

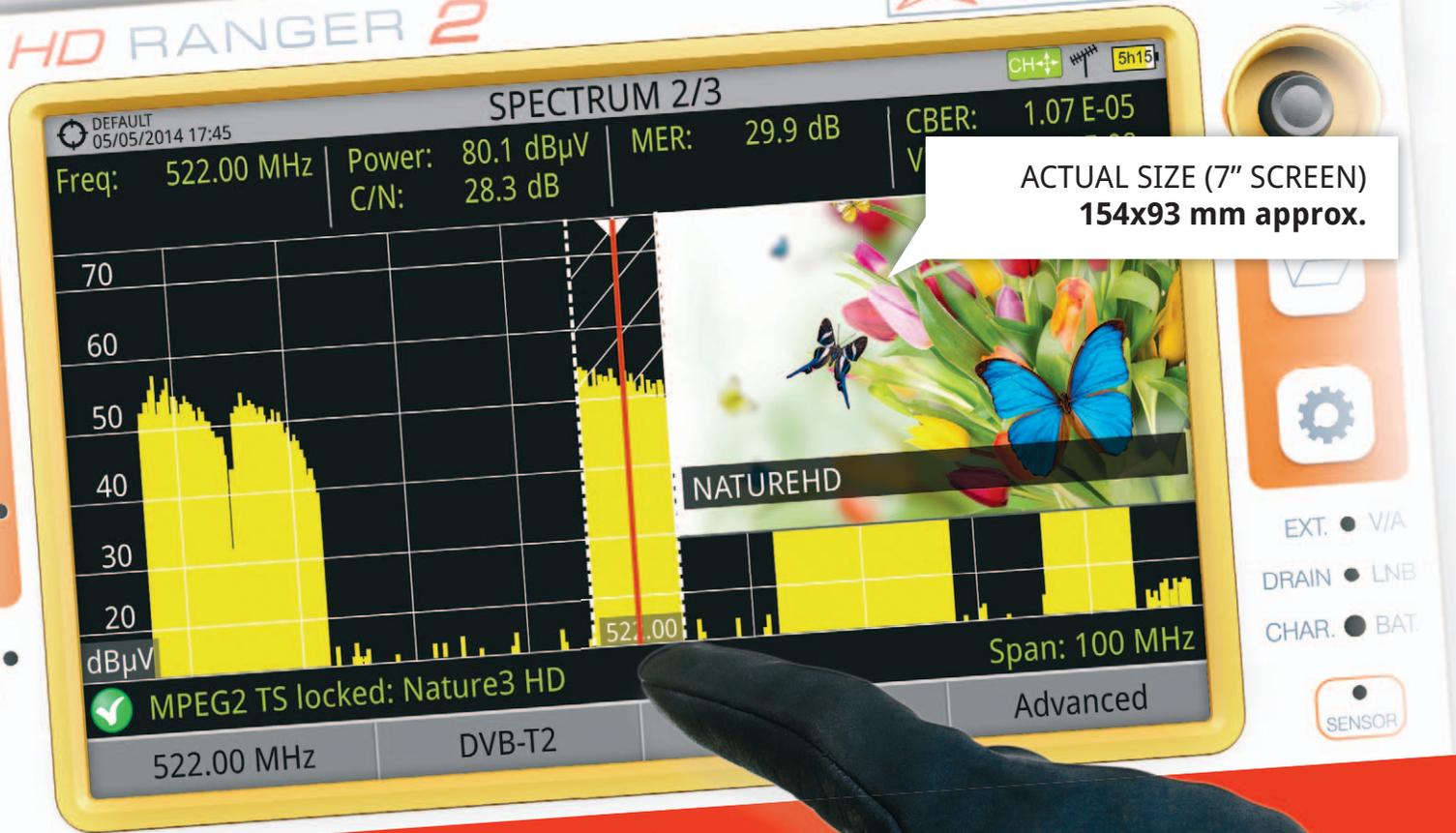


TV AND SATELLITE ANALYSERS



Make a wish...

HD RANGER 2



Touch to believe!

High resolution 7" touch screen

It helps you work easier and faster

The **HD RANGER 2** features a new touch screen with excellent brightness and superior image sharpness. You will ~~see~~ touch the difference! It can also be used wearing gloves.

Improved mechanical design

Setting new standards for handheld field strength meters

Ergonomic handle, tripod coupling, specially formulated chassis composition and more... make the **HD RANGER 2** robust, compact and ready for the hazards of the field work.

Hybrid operation

Touch or no touch. Your decision

The control software is designed in such a way that the meter can be fully operated using both the touch panel and the conventional keyboard.



Smart battery control

5 hours battery operating time

The **HD RANGER 2** uses a high quality, long operating time Li+ battery and a special control system that shows the remaining battery time. This is also useful to know at any instant what the exact battery charge situation is.

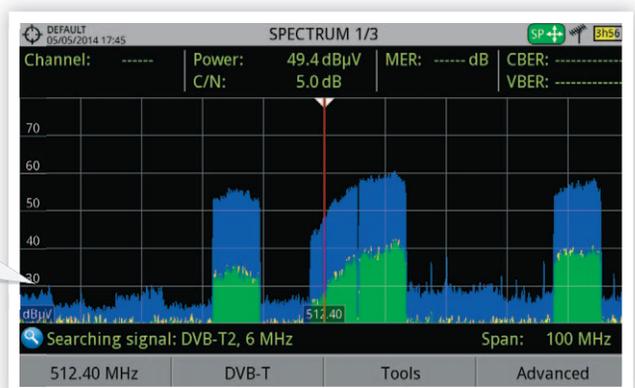


Triple split display 3 functions in a single screen

Fast & accurate spectrum analyser

90 ms sweep time & amazing resolution

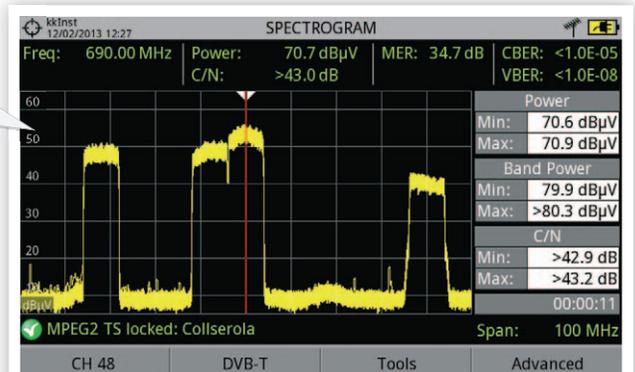
Variable span, 10, 5, 2 or 1 dB/DIV vertical scales, max and min hold, persistence control, etc... are some of the outstanding features of the *HD RANGER 2* spectrum analyser function.



