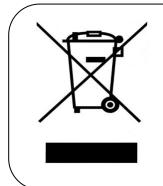
# TitanSDR Receiver

## Installation Manual v.2.0e



Enablia S.r.l. (Italy) 2014 Before using the receiver, read carefully this Manual.

#### Correct Disposal of This Product (Waste Electrical & Electronic Equipment)



The symbol of the crossed out wheelie bin indicates that in the European Union this product, and all items marked with this symbol, can not be disposed of as unsorted waste but must be disposed of separately at the end of their useful life.

# Table of Contents

1.	Overview	4
	Package contents	4
	Receiver panels	4
	AC/DC Adapter	5
2.	System Requirements	6
3.	Installation on Windows 7	7
4.	Installation on Windows XP	
5.	Notes on receiver connection and use	25
	Antenna	25
	Cooling fan	25
	Firewall	25
	USB Interface	26
6.	License	27
	License File	27
	USB Dongle	27
7.	CE Conformity	30
8.	Technical Specifications	31

## 1. Overview

#### Package contents

The package contains the following items:

- > TitanSDR receiver
- > 6V linear AC/DC power adapter
- ➢ USB cable
- Installation CD-ROM
- ➢ USB Dongle
- Installation Manual

#### **Receiver** panels

The front panel has an indicator green led: the led turns on when the receiver is switched on (Figure 1).





The rear panel (Figure 2) includes :

- 1. USB 2.0 port
- 2. Power input socket
- 3. On/off switch
- 4. SMA IF input (IF-IN)
- 5. BNC antenna input (ANT. IN)





#### The bottom panel includes the cooling fan opening (Figure 3).





### AC/DC Adapter

For best performance and safety, please use only the provided 6V linear AC/DC power adapter (Figure 4).



Figure 4

When the adapter is turned on by the on/off switch, the front red led turns on.

## 2. System Requirements

Before installing the receiver, ensure that your system meets the following requirements.

- CPU Dual Core 2.5 GHz or equivalent (for TitanSDR) Intel Core i5 or equivalent (for TitanSDR-Pro)
- 2GB RAM
- 150 MB of free hard disk space for software installation (extra space is required for recording of wideband and narrowband channels)
- Network Interface Card
- 1 spare USB2.0 Hi-Speed port
- Sound card
- 1024 x 768 minimum resolution video card and monitor
- Windows Operating System (Seven, XP, Vista)

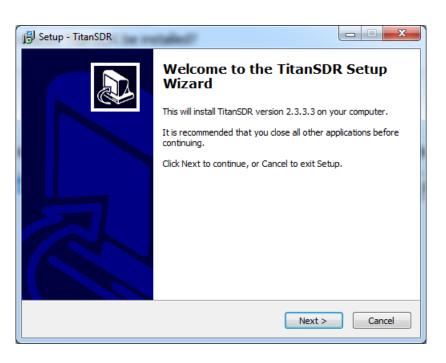
## 3. Installation on Windows 7

Please follow the steps below leaving the receiver disconnected from the PC, unless otherwise specified (i.e. connect it only when requested). The following installation procedure applies to all versions of TitanSDR.

- Insert the installation CD-ROM in your drive and double-click on X:\TitanSDR\_x.y.z\_Setup.exe (where "X" is the letter representing your CD-ROM drive and "x.y.z" is the setup version).
- 2. Select the Setup Language and click "OK".



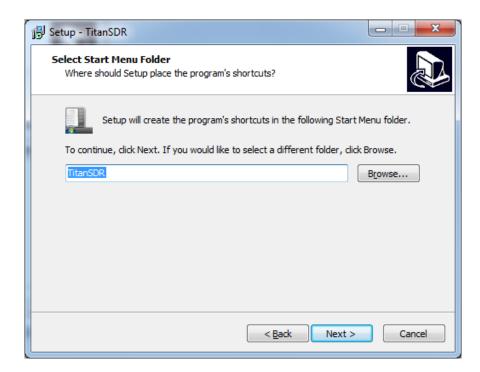
3. Click "Next" to continue



4. Confirm the proposed installation folder (for example, C:\Program Files\TitanSDR if "C:" is your main drive) by clicking "Next".

