

They allow ensuring the best use possible of the characteristics and its preservation.

Routine maintenance:

The maintenance limits itself to the external cleaning of the equipment. The other operations require a qualified staff.

Disconnect the equipment before any intervention.

Do not let water enter in the equipment in order to avoid electric discharge risks.

Regularly clean the equipment following the instructions here under:

- use soapy water to clean it.

- Do not use any product out of petrol, benzene, alcohol (if you do so, silk-screen printings will be dam-aged).

- Wipe with a soft and non-pilled rag.

- use a non-static product, and a product without solvent to clean the screen.

For the bag:

- Clean it with a clean rag, and do not use water.
- Using solvents is totally forbidden.

INFORMATION ABOUT LCD WITH ACTIV SCREEN MATRIX

Your SEFRAM's Field Strength Meter is equipped with a LCD active screen matrix.

This screen is supplied by several known for manufacturers. In actual technical conditions of fabrication, manufacturers are not able to insure 100% of well functioning of the pixels in display area.

They specified defective number of pixels on screen surface.

SEFRAM's quality service conditioned assembly of the screen of your instrument to the respect of acceptation conditions of these manufacturers.

ZONE B		
	ZONE A	
	(diagonal 60% of B)	

Acceptation criteria:

Zone A (central area): less than 5 defective pixels and less than 3 pixels contiguous.

Zone B (total surface of the screen): less than 9 defective pixels on all display surface when zone A condition is respected.

We mean by defective pixel a screen point which stay switched off or which light on a different colour than the awaited one.

The contractual warranty is not applicable on your field strength meter if the above-defined criteria are not achieved.

As many as delivery as warranty duration.

20 Specifications

20.1 Common technical features 786x

Frequency:	
Ranges:	5 MHz to 865 MHz, terrestrial band
	900 MHz to 2150 MHz, satellite band (except 7863)
	2412 MHz à 2484 MHz, WI-FI band 802.11 B/G/draft N (option)
	Only the Wi-Fi keys provided by Sefram are recognized
Resolution:	measurement: 50 kHz in terrestrial band, 1 MHz in satellite band, display: 1 kHz

Level measurement:

Frequencies	5-45 MHz	45-865 MHz	900-2150 MHz
Dynamic range	25-120 dBµV	20-120 dBµV	30-110 dBµV
Accuracy	+/- 1 dB typical	+/- 1 dB typical	+/- 1 dB typical
at 23°C +/-5°C	+/- 2 dB max	+/- 2 dB max	+/- 2 dB max
Accuracy	+/- 4 dB max	+/- 4 dB max	+/- 4 dB max
From -5°C to +45°C			

Unit:	dBµV, dBmV, dBm or Volt
Resolution:	0.1 dB
Measurement filters:	100 kHz, 300 kHz in terrestrial band. 1 MHz in satellite band.
Input:	75-OHMS BNC
Max input level:	-0,3V to 60VDC
Standards:	terrestrials B, G, D, K, I, L, M, N, FM, DVB-T/H, DVB-T52, DVB-C
	Satellites PAL, SECAM, NTSC, DVB-S2, DVB-S, DSS (except 7863)
Measurements:	peak, average or power
Display:	digital, graphic with 312 points
Recording time:	10 min, 1 hour, 8 hours, 24 hours, and 7 days
Spectrum analysis:	
Filters:	terrestrial 100 kHz, 300 kHz and 1 MHz
	satellite 1 MHz, 3 MHz and 10MHz
Input attenuator:	0 to 50 dB (step of 10 dB)
Dynamic range (display):	60 dB
Span:	0, 5, 10, 20, 50, 100, 200, 500, 1000 MHz and full band
Automatic measurements:	level, 2 cursors, power, C/N
Scanning modes:	normal, single shot, maximum, smoothing, and quick
Number of points:	350 points

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Scanning speed (quick mode):

Span	5	10	20	50	100	200	500	860	1000	1250	MHz
Terres- trial	130	130	130	130	140	150	200	340	-	-	ms
Satellite	-	360	360	360	370	370	370	-	380	380	ms