Merogram and Spectrogram

Identifying random interferences at a glance

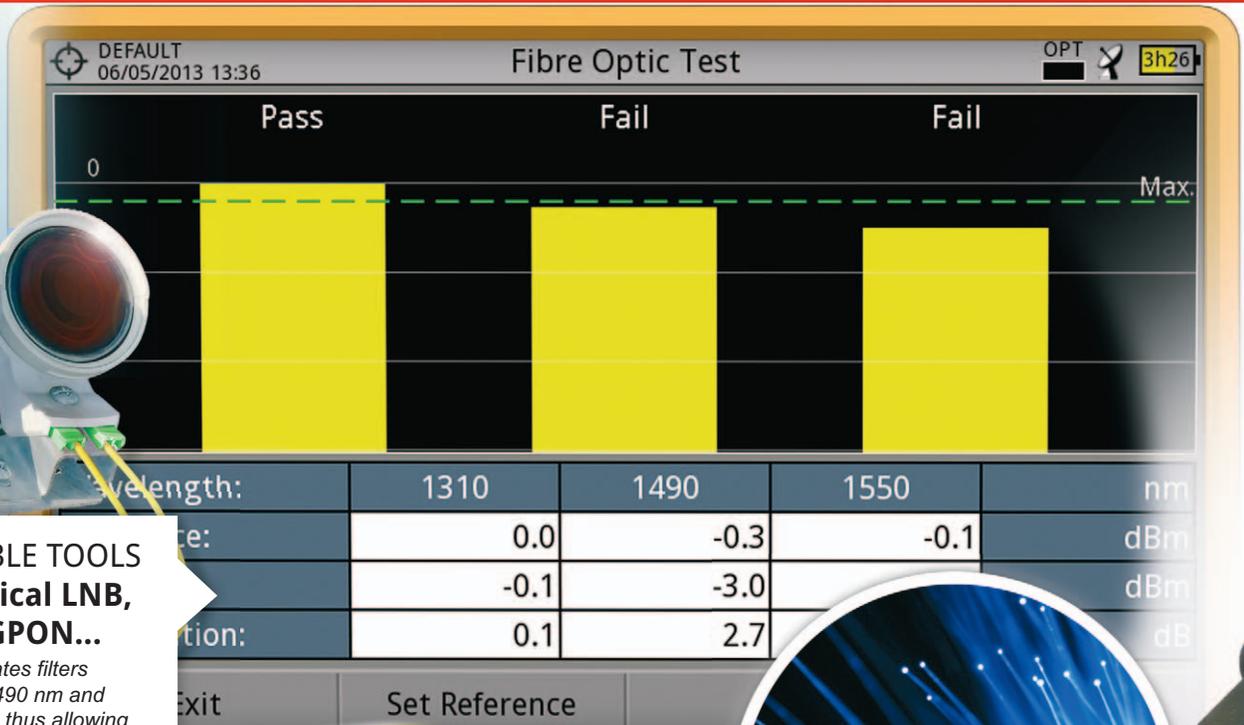
These functions have been developed to allow an early detection of intermittent impairments that may occur in very short periods of time and can not be monitored otherwise.



StealthID

Identifying the tuning parameters

The *HD RANGER 2* StealthID function automatically identifies the required demodulation settings while tuning so that you don't need any previous information about the signal.



THREE VALUABLE TOOLS
Use it for Optical LNB, RFoG, FTTH, GPON...
This module incorporates filters suited for 1310 nm, 1490 nm and 1550 nm wavelengths thus allowing simultaneous and selective measurements for different applications, unlike other instruments.



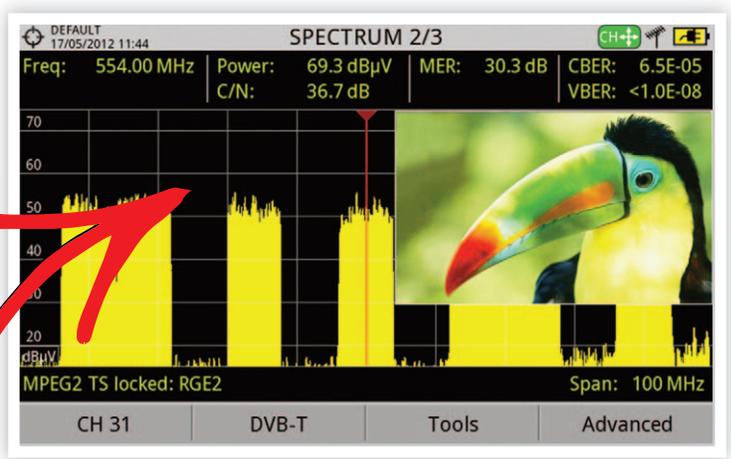
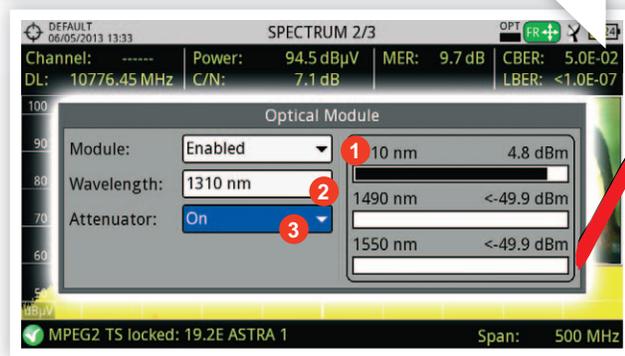
Optical measurements

(optional)

Selective Optical-to-RF converter

RFoG (Radiofrequency-over-Glass), as well as optical TV&SAT distribution, is used more and more by operators because it allows them to benefit from the advantages of fibre optics to compete with FTTH service providers. The RF signal at the converter output can be analysed, measured and decoded by the meter as one would usually do with any signal over copper wires.

- 1 Check which wavelengths are active in your system.
- 2 Select the wavelength to be converted into RF.
- 3 Set ON or OFF the built-in 15 dB attenuator of the field strength meter.



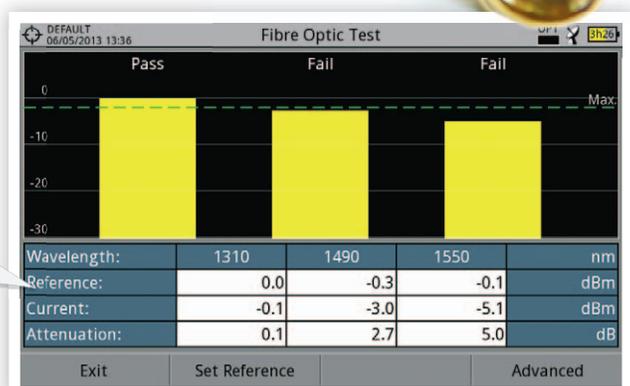
THREE IN ONE:
Selective power meter
+ Selective optical converter
+ 5 GHz aux RF input

... plus 5 GHz RF input!

(optional)

Selective optical power meter

The **HD RANGER 2** selective optical power meter combined with a portable triple laser source such as PROLITE-105 (sold separately) forms a complete Optical Loss Test Set to measure fibre attenuation. This is of great interest in live FTTH/GPON installations certification or even before they are in service.