🔁 Setup - TitanSDR	
Select Destination Location Where should TitanSDR be installed?	
Setup will install TitanSDR into the following folder.	
To continue, click Next. If you would like to select a different folder, click E	Browse.
C:\Program Files\TitanSDR	Browse
At least 130,0 MB of free disk space is required.	
< <u>Back</u> Next >	Cancel

5. Confirm the default shortcuts folder name by clicking "Next".



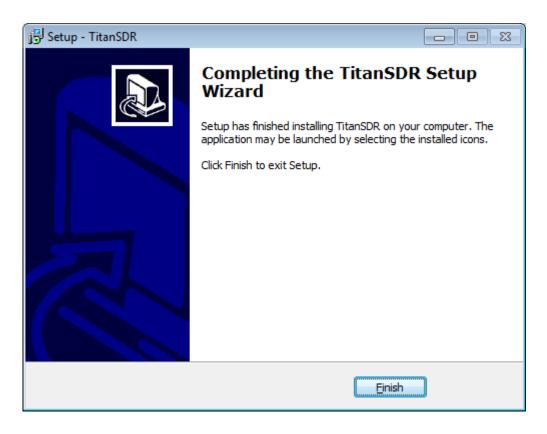
6. Check "Create a desktop icon" and click "Next".

😼 Setup - TitanSDR	- • •
Select Additional Tasks Which additional tasks should be performed?	
Select the additional tasks you would like Setup to perform while installing then click Next.	TitanSDR,
Additional icons:	
Create a desktop icon	
< <u>B</u> ack <u>N</u> ext >	Cancel

7. Click "Install" and wait for setup to complete.

i	Setup - TitanSDR	X
	Ready to Install Setup is now ready to begin installing TitanSDR on your computer.	
	Click Install to continue with the installation, or click Back if you want to review or change any settings.	
	Destination location: C:\Program Files\TitanSDR Start Menu folder: TitanSDR	•
	Additional tasks: Additional icons: Create a desktop icon	
	۲	-
	< <u>B</u> ack Install Ca	ncel

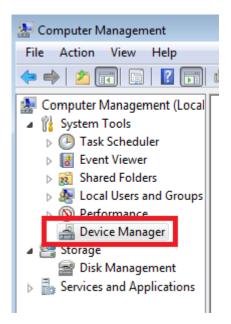
8. In the last setup window, click "Finish".



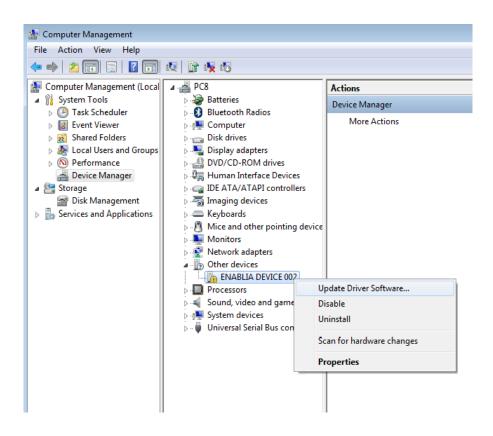
- Copy the provided license file "license.bin" to the folder C:\ProgramFiles\TitanSDR\License, assuming that "C:\ProgramFiles\TitanSDR" is the installation folder). Please refer to Chapter 6 for further details on license file.
- 10. Plug the supplied AC/DC power adapter into a wall outlet and to the receiver power socket. Then turn on the adapter by the red switch: the adapter red power led will turn on (please refer to Chapter 5 for further details on receiver connections).
- 11. Check that the receiver is switched off (power switch on '0') and connect it to the PC USB port by the provided USB cable.
- 12. Turn on the receiver by putting the power switch on '1': the green led on the front panel will turn on.
- 13. Click the Start Button, right-click on "Computer" and click "Manage".

Getting Started	•	
Connect to a Projector		
Paint	►	
Remote Desktop Connection	Documents	
Sticky Notes	Pictures	
Snipping Tool	Music	
Calculator	Computer	Open
XPS Viewer	Control Pa	· · · · ·
Windows Fax and Scan	Devices an	Map network drive Disconnect network drive
Magnifier		Show on Desktop
All Programs		Properties
Search programs and files	Shut down	

14. When the "Computer Management" window opens, click on "Device Manager" (located on the left side, under System Tools, towards the bottom of the list).