Scanning speed (normal mode):

Span	5	10	20	50	100	200	500	860	1000	1250	MHz
Terres- trial	1060	1060	1060	1060	1060	1060	1110	1440	-	-	ms
Satellite	-	1700	1700	1700	1700	1700	1700	-	1700	1700	ms

Measurement map (data logger):

Capacity:	scanning 100 setups max
Display:	digital, graphic
Measurement:	detection of thresholds, tilt

Storage:

Backup:	internal backup on flash memory
Data:	places, setups, frequency maps, measures, spectra, measurement maps, graphic displays
Capacity:	312 Kbytes, 1000 files max per type of data

Auxiliary inputs and outputs:

USB interface:	mini B USB
Ethernet interface:	RJ 45
Audio and video input/output:	RCA connectors
Power supply input:	5.5 mm jack, 15V max, 5 A

20.2 DVB-C

According to UIT-J.83 APPENDIX A. Frequencies: 46 MHz to 865 MHz Error rate: before Reed Solomon (BER) after Reed Solomon (UNC) (lost packets) Modulation error rate: 20 to 40 dB (MER) 1 to 7.224 Ms/s Rate: Constellation: 16, 32, 64, 128, 256 Scan function: in frequency, in rate Graphic display: BER, UNC and MER with 312 dots Duration : 10 min, 1 hour, 8 hours, 24 hours, and 7 days Constellation graphic display.

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20.3 MCNS

According to UIT-J.83 APPENDIX B					
Same features as DVB-C	but:				
Constellation:	64, 256				
Rate:	1 à 5.563 Ms/s				

20.4 DVB-S, DSS

According to ETS 300-421

Frequencies:	900 MHz to 2150 MHz
Error rate:	before Viterbi (CBER)
	after Viterbi (VBER)
	after Reed Solomon (UNC) (lost packets)
Modulation error rate:	0 to 20 dB (MER)
Rate:	1 to 45 Ms/s
Modulation:	QPSK
Viterbi rate:	1/2, 2/3, 3/4, 5/6, 6/7, 7/8 (automatic)
Scan function:	in frequency, in rate
Graphic display:	VBER, UNC and C/N with 312 points
Duration :	10 min, 1 hour, 8 hours, 24 hours, and 7 days

Constellation graphic display.

20.5 DVB-S2

According to ETS 302-307	
Frequencies:	900 MHz to 2150 MHz
Error rate:	before LDPC
	after LDPC (BCH)
	after BCH (PER) (lost packets)
Modulation error rate:	0 to 20 dB (MER)
Rate:	QPSK 1 to 45 Ms/s, 8PSK 1 to 35 Ms/s
Modulation:	QPSK, 8PSK (automatic)
Punctuation:	QPSK: 2/5, 1/2, 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 (automatic)
	8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, and 9/10 (automatic)
Scan function:	in frequency, in rate
Graphic display:	LDPC, BCH and PER with 312 points
Duration :	10 min, 1 hour, 8 hours, 24 hours, and 7 days

Constellation graphic display.

20.6 DVB-S2+ 45 MSymbols

According to ETS 302-307

Frequencies:	900 MHz to 2150 MHz
Error rate:	before LDPC
	after LDPC (BCH)
	after BCH (PER) (lost packets)
Modulation error rate:	0 to 20 dB (MER)
Rate:	QPSK 1 to 45 Ms/s, 8PSK 1 to 45 Ms/s
Modulation:	QPSK, 8PSK (automatic)
Punctuation:	QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10 (automatic)
	8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, and 9/10 (automatic)
Scan function:	in frequency, in rate