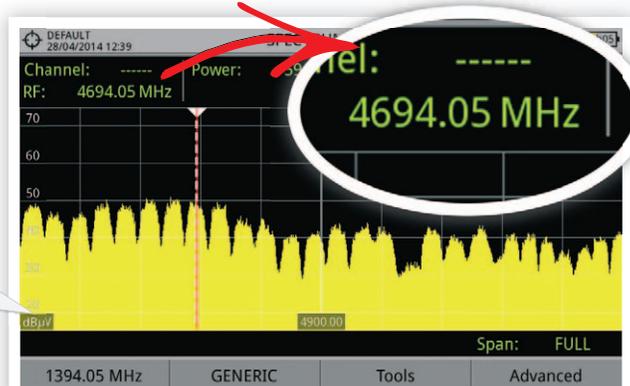


5 GHz RF Auxiliary input

Exclusive to **HD RANGER 2**

The **HD RANGER 2** optical fibre option comes along with a 5 GHz RF auxiliary input which can be used among other applications for direct connection to optical LNBs with 5.4 GHz output. This RF input covers three bands:

- Band I From 2150 MHz to 3000 MHz
- Band II From 3400 MHz to 4400 MHz
- Band III From 4400 MHz to 5400 MHz



HD RANGER 2



19" RACK VERSIONS
Available for **HD RANGER 2**
and **HD RANGER+**



Advanced satellite functions

DVB-S2 multistream

Advanced modulation techniques combine several independent transport streams into one single RF carrier. Selecting a specific TS is easy with your **HD RANGER 2** using the ISI Filtering function. This feature is available for DVB-S2, T2 and C2.

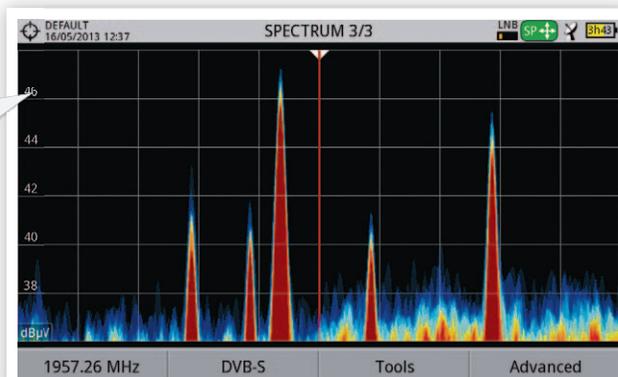
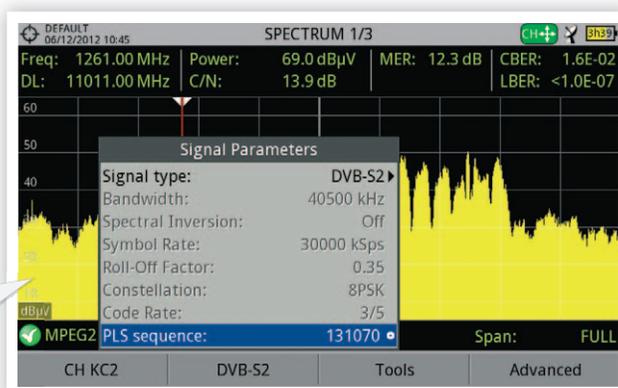
PLS - Physical Layer Scrambling

The PLS index is a number generated by the broadcaster that must be properly decoded by the customer so that demodulation is possible. **HD RANGER 2** can also work with these type of signals.

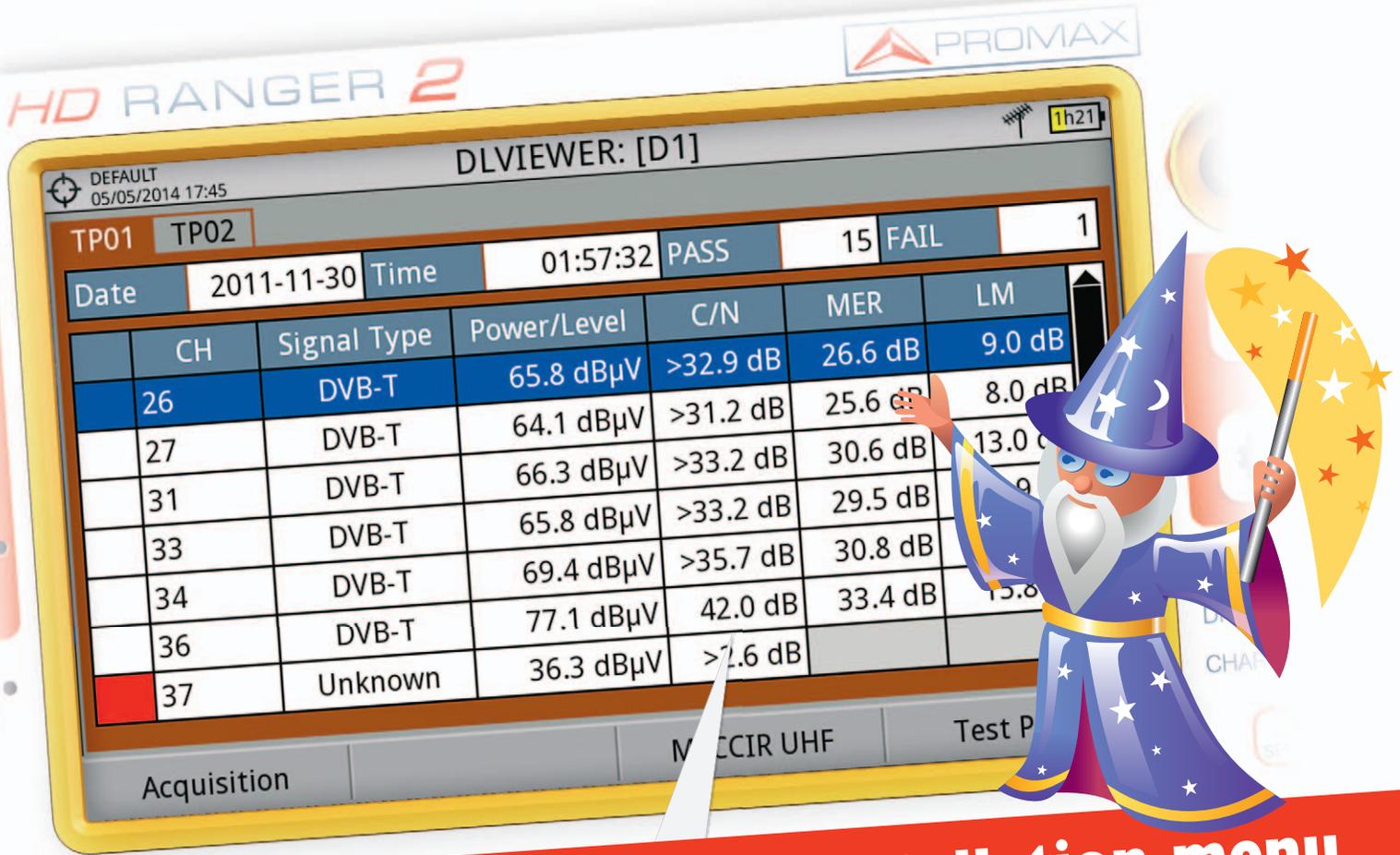
Beacon - Flyaways, SNG and VSAT

Helping live broadcast in remote areas

The **HD RANGER 2** spectrum analyser function makes it easy for technicians working in VSAT applications to set up their satellite transmission-reception systems.