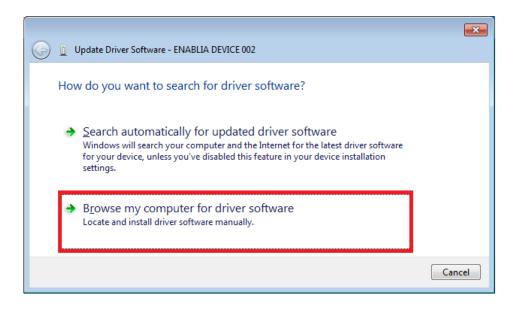
15. Expand the "Other Devices" list, right-click on "ENABLIA DEVICE 002" and click "Properties"



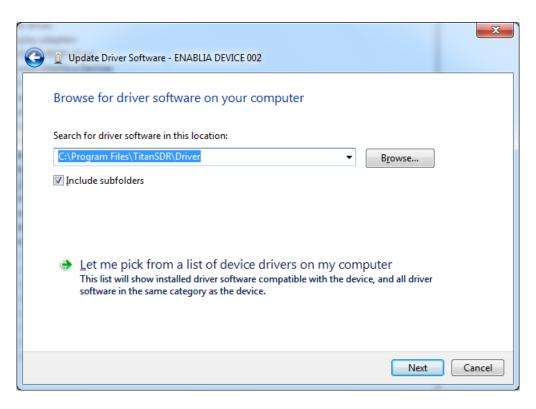
16. In "Properties" window, click the "Driver" tab and then click "Update Driver"

ENABLIA DEVICE 002 Prop	erties X
General Driver Details	
ENABLIA DEVI	CE 002
Driver Provider:	Unknown
Driver Date:	Not available
Driver Version:	Not available
Digital Signer:	Not digitally signed
Driver Details	To view details about the driver files.
Update Driver	To update the driver software for this device.
Roll Back Driver	If the device fails after updating the driver, roll back to the previously installed driver.
Disable	Disables the selected device.
<u>U</u> ninstall	To uninstall the driver (Advanced).
	OK Cancel

17. In the "Update Driver Software Window", click "Browse my computer for driver software"

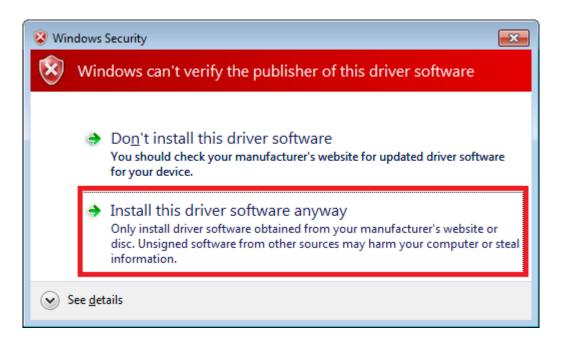


18. Click "Browse" and navigate to the folder containing the TitanSDR driver (C:\ProgramFiles\TitanSDR\Driver, assuming that "C:\ProgramFiles\TitanSDR" is the installation folder). Then click "Next".



Browse For Folder	×
Select the folder that contains drivers for your hard	ware.
🔺 🍑 TitanSDR	•
📔 Client	
i doc	
a 🌗 Driver	
in amd64	=
i386	
🍶 license	
J NBProc	
Server	Ŧ
Eolder: Driver	
ОК Саг	ncel

19. In "Windows Security" window , click "Install this driver software anyway"



20. Allow the installation process to complete and click "Close".

	<b>—X</b> —
😡 🗓 Update Driver Software - Enablia SDR	
Windows has successfully updated your driver software	
Windows has finished installing the driver software for this device:	
Enablia SDR Receiver	
	<u>C</u> lose

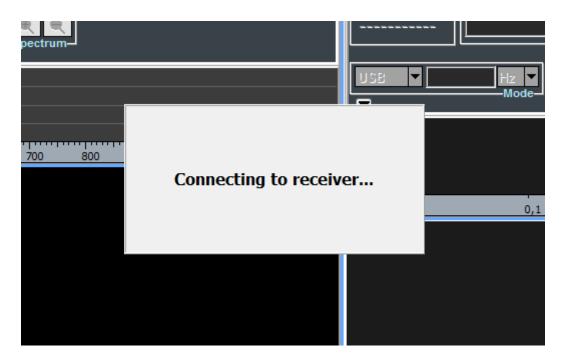
21. Run the TitanSDR software by double clicking the icon on your desktop and wait for application to open. Configure software firewall (if present) to allow TitanSDR processes communicating through the loopback address (see Chapter 5 for further details).



