Satcatcher Digipro T Max
Bringing the fun back to aligning a terrestrial antenna!

In the past TELE-satellite has already published a number of test reports for Satcatcher's DVB-S installation meters, and this time we'll be looking at a DVB-T model which covers a reception mode that is just as interesting. Digital terrestrial television has gained enormous momentum in recent years and these days almost all corners of the earth are covered with some type of digital terrestrial signal. What's more, analogue terrestrial transmission has become a thing of the past in many countries, or is currently on the verge of being superseded by digital signals. All this actually makes a lot of sense, too, as the bandwidth taken up by a single analogue channel can be used to transmit five to seven SDTV channels or two to three HDTV channels. As we're experiencing an ever-growing number of terrestrial channels all over the globe, the analogue switch-off is something that has to happen sooner or later.

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In the analogue age it was quite easy to correctly align a terrestrial antenna: You simply took a small TV set, hooked it up to the antenna and started moving the antenna until a picture with little or no noise popped up on screen.

In the digital age the new motto seems to be 'no pain, no gain'. For one thing, most small TVs don't come with a built-in DVB-T receiver, so you'd have to drag a receiver up to the antenna as well. In addition, a key feature of digital transmission is error correction, which means marginal signal strength might still whip up a perfect result on your screen as long as reception conditions are right. Come bad weather, though, you'll be left with a blank screen or frozen image – and the digital revolution might easily turn into a family resolution on the living room sofa.

Satcatcher comes to the rescue with its new Digipro T

Max, a signal meter that has been specially designed for the DVB-T market. If you live in areas with a differing digital terrestrial transmission technology such as ASTC, ISDB-T or DMB-TH Satcatcher has the appropriate model on offer too, or is currently working on it. As soon as we had opened the packaging there it was: The top-notch aluminium flight case that we have come to expect from Satcatcher. It makes sure the delicate meter can be safely stored and transported, and the fact that it looks rather sexy is a nice little bonus too.

The Digipro T Max itself weighs 1.6 kg and measures 25x12x6 cm, which makes it easy to handle and to carry along. We loved the fact that Satcatcher found a clever way of distributing weight inside the meter so that you always have a good grip and probably won't ever accidentally drop it. A protective bag keeps away moist, dust and dirt from the device, while at the same time allowing access to all sockets and the display, which itself is protected by a see-through foil.

Speaking of the display – with its high-resolution TFT technology and 3.5-inch diameter it is very easy to read even in direct sunlight.

For extreme situations the manufacturer includes a sun visor which can easily be attached to the bag, if need be. This way blinding sunlight won't get in the way of doing your job.

A total of 26 buttons are available to operate the Digipro T Max, all of which are located on the top side of the meter's housing. Apart from the standard on/off switch and a cross-shaped navi key, Satcatcher also added five keys with dedicated functions as well as four keys with user-defined functions. Making full use of these four keys it becomes child's play to work with the latest Satcatcher model.

On the bottom side there is the USB interface for connecting the meter to a PC as well as the socket for the external mains power charging unit which is used to supply energy to the built-in battery pack. While we're at it: the internal battery lasts for five to six hours of continuous operation and doesn't take longer than four hours to be fully recharged. 'Excellent' is the word that springs to mind!

Thanks to the generous supply of accessories that comes with the meter you can either re-charge the battery from the mains or by using the car charger while on the go. Professional installers will particularly appreciate this second option to keep their meter ready to use all of the time and to use travel time from one customer to the next for charging.

The aluminium flight case also includes a strap for carrying the Digipro T Max like a shoulder bag, a USB cable for PC connection as well as a mini CD-ROM with all required software. The user guide is available as PDF on the CD-ROM and is both comprehensive and easy to navigate through. It will provide an answer to almost any question you may have in connection with using the Digipro T Max.

The new Satcatcher DVB-T meter boasts excellent workmanship and creates a comfortably reassuring first impression, even though the meter housing is made of plastic rather than metal. We should note that our testing crew unanimously was of the opinion that the manufacturer's decision to go for plastic instead of metal was absolutely right. After all, every attempt at reducing the final weight of a mobile meter deserves special praise, not least from professionals who have to carry it around all day long.

Everyday use

Right after switching on the signal meter the main menu pops up, which is divided into eight sections. The default language of the OSD is English. However, Satcatcher will provide region-specific customised versions of the Digipro T Max to local distributors. Unfortunately, it is not possible to change the OSD language in a dedicated menu item. All you can edit in METER SETUP is the threshold level for the meter to start processing a signal, and the desired unit for measuring the signal (dBm, dBµV or dBmV).

You may also set a certain time of inactivity after which the meter switches off automatically. This avoids wasteful usage of battery capacity and provides ease of mind in this day and age of diminishing resources. Satcatcher has come up with a nifty feature consisting of pre-stored frequency lists, something the manufacturer calls channel plans. The Digipro T Max can store up to 15 channel plans with a total of 500 individual frequency entries.