HD RANGER 2



DLVIEWER: [D1]

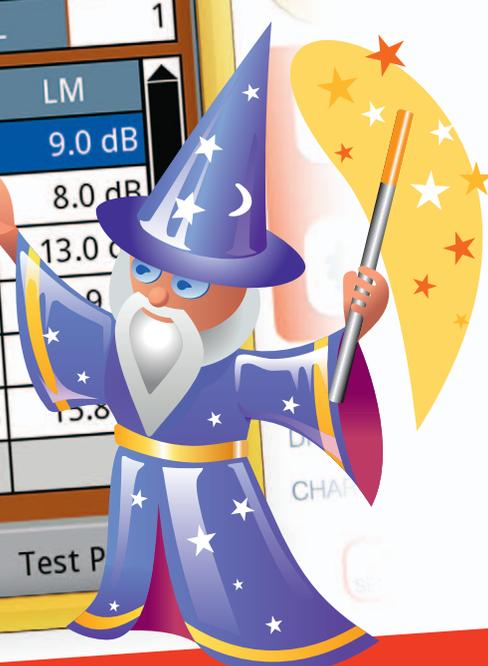
DEFAULT 05/05/2014 17:45

TP01 TP02

Date 2011-11-30 Time 01:57:32 PASS 15 FAIL 1

CH	Signal Type	Power/Level	C/N	MER	LM
26	DVB-T	65.8 dBμV	>32.9 dB	26.6 dB	9.0 dB
27	DVB-T	64.1 dBμV	>31.2 dB	25.6 dB	8.0 dB
31	DVB-T	66.3 dBμV	>33.2 dB	30.6 dB	13.0 dB
33	DVB-T	65.8 dBμV	>33.2 dB	29.5 dB	9.0 dB
34	DVB-T	69.4 dBμV	>35.7 dB	30.8 dB	15.8 dB
36	DVB-T	77.1 dBμV	42.0 dB	33.4 dB	15.8 dB
37	Unknown	36.3 dBμV	>2.6 dB		

Acquisition M CCIR UHF Test P

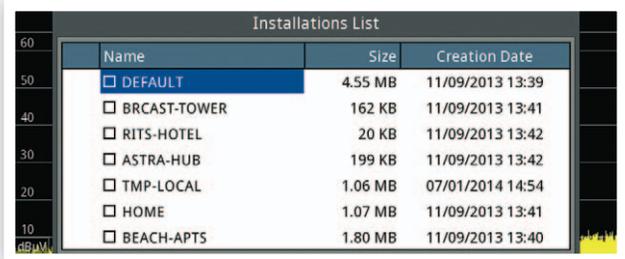


Powerful datalogger and installation menu

Automatic Datalogger

Data acquisition made truly automatic

The datalogger can perform channel power, carrier/noise, BER, MER... measurements automatically. It can also save information from the NIT table such as the network name or even the SID and names of the services in the mux under test. All this information is saved inside the meter and it can be downloaded to a USB memory or to a PC for further processing later on.

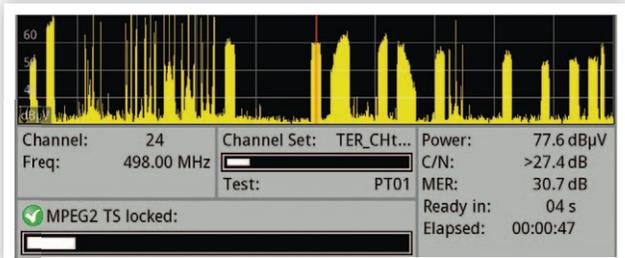
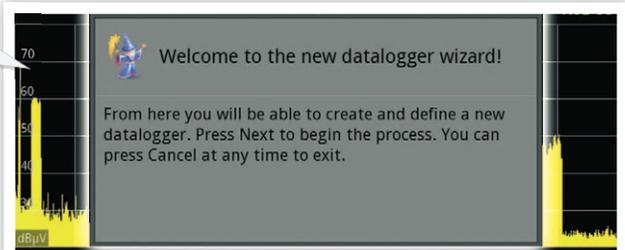


Name	Size	Creation Date
<input checked="" type="checkbox"/> DEFAULT	4.55 MB	11/09/2013 13:39
<input type="checkbox"/> BRCST-TOWER	162 KB	11/09/2013 13:41
<input type="checkbox"/> RITS-HOTEL	20 KB	11/09/2013 13:42
<input type="checkbox"/> ASTRA-HUB	199 KB	11/09/2013 13:42
<input type="checkbox"/> TMP-LOCAL	1.06 MB	07/01/2014 14:54
<input type="checkbox"/> HOME	1.07 MB	11/09/2013 13:41
<input type="checkbox"/> BEACH-APTS	1.80 MB	11/09/2013 13:40

Datalogger wizard

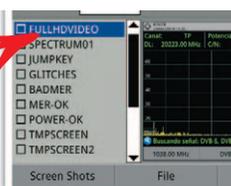
Configuring Datalogger and installations easily

Datalogger configuration is usually the less automated part of operating a datalogger and it is the main source of user errors. **HD RANGER 2** includes a configuration wizard that helps to complete this process fast and easy.

Welcome to the new datalogger wizard!

From here you will be able to create and define a new datalogger. Press Next to begin the process. You can press Cancel at any time to exit.



Screenshot key



IPTV input

Interfacing with IPTV equipment

IPTV stands for TV over IP networks. It actually means TV over any type of IP packet based distribution network. These networks can be referred to as LAN (Local Area Network), ethernet, computer networks, etc. With the growth of LAN based TV distribution systems, having an IPTV input in your field strength meter becomes a handy feature.

IPTV Reception

The *HD RANGER 2* allows you to receive television programmes over IPTV networks. Those programmes can be displayed on the screen together with other important service information.

Measurements on IPTV signals

Although some concepts are similar, signal quality assessment metrics is not the same in IPTV as it is in digital TV over radio frequency. The *HD RANGER 2* offers the measurements you need to understand, identify and correct the new problems that can be found in this new type of television distribution networks.



ATSC & ISDB-T/Tb VERSIONS AVAILABLE



HD RANGER *Lite*

A HD Analyser at an impressive price.

Digital and analog. DVB-T/C/S and DVB-T2/C2/S2. Spectrum, measurements and picture in a single screen. USB connection.



HD RANGER+

For those who want it all.

Includes Dolby Digital Plus, LTE filters and dynamic echoes analysis. Options for optical fibre and GPS. And more than 4 hours of battery life!