22. On TitanSDR application, click the "UsbConnection" button (the rightmost button of the Panoramic Scope toolbar)



23. The message "Connecting to receiver" is displayed : wait for connection to complete.



24. When receiver connection succeeds, spectrum is displayed in the Panoramic Scope.

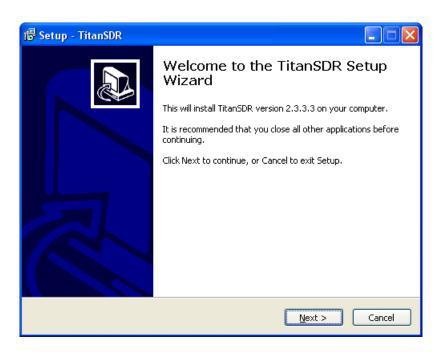
### 4. Installation on Windows XP

Please follow the steps below leaving the receiver disconnected from the PC, unless otherwise specified (i.e. connect it only when requested). The following installation procedure applies to all versions of TitanSDR.

- 1. Insert the installation CD-ROM in your drive and double-click on X:\TitanSDR\_x.y.z\_Setup.exe (where "X" is the letter representing your CD-ROM drive and "x.y.z" is the setup version).
- 2. Select the Setup Language and click "OK".



3. Click "Next" to continue



4. Confirm the proposed installation folder (for example, C:\ProgramFiles\TitanSDR if "C:" is your main drive) by clicking "Next".

1🕏 Setup - TitanSDR
Select Destination Location Where should TitanSDR be installed?
Setup will install TitanSDR into the following folder.
To continue, click Next. If you would like to select a different folder, click Browse.
G:\Program Files\TitanSDR Browse
At least 130.0 MB of free disk space is required.
< <u>Back</u> <u>N</u> ext > Cancel

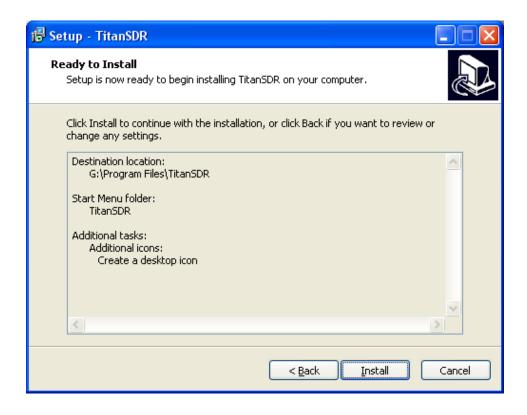
5. Confirm the default shortcuts folder by clicking "Next".

🔂 Setup - TitanSDR
Select Start Menu Folder Where should Setup place the program's shortcuts?
Setup will create the program's shortcuts in the following Start Menu folder. To continue, click Next. If you would like to select a different folder, click Browse.
TitanSDR Browse
< <u>B</u> ack <u>N</u> ext > Cancel

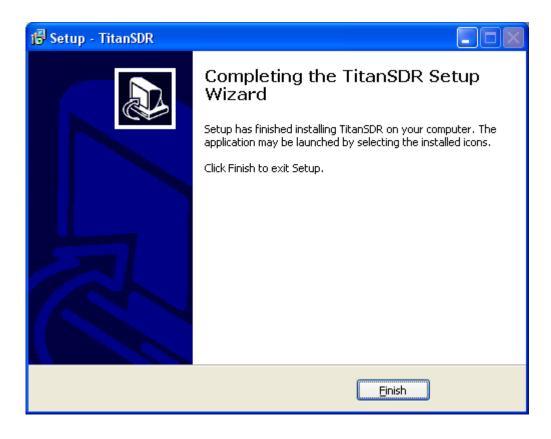
6. Check "Create a desktop icon" and click "Next".



