

# United Colors of Horizon: HD-TM USB PLUS Is Red

After testing a yellow meter (TELE-satellite 10-11/2009), a blue meter (TELE-satellite 06-07/2010) and a gray meter (TELE-satellite 12-01/2010), why not to take a look at a red one? Red is the color used by Horizon for its terrestrial instruments. The HD-TM USB PLUS is an improved version of their HDTM model. The USB port allows you not only to update the firmware or channel plan but it also lets you download any measured results to a PC for future reference. The PLUS means that analog TV signals can also be detected and that more signal parameters can be measured (like MER). The frequency range is extended and even a simple spectrum analyzer is now available.



The HD-TM USB PLUS comes with a very practical nylon carrying case, an AC charging cable, a DC car charger, a USB cable, a rain cover for the front panel, an "F" male-to-male adapter, an "F" to UHF adapter and two 10 dB attenuators. The battery pack (NiMH 3300 mAh) is installed inside the meter and lets you operate the unit for up to 7 hours. It can be accessed by opening a flap on the bottom side of the case. So, if needed, you can replace the battery pack or simply disconnect it if a longer period of inactivity is expected. This is very practical.

The HD-TM USB PLUS looks very similar to the satellite and cable counterparts in the Horizon product family. Except for the model designation printed on the front panel, the only way to distinguish between the different models is the color of the plastic housing. The display, the keyboard and the connector are all in exactly the same place.

The 128x64 pixel graphic

## TELE-satellite World

[www.TELE-satellite.com/...](http://www.TELE-satellite.com/...)

Download this report in other languages from the Internet:

Arabic	العربية	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/ara/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/ara/horizon.pdf</a>
Indonesian	Indonesia	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/bid/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/bid/horizon.pdf</a>
Bulgarian	Български	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/bul/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/bul/horizon.pdf</a>
Czech	Česky	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/ces/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/ces/horizon.pdf</a>
German	Deutsch	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/deu/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/deu/horizon.pdf</a>
English	English	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/eng/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/eng/horizon.pdf</a>
Spanish	Español	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/esp/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/esp/horizon.pdf</a>
Farsi	فارسی	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/far/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/far/horizon.pdf</a>
French	Français	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/fra/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/fra/horizon.pdf</a>
Hebrew	עברית	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/heb/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/heb/horizon.pdf</a>
Greek	Ελληνικά	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/hel/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/hel/horizon.pdf</a>
Croatian	Hrvatski	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/hrv/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/hrv/horizon.pdf</a>
Italian	Italiano	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/ita/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/ita/horizon.pdf</a>
Hungarian	Magyar	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/mag/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/mag/horizon.pdf</a>
Mandarin	中文	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/mag/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/mag/horizon.pdf</a>
Dutch	Nederlands	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/med/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/med/horizon.pdf</a>
Polish	Polski	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/pol/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/pol/horizon.pdf</a>
Portuguese	Português	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/por/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/por/horizon.pdf</a>
Romanian	Românesc	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/rom/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/rom/horizon.pdf</a>
Russian	Русский	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/rus/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/rus/horizon.pdf</a>
Swedish	Svenska	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/sve/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/sve/horizon.pdf</a>
Turkish	Türkçe	<a href="http://www.TELE-satellite.com/TELE-satellite-1009/tur/horizon.pdf">www.TELE-satellite.com/TELE-satellite-1009/tur/horizon.pdf</a>

Available online starting from 30 July 2010



# HORIZON

For a reliable solution!

LCD is located more or less in the center of the front panel. The "F" jack to install the "F" male-to-male adapter or the F-UHF adapter is on the left and the keyboard is on the right side of the display. The term "keyboard" might be overstating it a little bit; there are only four push buttons.

The meter can be charged by simply connecting one side of the AC charging cable to the back of the meter and the other end to a wall outlet. The AC voltage range that can be used with the meter is wide enough so that you can use it almost anywhere in the world. There is no external power supply unit. Everything is hidden in the meter case. When you are on the go, you can recharge the battery using the 12 VDC socket in your car and the car charger cable that comes with the HD-TM USB PLUS.

The carrying case has a strap you can use to hang the meter around your neck. The nylon case has openings for cables so you don't have to take the meter out of it when charging the internal battery. Additionally, the case has a pocket on its side in which you can keep, for example, adapters and attenuators. The attenuators are needed only when a very strong signal is measured - greater than -20 dBm (>87 dBμV). This could be the case if the meter is connected close to an antenna amplifier output. Just like Horizon's other models, a quick start guide is visible on the nylon case cover when you open it to use the meter. This meter has quite a few of these small but nice surprises.