20.7 DVB-T/H

According to ETS 301-7	/01
Frequencies:	45 MHz to 865 MHz
AFC:	+/- 167 kHz, +/- 333 kHz, +/- 500 kHz
Error rate:	before Viterbi (CBER)
	after Viterbi (VBER)
	after Reed Solomon (UNC) (lost packages)
Modulation error rate:	0 to 35 dB (MER)
Bandwidth:	5, 6, 7 or 8 MHz, 6, 7 or 8 MHz HDT2 models
Carriers:	/ 8k (automatic, manual automatic HDT2 models)
Constellation:	16QAM, 64QAM, QPSK (automatic)
Viterbi rate:	1/2, 2/3, 3/4, 5/6, 7/8 (automatic)
Guard rate:	1/4, 1/8, 1/16, 1/32 (automatic / manual)
Scan function:	in frequency (per channels)
Graphic display:	CBER, VBER, UNC and MER with 312 points
Duration :	10 min, 1 hour, 8 hours, 24 hours, and 7 days

Constellation graphic display. Graphic display Channel Confidence and Frequency Response. Graphic display Channel Pulse Response (echoes).

20.8 DVB-T2

According	to	ETS	302	-755
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Frequencies:	45 MHz to 865 MHz
AFC:	+/- 167 kHz, +/- 333 kHz, +/- 500 kHz
Error rate:	before LDPC
	after LDPC (BCH)
	after BCH (FER) (lost packets)
Modulation error rate:	0 to 35 dB (MER)

Bandwidth:	5, 6, 7 or 8 MHz
Carriers:	1k, 2k, 4k, 8k, 16k, 32k (automatic)
Constellation:	QPSK, 16QAM, 64QAM, 256QAM (automatic)
Viterbi rate:	1/2, 3/5, 2/3, 3/4, 4/5, 5/6 (automatic)
Guard rate:	1⁄4, 19/256, 1/8, 19/128, 1/16, 1/32, 1/128
Scan function:	in frequency (per channels)

Constellation graphic display.

Graphic display of the Channel Pulse Response. (echoes) Graphic display Channel Confidence MER/carrier.

20.9 Image and sound demodulation

Audio:	analogue sound TV AM and FM, FM radio, mono
	digital sound TV, MPEG2, MPEG-1 L1/L2
	HD version
	digital sound TV, MPEG2, MPEG4 (H264), MPEG-1 L1/L2
	Via Licensing AAC and HE-AAC, Dolby Digital and Dolby Digital Plus
Video:	analogue terrestrial TV for PAL, SECAM, and NTSC (on LCD screen)
	digital TV MPEG2
	decoding depends on CAM
	HD version
	digital TV MPEG2, digital TV MPEG4(H.264) including HD TV,
	decoding depends on CAM
Video output:	Peak to peak level: 1 V; output impedance 75 ohms
Audio output:	about 0 dBm; minimal charge 1 kOhm.
Video input:	CVBS, peak to peak level 1 V max
Audio input:	level 0 dBm max

20.10 Remote supply

Voltage:	5V, 13 V, 18V et 24V
Current:	500 mA max, (300 mA @ 24V) overload protected
Mini DiSEqC:	22 kHz +/- 2 kHz, 0.6 V peak to peak +/- 0.1 V
DiSEqC generator:	standard 1.2, dish rotor control, Committed and Uncommitted
	switches
SatCR:	DiSEqC protocol extension, maximum 8 Slots control

20.11 Power supply – battery

External power supply:	main adapter 100/240 VAC, cable depends on the country
	5.5 mm jack, 2.1 mm hole
	output 15V 5 A max
Non-removable battery:	Lithium-ion 10.8 V, 6.5 Ah. (9 V when charge is completed)

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	200 charge/discharge cycles
Autonomy:	3-hours typical after complete charge (2 hours, appliance off)
	2h30 after fast charge of 1 hour (appliance off)

20.12 Environment

LCD display:	TFT, colour, 7.0 inches (16/9°), with backlight
Operating temperature:	-5°C to +45°C
Storage temperature:	-10° C to $+60^{\circ}$ C
EMC and safety:	CE marked and compliant
	NF-EN 61326 July 1997 + A1 October 98 + A2 Edit September 2001
	EN 55022 A2 edit 2003 class B autonomous device
	Immunity according to EN 61326-1 2006
	NF-EN 61010-1 June 2001
Dimensions and weight:	about 210 x 297 x 90
	2.1 kg (with battery)

20.13 Accessories

The appliance is delivered with: a bag, a battery, a main adapter, and a user manual.