7. Click "Install" and wait for setup to complete.



8. In the last setup window, click "Finish".

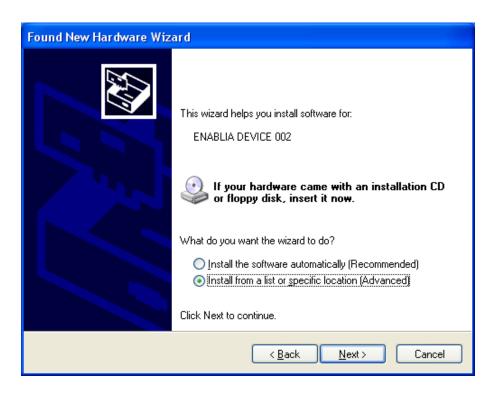


- 9. Copy the provided license file "license.bin" to the folder C:\ProgramFiles\TitanSDR\License (assuming that "C:\ProgramFiles\TitanSDR" is the TitanSDR installation folder). Please refer to Chapter 6 for further details on license file.
- 10. Plug the supplied AC/DC power adapter into a wall outlet and to the receiver power socket. Then turn on the adapter by the red switch: the adapter red power led will turn on (please refer to Chapter 5 for further details on receiver connections).
- 11. Check that the receiver is switched off (power switch on '0') and connect it to the PC USB port by the provided USB cable.
- 12. Turn on the receiver by putting the power switch on '1': the green led on the front panel will turn on.

13. In the "Found New Hardware Wizard" select "No, not this time" (to prevent the connection to Windows Update) and click "Next"

Found New Hardware Wizard		
	Welcome to the Found New Hardware Wizard	
	Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). <u>Read our privacy policy</u>	
	Can Windows connect to Windows Update to search for software?	
	<ul> <li>Yes, this time only</li> <li>Yes, now and every time I connect a device</li> <li>No, not this time</li> </ul>	
	Click Next to continue.	
	< <u>B</u> ack <u>N</u> ext > Cancel	

14. Select "Install from a list or specific location (Advanced)" and click "Next"



15. In the next dialog, tick the option "Search for the best driver in these location" and "Include this location in the search". Click "Browse" and navigate to the folder containing the TitanSDR driver (C:\ProgramFiles\TitanSDR\Driver, assuming that "C:\ProgramFiles\TitanSDR" is the TitanSDR installation folder) and then click "Next".

Found New Hardware Wizard
Please choose your search and installation options.
<ul> <li>Search for the best driver in these locations.</li> <li>Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.</li> <li>Search removable media (floppy, CD-ROM)</li> <li>Include this location in the search:</li> <li>C:\Program Files\TitanSDR\Driver</li> <li>Don't search. I will choose the driver to install.</li> </ul>
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.

Browse For Folder	? 🔀		
Select the folder that contains drivers for your hardware.			
🖃 🧰 TitanSDR	~		
🛅 Client	_		
🛅 doc			
🖃 🧰 Driver			
🛅 amd64			
🛅 i386			
🛅 license	=		
🛅 NBProc			
🚞 Server			
🚞 Uninstall Information			
🚞 USB Camera			
🕀 🦳 Vimicro	<b>×</b>		
To view any subfolders, click a plus sign above.			
ОК	Cancel		

16. Click "Continue Anyway" to bypass Windows Logo testing.

Hardware Installation				
1	The software you are installing for this hardware: Enablia SDR Receiver has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.			
	Continue Anyway STOP Installation			

17. Allow the installation process to complete and click "Finish"

Found New Hardware Wizard					
	Completing the Found New Hardware Wizard The wizard has finished installing the software for: Enablia SDR Receiver				
	< <u>B</u> ack <b>Finish</b> Cancel				

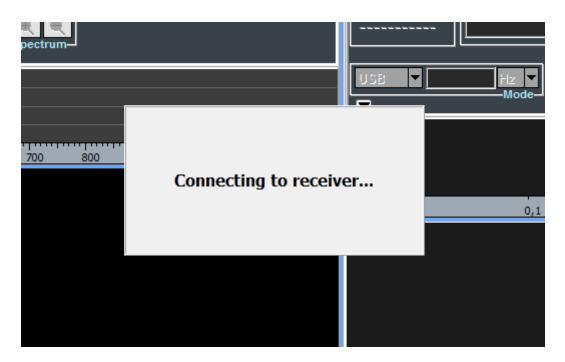
18. Run the TitanSDR software by double clicking the icon on your desktop and wait for the application to open. Configure software firewall (if present) to allow TitanSDR processes communicating through the loopback address (see Chapter 5 for further details).



19. On TitanSDR application, click the "UsbConnection" button (the rightmost button of the Panoramic Scope toolbar).



20. The message "Connecting to receiver" is displayed: wait for connection to complete.



21. When receiver connection succeeds, spectrum is displayed in the Panoramic Scope.

## 5. Notes on receiver connection and use

#### Antenna

Connect a short-wave antenna to the receiver BNC connector (Figure 2, connector 5).