## Usage

The up arrow button dis-



plays the Setup menu which consists of 8 items: Brightness, Contrast, RF units (dBm, dBmV, dBμV), Squelch (level under which signals are ignored = level of noise), Sleep (time after which the meter turns itself off), Language (English, French, German, Italian, Spanish, Dutch, Polish, Swedish, Danish, Norwegian, Croatian, Finnish), Version (of the firmware) and Defaults (returning to factory settings). The up/down arrows are used to select the item while the left/right buttons will change the current setting. If you press and hold the up arrow for a second or so the unit will go off. That's why this button is also marked OFF.

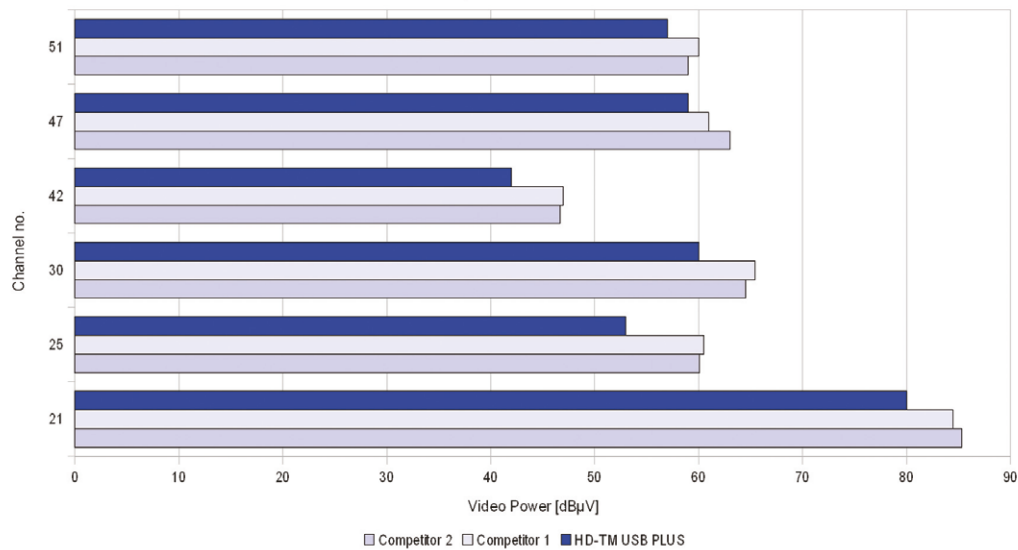
The down arrow turns the meter on for normal operation. After the welcome screen, the Main Menu appears which consists of nine items: Choose transmitter, Full scan, Short scan, Slope test, Manual scan, Log channel, Log transmitter, Log all, Antenna amp. We will focus on three of them: Full scan, Short scan and Log all.

A Full scan does exactly what you'd expect it to do. It starts at the lowest frequency and goes up from

there. Every time it finds an analog carrier or a set of COFDM signal carriers it stops and displays the first screen of signal measurement results. The down arrow cycles through the result screens. Although not every parameter can be measured (for example: the meter does not calculate noise margin for DVB-T and it does not show constellation diagrams), the most important parameters are measured or calculated. So, we have power levels and signal quality parameters (C/N for analog and MER for