Optional accessories (on request):

- kit TR7836 including the TR7836 software and the USB cable type A to mini
- cigarette lighter power supply : reference 978361000
- F/BNC adapter : ref. 213200011
- BNC/ TV (female) adapter : reference 213200010
- USB cable type A to mini B : ref. 978551100
- ETHERNET cross cable : ref. 298504246
- Wi-Fi adapter : ref. 978651000
- accessories bag: ref. 978656500

For more details, please contact SEFRAM sales department.

20.14 V, dBµV, dBmV and dBm conversion

dBµV (dBmV) is a logarithmic ratio between a measured voltage U_d and a reference voltage U_r .

The reference voltage is Ur = 1 μ V (1 mV)

 $N = 20 \log (U_d/U_r)$

dBm is a logarithmic ratio between a measured power P_d and a reference power P_r .

The reference power is Pr = 1 mW into 75 ohms.

 $N = 10 \log (P_{d}/P_{r})$ with $Pd = Ud^{2}/75$

$U_{d} = 1 \ \mu V$	$N = 0 dB\mu V$	N = - 60 dBmV	N = -108.75 dBm
$U_d = 1 \text{ mV}$	$N = 60 \text{ dB}\mu V$	N = 0 dBmV	N = -48.75 dBm
$U_d = 1 V$	N = 120 dBµV	N = 60 dBmV	N = 11.25 dBm

20.15 Values to be measured

Recommended values for good quality signal.

Measurements	Level, power (dBµV)		C/N	DED	MED	Madulation
	mini	maxi	(dB)	DER	(dB)	Modulation
Terrestrial						
Analogue TV	57	74	> 45	-	-	-
FM	50	66	> 38	-	-	-
DVB-T	35	70	> 26	VBER < 2 ^{,E} ,-4	> 26	8K, 64QAM, 1/32, 2/3
DVB-T2	35	70	> 22	PER < 1 ^E -7	> 22	32k, 256QAM, 1/8, 3/4
DVB-C, MCNS	57	74	> 31	BER < 2 ^E -4	> 31	64QAM
Satellite						
Analogue TV	47	77	> 15	-	-	-
DVB-S, DSS	47	77	> 11	$VBER < 2^{E} - 4$	> 11	QPSK, 3/4
DVB-S2	47	77	> 8	PER < 1 ^E -7	> 8	8PSK, 2/3

DECLARATION OF CE CONFORMITY according to EEC directives and NF EN 45014 norm DECLARATION DE CONFORMITE CE suivant directives CEE et norme NF EN 45014 CE

SEFRAM INSTRUMENTS & SYSTEMES 32, rue Edouard MARTEL 42009 SAINT-ETIENNE Cedex 2 (FRANCE)

Declares, that the below mentionned product complies with : Déclare que le produit désigné ci-après est conforme à :

The European low voltage directive 2006/95/EEC :

La directive Européenne basse tension 2006/95/CE

NF EN 61010-031 Safety requirements for electrical equipement for measurement, control and laboratory use. Règles de sécurité pour les appareils électriques de mesurage, de régulation et de laboratoire.

The European EMC directive 2004/108/EEC : Emission standard EN 50081-1. Immunity standard EN 50082-1. La directive Européenne CEM 2004/108/CE :

En émission selon NF EN 50081-1. En immunité selon NF EN 50082-1.

Pollution degree Degré de pollution : 2

Product name Désignation : Field Strengh Meter Mesureur de champ

Model Type: 786x

Compliance was demonstrated in listed laboratory and record in test report number La conformité à été démontrée dans un laboratoire reconnu et enregistrée dans le rapport numéro RC 786x

SAINT-ETIENNE the : September 23, 2008

Name/Position : TAGLIARINO / Quality Manager