All meters are shipped with a complete frequency list for the UHF/VHF bands as well as with a special list for Great Britain. This does away with the tiresome job of selecting a channel using the spectrum display or manual frequency input. A simple touch of a button in the frequency list is all it takes to select a channel for scanning. To top it all, Satcatcher even allows users to assign names to individual frequencies, so that frequently used entries are found in a second.

The Digipro T Max is very strict in distinguishing between analogue and digital

signals, which is why the pre-stored frequency list includes two entries (analogue and digital) for each channel. If a channel is selected manually the meter prompts the user to select whether that channel is analogue or digital. A separate menu item allows user to edit the frequency lists directly on the meter. As a more convenient option you may install the software provided on CD-ROM and do all your editing with an easy-to-use Windows tool.

A new frequency list can easily be loaded and activated in a dedicated menu item of the Digipro T Max. During this process the currently active frequency list is cancelled and replaced by the new one. This allows professional installers to create different lists for different regions, with each list including only those frequencies that are in active use in any given region.

Apart from making the meter a lot easier to use this also speeds up work processes and therefore can help save real money. We chose to align a UHF antenna for DVB-T reception in our test. It didn't take us long to prepare all required hardware and we then started out with connecting the Digipro T max to the antenna with a coax cable.

The spectrum display indicated right away that three active DVB-T frequencies were available at our test location in Vienna. The meter even showed very weak frequencies intended for different regions. Signal peaks of these out-of-area frequencies were clear to notice in the spectrum. The navi key is used to place the cursor on any desired frequency within the spectrum display and it is possible to conveniently enlarge certain sectors thanks to a number of pre-defined

bandwidths (full, 500, 200, 100, 50, 32, 16, 8 MHz). After pressing the "TEST" function key the meter checks the currently selected frequency and after a short moment informs the user whether or not a usable signal is available and – more importantly – what type of signal it is.

If you know the frequency you're looking for you can of course also enter it manually – something that is possible in all menus of the Satcatcher Digipro T Max. This, too, may save valuable time for professional installers. If you don't need a real-time spectrum display but rather prefer in-depth information you should look at the meter's automatic channel scan. It covers all entries of a frequency list and uses colour-coded bars to present results.

A yellow bar indicates an analogue signal, for example, while yellow/blue stands for analogue radio, white for digital TV, black for DAB and green for FM radio. One glimpse is all it takes to get an overview of what is available at the present location. Similar to spectrum mode, here too the navi key can be used to change between frequencies and once the desired entry is marked it only takes one more touch of

a button for a closer look at the signal.

Once a frequency has been activated from the pre-set list, identified after scanning, selected from the spectrum display or entered manually, the next step usually is to perform a signal test. The Digipro T Max has a dedicated function key for this step and it instantly shows the signal strength in dBm, dBµV or dBmV for the audio and video frequencies of analogue signals and for the carrier frequency of digital signals.

If a digital signal is received, MER (Modulation Error Ratio), C/N (Carrier to Noise Ratio), CBER (Channel Bit Error Rate) and VBER (Viterbi Error Rate) are displayed as well, so that you get a realistic impression of signal quality and applied error correction.

The meter reacts quickly to any signal changes and thus provides very reliable feedback when aligning an antenna. If all that still is not enough for some, Satcatcher offers some icing on the cake and has equipped its Digipro T Max with the option of locking into a DVB-T frequency and showing its channels on screen. This way you can easily use NIT data to find out which frequency you're

on, but you can also watch the channel directly on your signal meter.

The only minor drawback is that this sweet extra bonus does not work with analogue television signals. However, this is easily made up for with the option to call up a COFDM (Coded Orthogonal Frequency Division Multiplexing) constellation diagram for thoroughly analysing a signal. This is a feature clearly targeted to professional installers, who will greatly appreciate this.

It goes without saying that the Satcatcher Digipro T Max is compatible with all DVB-T modulations, meaning it will work with QPSK, 16 QAM and 64 QAM. The closer the dots shown in the constellation diagram are to each other, the better the signal. For those of you with an active signal amplifier the meter can be set with the +/- buttons to generate 5V or 12V current on the antenna output to power the amplifier. Satcatcher models for certain countries, like France, Spain or Portugal, have set these outputs to 5V and 24V to feed amplifiers in use there.

And since the new Satcatcher signal meter is compatible with FM and DAB as well, antennas for these fre-

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1. Analogue signal measuring

2. Signal scan across the complete UHF frequency range

3. Spectrum display

4. Various basic setting for signal measuring

5. Eight segments make up the main menu

6. DVB-T channels can be watched on the monitor

7. COFDM diagram for signal analysis

8. Signal information of a frequency with digital content

9. The complete UHF and VHF bands (analogue as well as digital) are included in the pre-stored frequency lists

10. Frequency lists can be edited either directly on the meter or conveniently on the PC

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quency ranges can be aligned just as easily. While in FM mode the meter shows the signal level right away, and if required the signal audio can be put out and checked with the touch of a button.

The same is true for DAB signals. We tested both modes and found that setting up both UHF/VHF and FM antennas was as easy as 1-2-3.