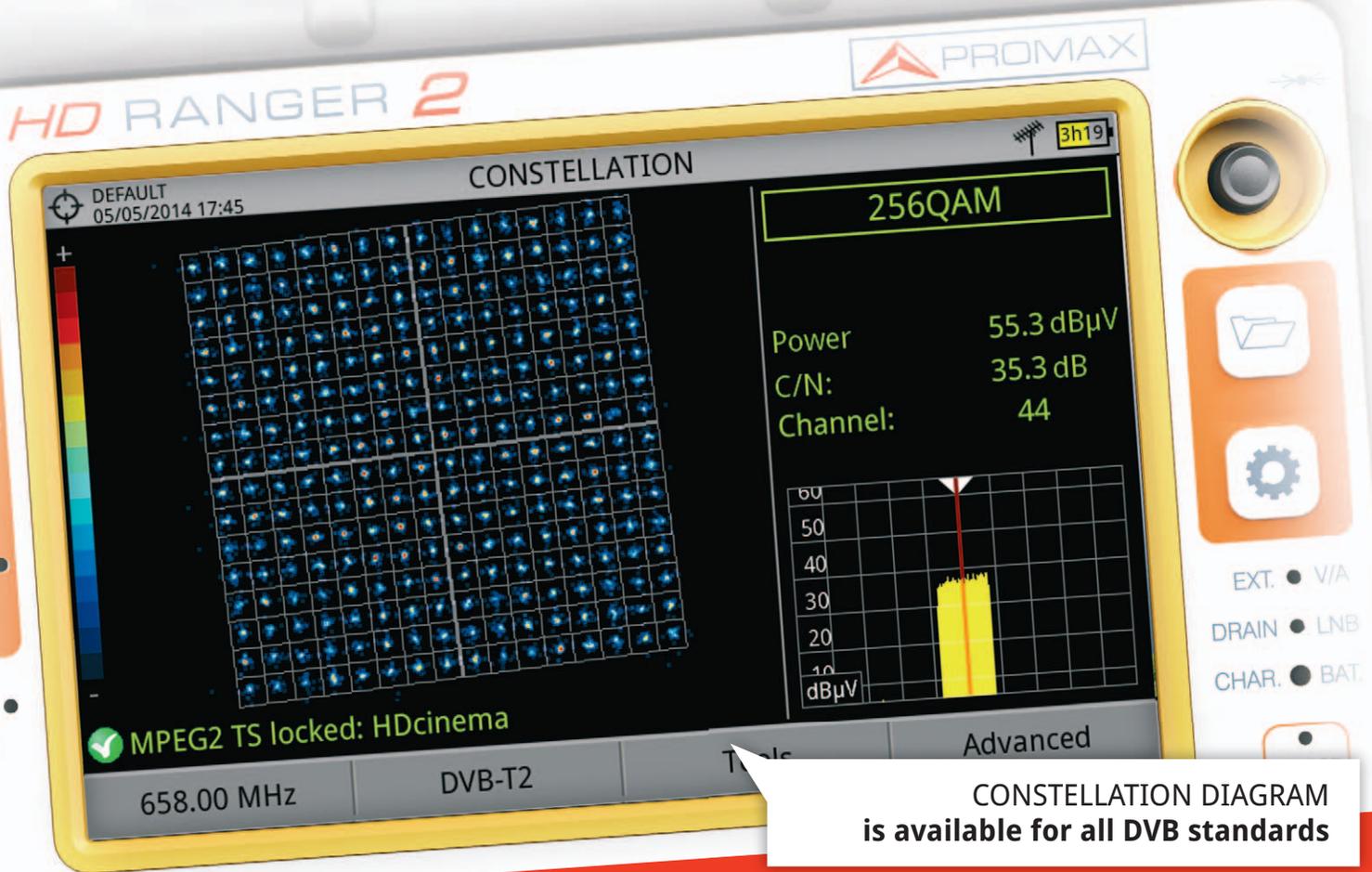
HD RANGER 2

When everything is not enough.

Touch screen, real-time Transport Stream analysis, IPTV measurements and decoding, Common Interface (CAM), TS-ASI input and output, HDMI...



HD RANGER 2



Constellation diagram

COFDM constellation

Detecting signal impairments at a glance

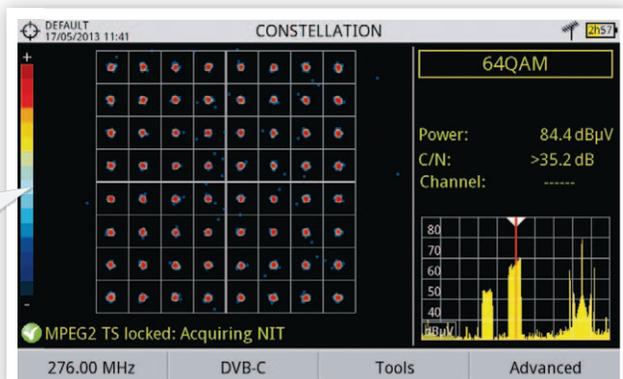
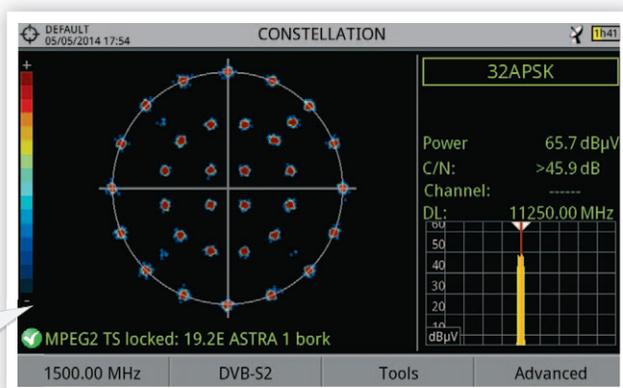
The constellation diagram is a graphic representation of the digital symbols received over a period of time. There are different types of constellation diagrams for the different modulation modes. DVB-T/T2, DVB-C/C2 and DVB-S/S2 constellations are available on the **HD RANGER 2**.