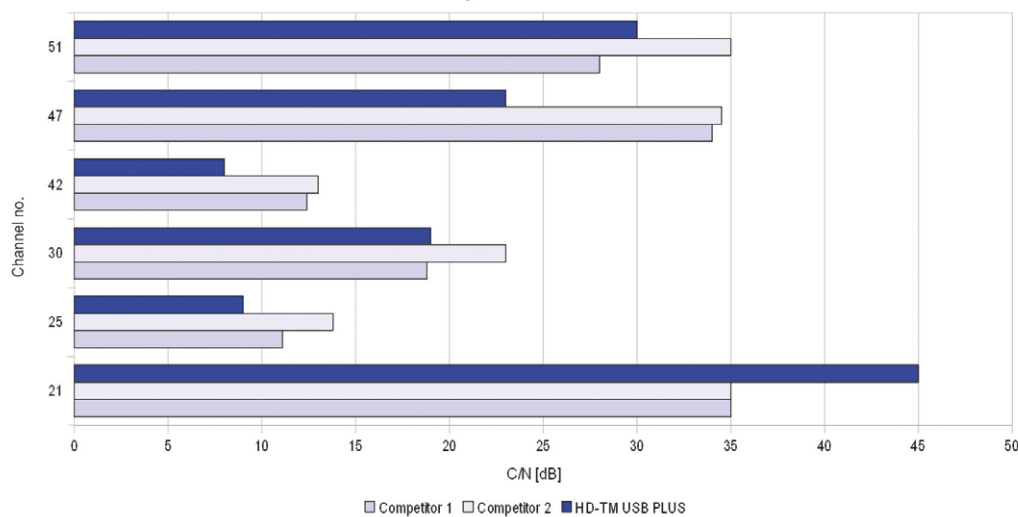
graph 1

Analog TV Measurements



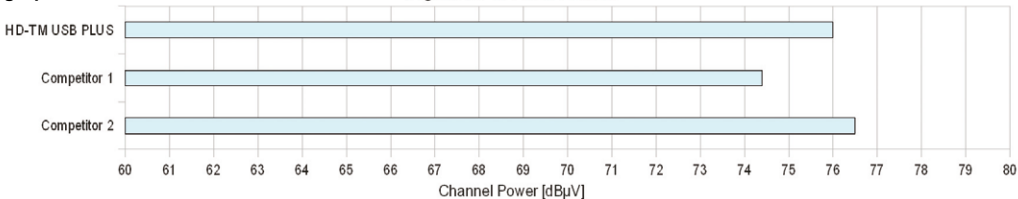
graph 2

Analog TV Measurements



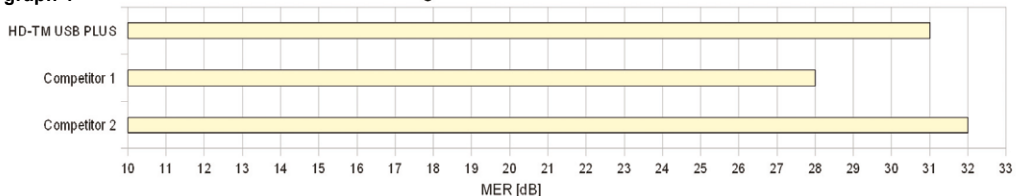
graph 3

Digital TV Measurements



graph 4

Digital TV Measurements



digital signals). The HD-TM USB PLUS automatically detects DVB-T parameters: QAM order, symbol rate, FEC and guard interval. We even have small spectrum views although its functionality is limited.

When in full scan mode, the meter displays the country settings (in our case it was: "Polska (Poland)") what means that the country specific setup has been installed in the meter. This is even more evident when

you enter Short scan. Here the meter only scans those digital channels that should be available in your region. To select your region, go to Choose transmitter from the Main Menu, select the region of your country and the cor-

rect digital transmitter frequencies are assigned to the Short scan mode. Very, very convenient!

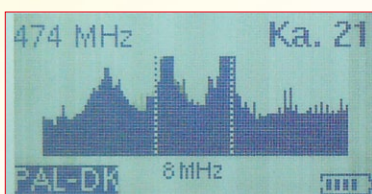
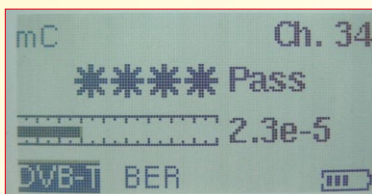
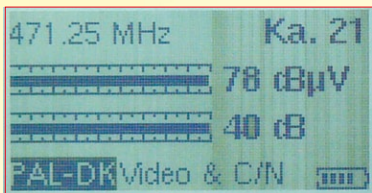
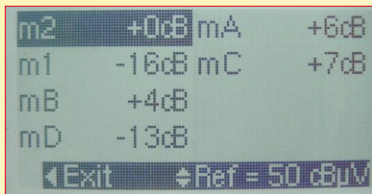
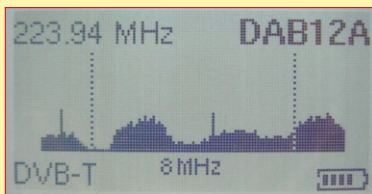
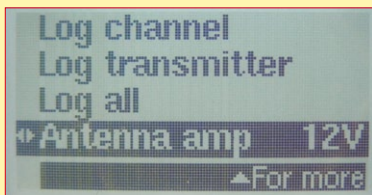
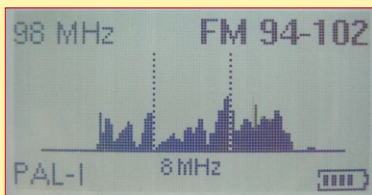
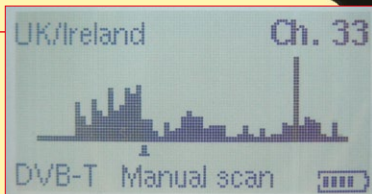
We are really happy that Horizon included the Log-all function in the HD-TM USB PLUS. Thanks to this feature you can do a full automatic scan of the entire bandwidth and store the results of every identified signal in the meter's memory - both analog and digital. This is a very nice addition to the Log channel and Log transmitter features which deal with single signals. After downloading the Log Reader software for MS Windows from Horizon's web page, you can see the results stored in the meter's internal memory and download them as an ASC file. This file can then be opened by any worksheet or text editor.