Towards the end of our test we attempted to push the Digipro T Max to its limits by trying to align a UHF antenna in a way that allows reception of extremely weak signals. Thanks to signal level changes being shown in real-time this was achieved in next to no time at all.

This way we were even able to receive DVB-T signals not intended for our local market,

even though error correction had to work overtime and the signal broke down every once in a while.

PC connection

We mentioned above that up to 15 channel plans can be stored inside the Digipro T Max. While these can of course be edited in the meter itself, a much more convenient way of managing these

entries is by connecting the device to a PC.

That is why the T Max comes with a USB interface and USB cable so that any Windows-based PC can be used to manage the meter's data. All required drivers and software components are available from the CD-ROM that comes with the meter.

We used one of our Windows

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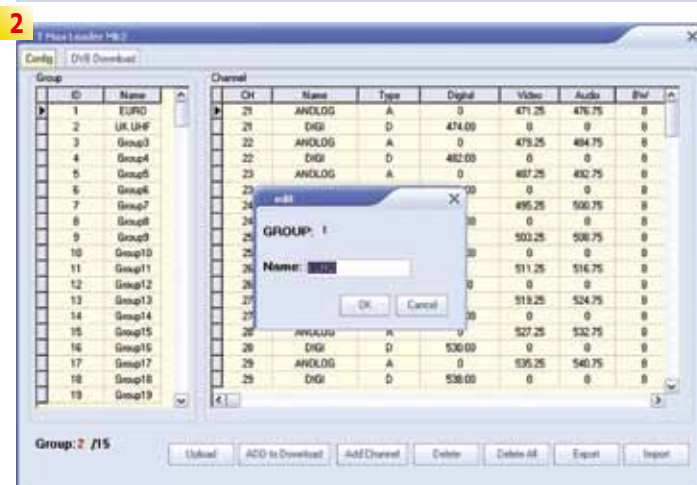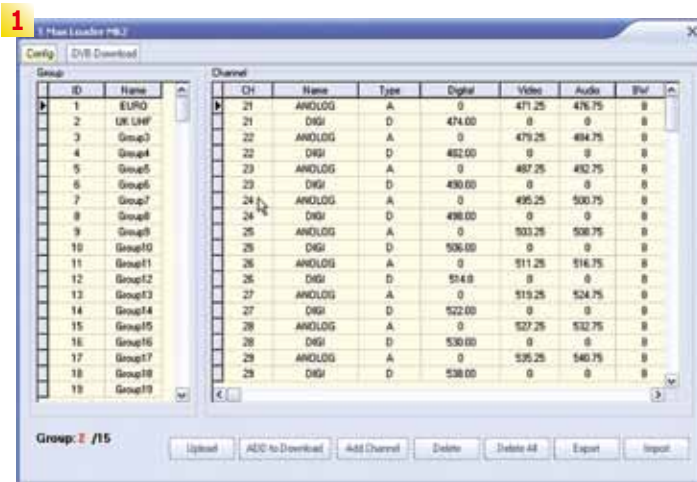
XP computers and can assure you that installation happens in a breeze and it was easy and self-explanatory to edit frequencies and transfer data back to the meter's memory.

Once again Satcatcher has hit the jackpot with this new meter and it's safe to say the Digipro T Max will join the ranks of other highly successful Satcatcher signal meters.

After models for DVB-S and DVB-C it is the perfect addition to complete the manufacturer's range.

Offering a perfect balance between ease of use and myriad features, and characterised by solid workmanship the Digipro T Max is right on track to bringing back some fun to UHF/VHF and FM antenna alignment jobs.

Expert Opinion

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Ease of use, a large range of features and good workmanship are the most important attributes of the Satcatcher Digipro T Max.

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Only DVB-T channels can be watched on the meter's display. For analogue TV channels this option is not available.

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TECHNICAL DATA

Distributor	SatCatcher, Unit 7 Salvesen Way, Hull, East Yorkshire, UK HU3 4UQ, United Kingdom
Tel	+44 (0) 148 222 15 77
Email	sales@satcatcher.com
Model	Digipro T Max
Type	Signal Meter for DVB-T, analogue TV, digital DAB radio, analogue FM radio
Frequency range	46~870 MHz
Level range (COFDM)	35 dBuV ~ 110 dBuV
Level range (analogue)	25 dBuV ~ 120 dBuV
Level measurement accuracy	+/- 2dB
MER	19-32 dB
BER	10E-2 to 10E-8
Demodulation	QPSK, 16 QAM, 64 QAM
Input impedance	75 Ohm
Power supply	Up to 5 hours without recharge
Supplied items	Protective case, fold away sun visor, software CD, user guide, mains charging unit, car charger, USB connection cable
Dimension	250x120x60mm
Net weight	0.8kg
Gross weight	1.6kg
Working temperature	0°C ~ +40°C
Display	3.5" LCD color display

1. All frequency lists can easily be edited on the PC

2. New frequency lists are added with a single mouse click

3. Same for new frequency entries

4. Once you're done with all your editing the new data are sent back to the Digipro T Max via USB connection