16/32 APSK, 8PSK and QPSK constellation

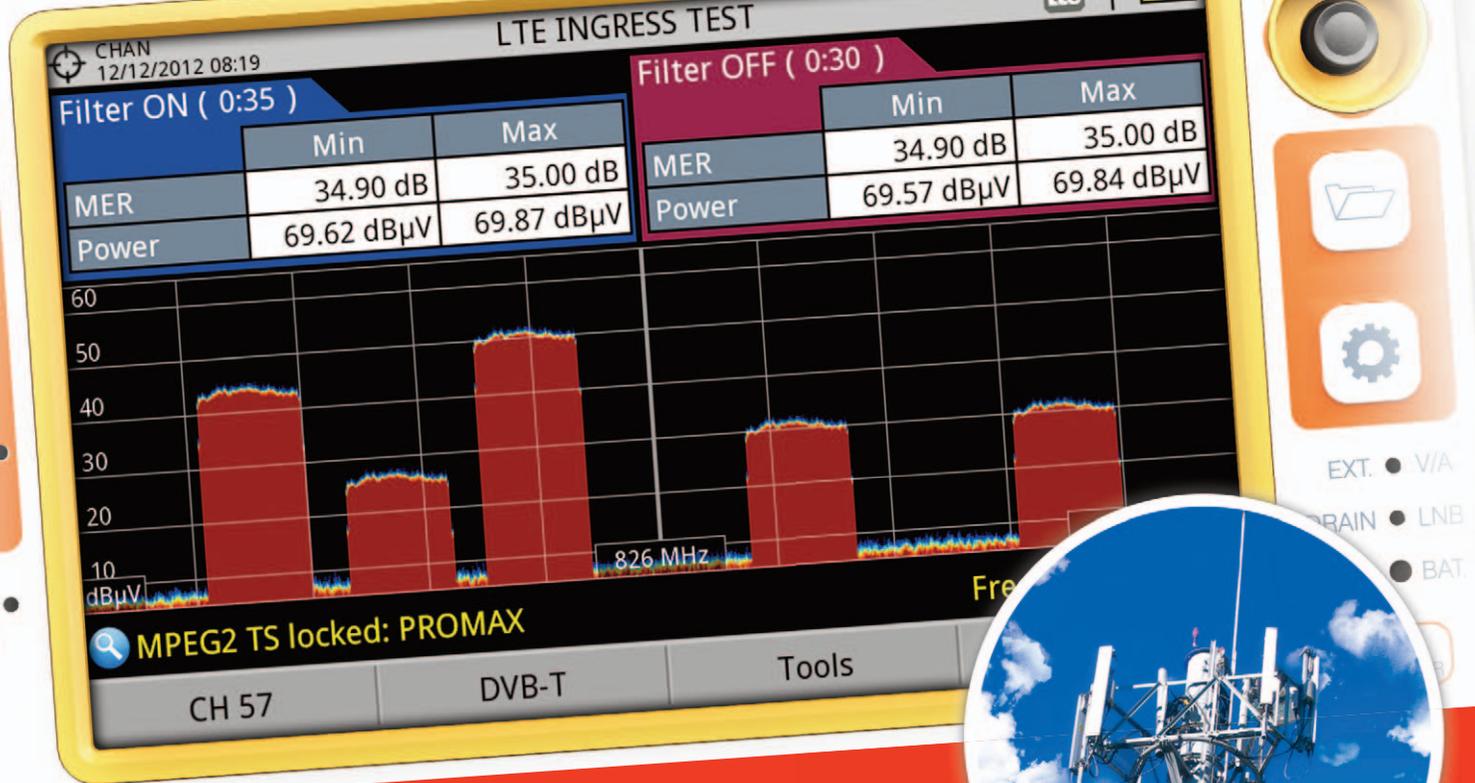
In the case of an ideal transmission channel, free of noise and interferences, all symbols are recognised by the demodulator without mistakes. In this case, they are represented in the constellation diagram as well defined points hitting in the same area and forming a clear dot.

16, 32, 64, 128, 256 QAM

Every modulation type is represented differently. A DVB-C 16QAM signal is represented on the screen by a total of 16 different zones, and a DVB-C 64QAM is represented on the screen by a total of 64 different zones and so on.



HD RANGER 2



LTE interference

LTE interference on SMATV systems

Minimizing LTE effect on your TV system

The **HD RANGER 2** has a variety of tools to compare the signal reception quality measurements on digital TV channels with and without the LTE filter. This is very helpful to anticipate the performance improvement you should expect on your TV distribution system well before you physically make changes to the cabling to insert the LTE filter.



LTE interference on CATV networks

Locating interference sources to prevent service calls

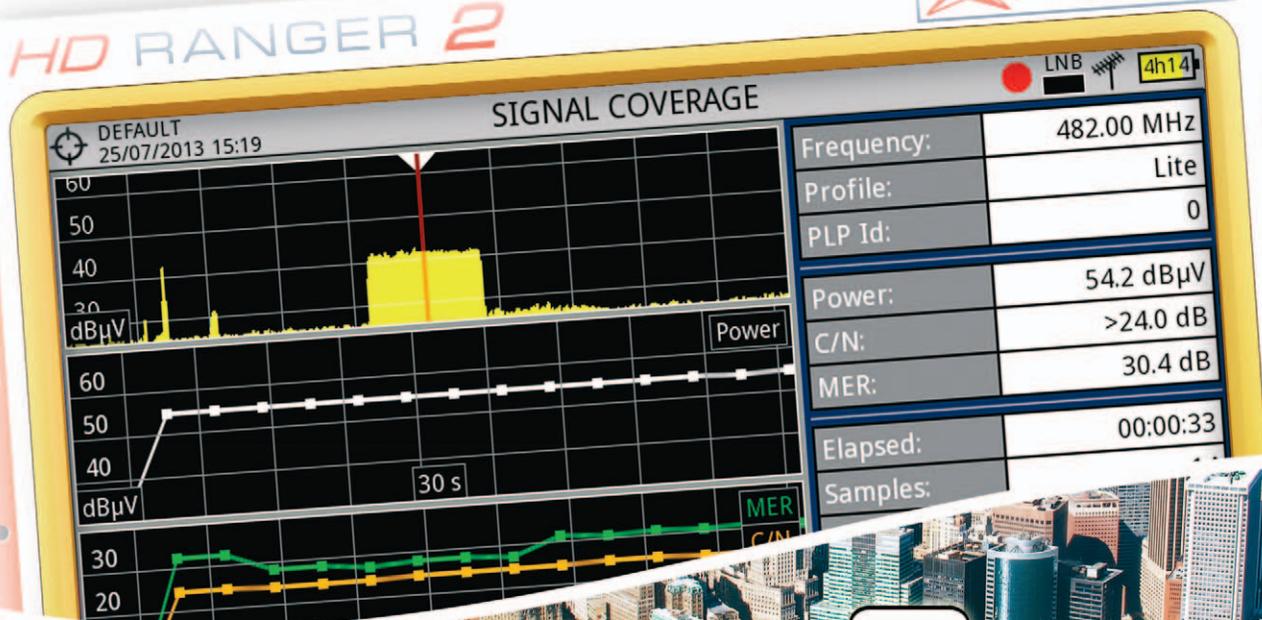
Some of the bands allocated to LTE are near or inside former television bands. For example band 5 (uplink 824-849 MHz; downlink 869-894 MHz). The **HD RANGER 2** has special functions to help installers determine the level of activity in those bands and therefore anticipate potential interference problems.

Downlink and Uplink interference

Visualising the two different scenarios

Downlink interference comes from the mobile phone base stations which are placed at fixed locations and are always on. This is not the case of Uplink interference which comes from the handheld devices and therefore it can be a lot more difficult to locate and mitigate.

HD RANGER 2



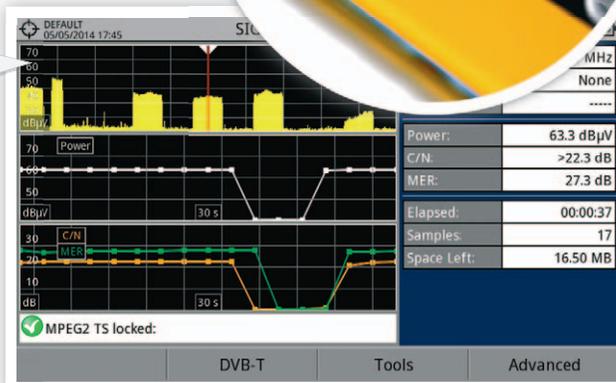
Drive test GPS option



Drive test GPS option

Taking georeferenced measurements

Adding this option to the **HD RANGER 2** turns it into an ideal field strength meter to perform "drive test" signal coverage analysis. It is able to record different types of measurements and add information about the time they are recorded and GPS location coordinates. In these applications it is essential to perform measurements in a specific PLP (*Physical Layer Pipe*) and to work with the new developments of the DVB-T2 and DVB-T standards, Lite and Base.