The HD-TM USB PLUS can provide DC voltage to power an antenna amplifier. It can be either 5 V or 12 V DC. It has a slope test which can be helpful in detecting excessive attenuation in the antenna cabling.

Our general impression when using this meter is that it is quite fast and very easy to use! Aligning a terrestrial antenna with it is nothing but fun. It can be also very helpful in finding any faults in antenna installations. Sure, it's not a Rolls Royce among signal analyzers, but it does offer surprisingly much for such a low price!

## Performance

Once we became familiar with operating the HD-TM USB PLUS, it was time to compare it with different meters from other brands. We took more advanced instruments to check if the meter readings were in line with them. The first test con-



cerned analog TV measurements. (See the graph 1., 2.)

The video level measurement results were somewhat lower than those of the competitors but the difference was not dramatic. The spread among C/N results was quite big but there was a big difference not only between the HD-TM USB PLUS but also between two competitors we used for reference. That's because every meter has to choose the frequency where only noise is present for establishing the noise level. And every meter can use a different point in the frequency spectrum. That's why the so-called "automatic C/N measurement" can be so unpredictable. We should not compare the C/N if the measurements were taken by different meter models. So, what's the point?

If we turn an antenna, we will always observe an improvement in C/N if we move it in the proper direction -no matter which meter we were to use. But if we want to compare two antenna installations, we need to use the same meter! We should not measure one installation with one meter type and the other with another type. Do not compare the C/N of analog signals measured with different meters!

The situation is better with digital signals. Here, instead of C/N, we usually measure MER which is also directly related to signal quality. Since the meter does not have to arbitrarily choose any noise level but instead measures the spread of IQ vectors, it is an excellent measure and is much less dependent on the meter type or brand that is used.

And how was it for the HD-TM USB PLUS? Not bad,

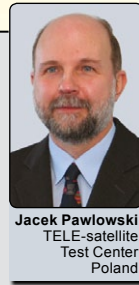
really. It basically matched the results obtained from both competitors with its power channel measurement results as well as its MER results. (See the graph 3., 4.)

In a few years, analog TV will disappear completely from the airwaves. Evidently the HD-TM USB PLUS is quite ready for that moment. Its accuracy in digital signal measurements leaves nothing to be desired.

## Expert Opinion

+

**Small, lightweight, and very easy to use. Very fast. Accurate digital signal measurement. Customizable for a given region of the world (country) just by downloading the proper setup from the manufacturer's web page. Built-in power supply unit. Affordable. USB-Port allows export of measurement data. Simple built-in spectrum analyzer.**



Jacek Pawlowski  
TELE-satellite  
Test Center  
Poland

-  
Not DVB-T2 compliant

## TECHNICAL DATA

<b>Manufacturer</b>	Horizon Global Electronics Ltd., England
<b>Fax</b>	+44 (0) 1279 417 025
<b>E-mail</b>	sales@horizonhge.com
<b>Web page</b>	www.horizonhge.com
<b>Model</b>	HD-TM USB PLUS
<b>Function</b>	Digital and analog terrestrial TV meter with spectrum analyzer and USB data output
<b>Input frequency</b>	49-861 MHz
<b>Signal level</b>	-92.1dBm to -20 dBm
<b>Masthead amplifier supply</b>	5 or 12V, 100 mA max.
<b>Power supply</b>	100-240 V, 50/60 Hz, 0.31A max. 12 V DC, 0.8 A max.
<b>Operational time when fully charged</b>	7 hours typ.