Use the SMA connector as IF input (Figure 2, connector 4) to bypass RF attenuators, preselectors and the anti-aliasing filter of the receiver chain.

If an amplified antenna is used, please make sure not to exceed the receiver clipping level indicated in Technical Specifications (see Chapter 8).

### Cooling fan

To reduce the possibilities of overheating, use the receiver only on a hard, flat surface. Do not allow any object to block the airflow through the cooling fan opening (Figure 3).

#### Firewall

TitanSDR application consists of four different running processes, communicating with each other over the loopback network interface:

- TitanSDR\_MMI.exe
- TitanSDR\_Server.exe
- TitanSDR\_Client.exe
- TitanSDR\_NBProc.exe

User has to configure software firewalls (if present) to allow TCP-UDP communications among the TitanSDR processes through the IP address 127.0.0.1.

If a "Remember my answer" option is present in the firewall dialog, please select it in order to skip future requests of the same type.

#### USB Interface

Connect the TitanSDR receiver to a 480 Mbit/sec Hi-Speed USB 2.0 port of the host PC using the provided USB cable or, as an alternative, a shielded USB cable (maximum length of 1 meter) with the Hi-Speed USB certification label (Figure 5).



Figure 5

In order to get the best performance from the USB link, don't connect USB devices to the PC other than TitanSDR receiver (except for mouse and keyboard).

In order to maximize USB performances, TitanSDR application automatically set the "High performance" power plan in Windows Power Options.

Wi-fi or Bluetooth connections can limit throughput over the USB interface, especially in Notebooks: disable wireless and Bluetooth cards in Windows "Device Manager".

Notebook embedded webcams are often connected to the USB controller, demanding much of USB bandwidth and, for this reason, potentially affecting the TitanSDR performance. Therefore, if a webcam is present, please switch it off when the receiver is running.

Keep all the system devices drivers updated and always check drivers compatibility with the installed Operating System.

## 6. <u>License</u>

#### License File

A software license file ("license.bin") is associated with the receiver and is sent by E-mail after package delivery or included in the folder "License" of the installation CD. Please copy license.bin file to the folder C:\PrograFiles\TitanSDR\License (assuming that "C:\PrograFiles\TitanSDR" is the TitanSDR installation folder). That license file is required to have TitanSDR application working with the receiver.

If, after clicking the UsbConnection button (the rightmost button of the Panoramic Scope toolbar), the message "License file not found" pops up (Figure 6), please verify that license.bin file is in the above indicated folder.

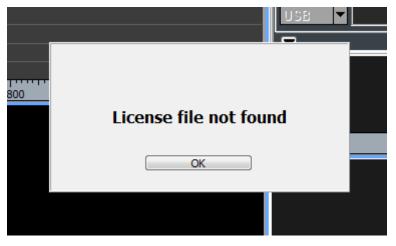


Figure 6

If the receiver is switched-on and connected to the PC and a valid license file is in the right folder, both "Receiver Mode" and "Player Mode" are allowed.

#### USB Dongle

An USB Dongle is provided with the receiver (Figure 7). By connecting the Dongle to an USB port, it is possible to use

TitanSDR software in "Player Mode", to replay previously recorded files, without connecting a receiver to the PC.



Figure 7

Connect the USB Dongle to an USB port, run TitanSDR software and select **Mode>Player** (Figure 8).

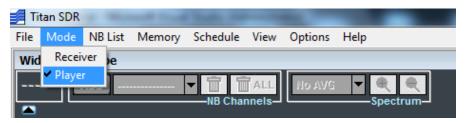


Figure 8

If the USB Dongle is correctly detected, the message "USB key found" will be displayed (Figure 9).

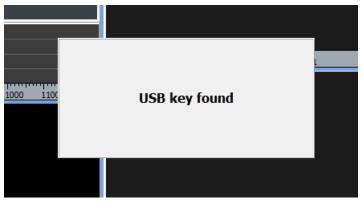


Figure 9

If TitanSDR software detects neither the receiver nor the USB Dongle, the message in Figure 10 will be displayed.



Figure 10

Microsoft Windows detects the USB Dongle as an USB Flash Drive ("TitanSDRKey)": do not rename or format the Drive. Do not cancel or alter the license file in the Dongle. In order to allow the user updating the license file for future upgrades, the dongle contains a writable storage memory: please don't put any file on the USB Dongle.