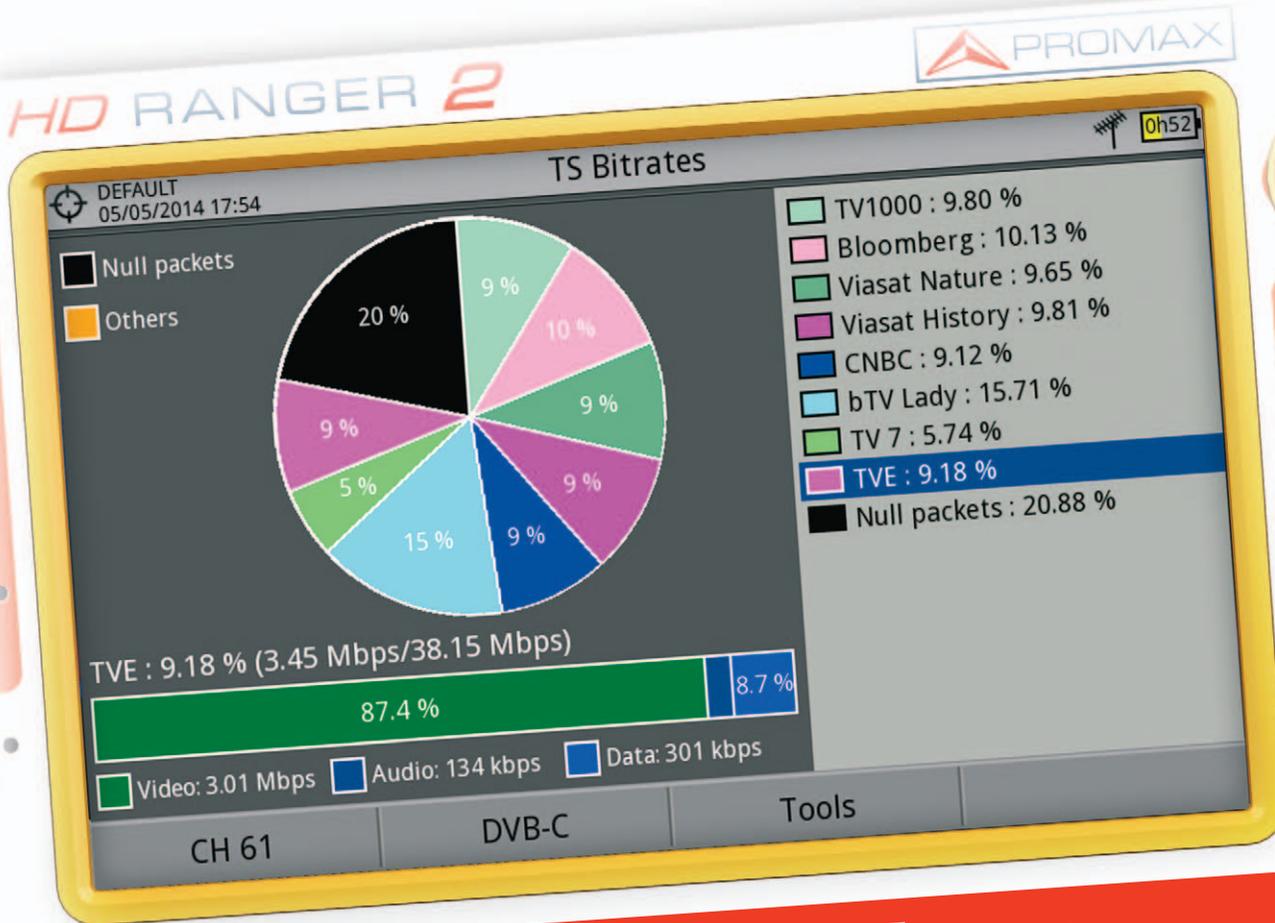


Creating reports

All this information is saved automatically to either the internal meter's memory or to an external USB memory and can be transferred to a PC computer using an universal XML format. Once on the PC the data can be processed and presented in different ways among which overlaying the values on a map is the most interesting.



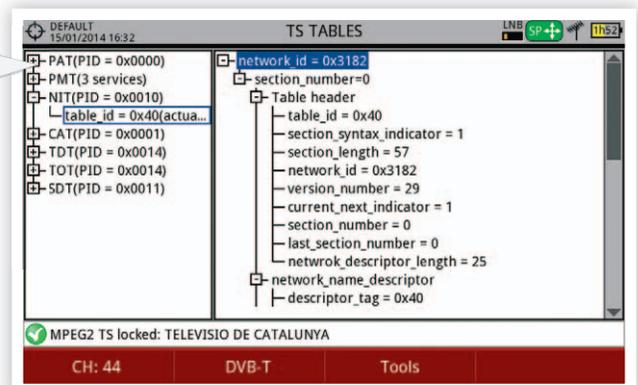
HD RANGER 2



Transport stream analyser

Table analysis

This function shows every detail of the transport stream tables in real time on a tree diagram. This is an outstanding function which is normally available in more expensive equipment only. It is possible to navigate through the tree branches using the joystick or the touch screen functionality.

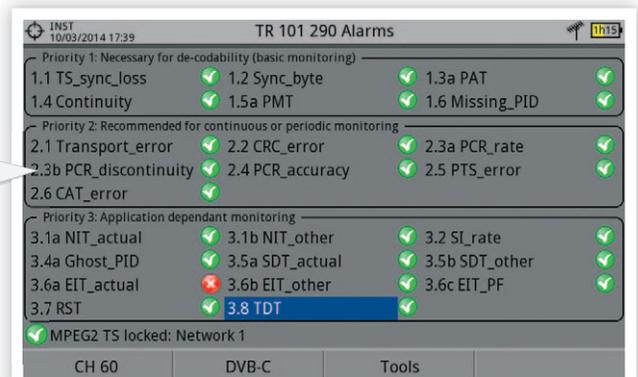


Bitrate analysis

It shows the real time bitrate used by each one of the services in a transport stream on a pie chart. The graphic is dynamic and it is refreshed so that variations in the bitrate distribution among the services can be seen at a glance.

Alarms

This function monitors the transport stream in real time and shows alarm information classified in three priority levels according to TR 101 290 standard. It can be very useful to identify the source of the problem when transmission glitches occur.



HD RANGER 2



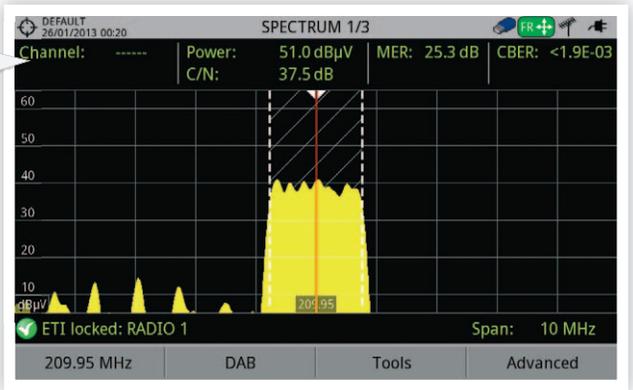
A FULLY CAPABLE RADIO RECEIVER & ANALYSER!
FM, RDS, DAB and DAB+



DAB and DAB+ option

Option for DAB and DAB+ Digital radio signal analysis

The DAB/DAB+ option allows the *HD RANGER 2* field strength meters to detect, measure, analyse and demodulate digital radio services using DAB and DAB+ standards. It is also possible to display data information normally broadcasted along with the audio content.



DAB+ digital audio

The logical evolution of Digital Audio Broadcast

DAB+ is an evolution of DAB (*Digital Audio Broadcast*) that among other differences uses AAC+ audio codec. It also includes Reed-Solomon error correction algorithm which makes it more robust against transmission impairments. *HD RANGER 2* DAB option is compatible with both standards.





Dynamic echoes & more

Dynamic echoes analysis

A must-have utility to align terrestrial aerials

Dynamic echoes measurement is an essential function in DVB-T, DVB-T2 and recently in DVB-C2 as well. **HD RANGER 2** covers all these standards. The information about the various echoes received at the test point is displayed on a bespoke screen where data is laid down in a comprehensive way including power, delay and other channel details.

16/32 APSK constellations and VCM/ACM modulation schemes

Latest technology in radio links modulation schemes

These constellations are widely used hand in hand with VCM (*Variable Coding and Modulation*) and ACM (*Adaptive Coding and Modulation*) schemes, allowing the operator to change the modulation parameters used in the same RF channel over time.



IRG descriptor identification

For multi-camera live broadcasting events

The IRG descriptor is an embedded code that is added to "sky to ground" or "ground to ground" video links containing contact info, GPS coordinates, etc from the source signal. By introducing this data, interferences can be quickly tracked and solved in scenarios that require a quick troubleshooting time such as live transmissions of sports events.

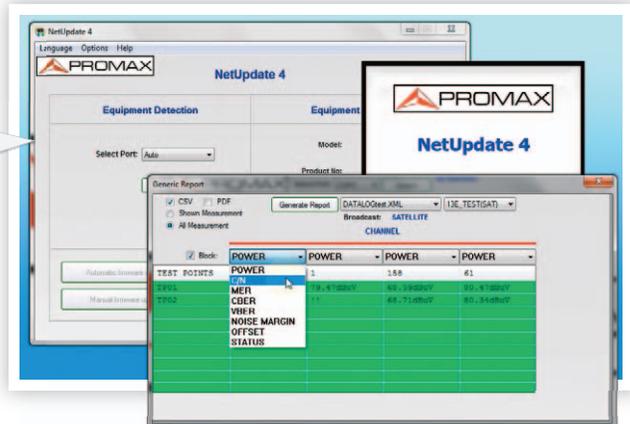


NetUpdate 4 - The perfect partner



PC software application

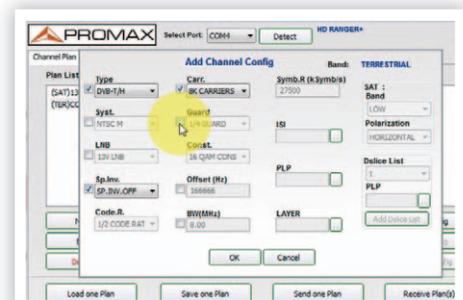
All RANGER products have a USB interface which can be used to connect it to a memory stick but also to a PC computer. NetUpdate 4 is a free PC software which can be downloaded from our website. This complete multi function application can be used to keep your meter updated, edit and tailor your channel tables or process datalogger information



Update the analyser's firmware



Receive, open, save and print Datalogger files



Create, edit, transmit, receive and save channel plans

Accessories for TV & SAT analysers



Hard transport cases & soft carrying bags for PROMAX field strength meters

We offer a variety of both included and optional cases to protect your HD Ranger products during use and transport. The HD RANGER 2 comes with a carrying bag and a transport case.

Optical to RF converter

it allows your field strength meter to work with optical LNBS



CV-100

Test signal generator

to equalise your SMATV networks



RP-080

Test signal generator

6 carriers for CATV, UHF and FI SAT bands



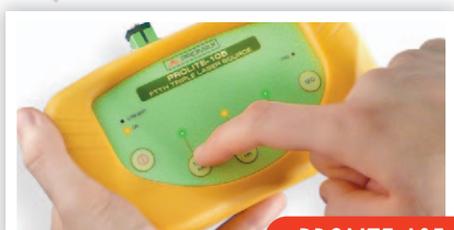
RP-110



Frequency band down converters

- CV-223 (2-3 GHz to 20-1000 MHz)
- CV-245 (2.4 GHz to 1483-1583 MHz)
- CV-589 (5.8 GHz to 1500--1600 MHz)

Triple wavelength LASER source



PROLITE-105

I to 2200 MHz noise generator



NG-283

Master aerial



AM-030



		HD RANGER <i>Lite</i>	HD RANGER+	HD RANGER 2
STANDARDS	DVB systems	 DVB Digital Video Broadcasting	DVB-T/C/S ² DVB-T2/C2/S2 ²	DVB-T/C/S ² DVB-T2/C2/S2 ²
	Dolby Digital Plus	 DOLBY DIGITAL PLUS		✓
	DAB / DAB+ digital radio	 DAB+		○
	Analog TV and FM radio		✓	✓  RDS
TFT- LCD	LCD screen features		7" (16:9)	7" (16:9) touch screen
	Triple split display		✓	✓
CONNECTIVITY	HDMI output	 HDMI		✓
	IPTV input	 ip.tv		✓
	ASI-TS input and output	 ASI-TS LINEOUT		✓
	Encrypted channels (CAM modules)			✓
	Audio/Video input and output			✓
	USB connection	 USB	✓	✓
	5 GHz RF aux input			○
	Optical fibre measurements			○
	GPS	 (GPS)		○
	ADVANCED FUNCTIONS	Transport Stream analyser		
Dynamic echoes analysis			✓	✓
Merogram and Spectrogram				✓
Signal monitoring				✓
MER by carrier measurement				✓
MER measurement			✓	✓
Constellation diagram			✓	✓
LTE filters		 lte		✓
OTHER	Soft carrying bag		✓	✓
	Hard transport case		○	✓
	Battery		> 2 h	> 4 h
	3 GHz band extension		○	○
	19" rack mounting option			○

DESIGN AND SPECIFICATIONS ARE SUBJECT TO CHANGES WITHOUT PRIOR NOTICE. 05-14 0 IP4052

✓ Included ○ Optional