## 7. <u>CE Conformity</u>

Enablia S.r.l. declares that the TitanSDR receiver is in compliance with following European Community Directives:

- Electromagnetic Compatibility Directive (2004/108/EC)
  - EN55022
  - EN55024
  - EN61000-3-2
  - EN61000-3-3
- Low Voltage Directive (2006/95/EC)
  - EN 60950

Documentation and test reports are available upon request.

## 8. <u>Technical Specifications</u>

Frequency Range	9 kHz – 32 MHz	Sensitivity	-116 dBm (0.34 µV) SSB at S+N/N=10dB, 15MHz, 2.4 kHz BW
Noise Figure	<b>9 KHz - 1.5 MHz:</b> NF = 15.25dB	Tuning Accuracy	+/- 0.5 ppm
Preselectors (16)	1.5 MHz - 32 MHz: NF = 14.2dB Low Pass: 0-1.54 MHz Band Pass (1.44-32 MHz): 1.44- 2.07, 1.88-2.7, 2.4-3.46, 2.96-4.26, 3.56-5.12, 4.22-6.08, 4.88-7.03, 5.53-7.96, 6.46-9.31, 7.81-11.24, 9.74-14. 03, 12.53-18.05, 16.55- 23.17, 21.67-28.17, 26.67-32	Recording	One Wideband Channel (proprietary file format) All Narrowband Channels (.wav files) <b>Scheduler function:</b> recording at programmable time intervals (also day-time periodic tasks with selectable days of week) By <b>VAC</b> (Virtual Audio Cable)
Attenuation	0dB, 10dB, 20dB, 30dB	audio to SW decoders	By <b>LAN</b> to <i>Krypto500</i> and to <i>Hoka</i> <i>Electronic</i> software decoders (TitanSDR-Pro only)
Clipping	-8dBm (@ 0dB Attenuation)		
Wideband Channels	Maximum Number of Channels: 4	Support for SW developers	LAN Ethernet control of TitanSDR software application through ad hoc TCP commands set (Pro version only)
	Bandwidths (kHz): 312.5, 625, 937.5, 1250, 1562.5, 1875, 2187.5 Maximum Total Bandwidth (kHz): 2187.5, 1875, 1562.5 and 1250 for 1, 2, 3 and 4 Wideband Channels,	Memories	Saving allowed for NB channel frequency, bandwidth, mode, entry time, entry date, callsign, ITU code, station and user description
	respectively	A/D Conversion	16 bit, 80 Msps
Narrowband	8 (TitanSDR) or 40 (TitanSDR-Pro), independently tunable within Wideband Channels	Image Rejection	90 dB typ.
Channels		IIP3	>37 dBm
Spectrum Scopes Refresh Rate	19 Hz	SFDR	>108 dB
		Alias Rejection	115 dB
Panoramic Scope	0 Hz ÷32 or 40 MHz, 305 Hz RBW	Antenna Input	50 Ohm BNC
Wideband Scope	312.5 ÷ 2187.5 kHz, min RBW 19.07 Hz (Spectrum & Waterfall with customizable palette)	IF input	50 Ohm SMA - Bandwidth: 0.1÷ 32MHz
Narrowband Scope	<b>RF:</b> 39.06 kHz, min RBW 19.07 Hz (Spectrum & Waterfall with customizable palette)	PC Operative System	Windows 7/Vista/XP
		PC Interface	USB 2.0
	<b>Audio:</b> 5512.5 $\div$ 22050 Hz , RBW 5.4 $\div$ 21.5 Hz (Spectrum & Waterfall with customizable palette)	Operating Temperature	0° - 40° (°Celsius)
Modes	SSB, AM, NBFM, CW, eSSB, FSK, DRM ( <i>Dream</i> or <i>DRM Software Radio</i> supported)	Supply Voltage	6VDC +/-1V
		Supply Current	2.5Amp
Selectivity	100 dB (Stop Band Attenuation)	Dimensions	243mm x 52mm x 145mm (WxHxL)

#### **ENABLIA**

Enablia S.r.l. Via Nicostene, 20 00124 – Rome (Italy) Tel. +39.06.7259.4065 E-Mail: <u>enablia@enablia.com</u> www.enablia.com