

Sling Media WiFi Monitor

Theory of Operation

10/13/09

Model name: **WiFi Mon 150**

EchoStar Corp. and Sling Media, Inc. Confidential

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Introduction

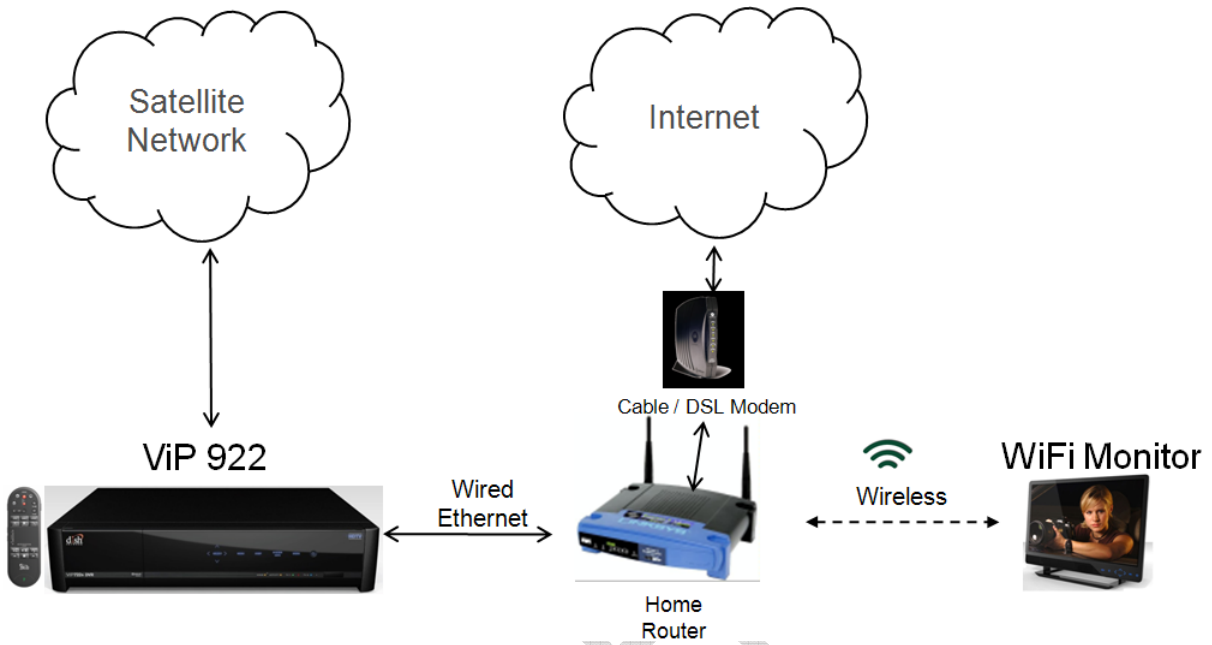
WiFi Monitor is a portable display designed to be used in conjunction with a Slingbox or a SlingLoaded Set-top box, i.e., a STB with Slingbox functionality integrated within it such as the Dish Network ViP 922 Duo DVR satellite receiver. The WiFi Monitor connects to a consumer's home network via Ethernet or Wi-Fi (802.11 a/b/g/n) and receives live and recorded (DVR) television from the Slingbox or the SlingLoaded STB. In this way, consumers can watch their television programming in any location in the home where a network connection is available. The monitor is especially convenient for rooms or spaces that have not been wired for TV programming, such as a kitchen, bathroom, patio, or garage.

WiFi Monitor Ecosystem

WiFi Monitor can exist as part of a wireless or wired home network. Referring to the illustration in Figure 1, the key aspects of the ecosystem and interaction of the components are:

1. The ViP 922 receives TV programming and metadata via satellite. This device is also connected to the home network router via Ethernet.
2. The home router provides IP connectivity via Ethernet or Wi-Fi to the ViP922 and WiFi Monitor. The home network router is connected to a DLS or Cable modem
3. WiFi Monitor is connected to the home network via wireless or wired connection, and communicates with the ViP 922 over the IP network. The ViP 922 streams TV programming to WiFi monitor, which decodes and displays the video and audio content for the consumer to watch. The user sends commands to the WiFi Monitor by using an IR remote control. These commands trigger either local actions (like moving through the WiFi Monitor menu system), or result in WiFi monitor sending control commands and/or data (like channel change, search keywords) to the ViP 922 set-top box. The ViP 922 processes these commands and performs an appropriate action, and/or sends data back to WiFi Monitor for presentation to the user. The WiFi Monitor also downloads metadata directly from the Internet for presentation to the user.

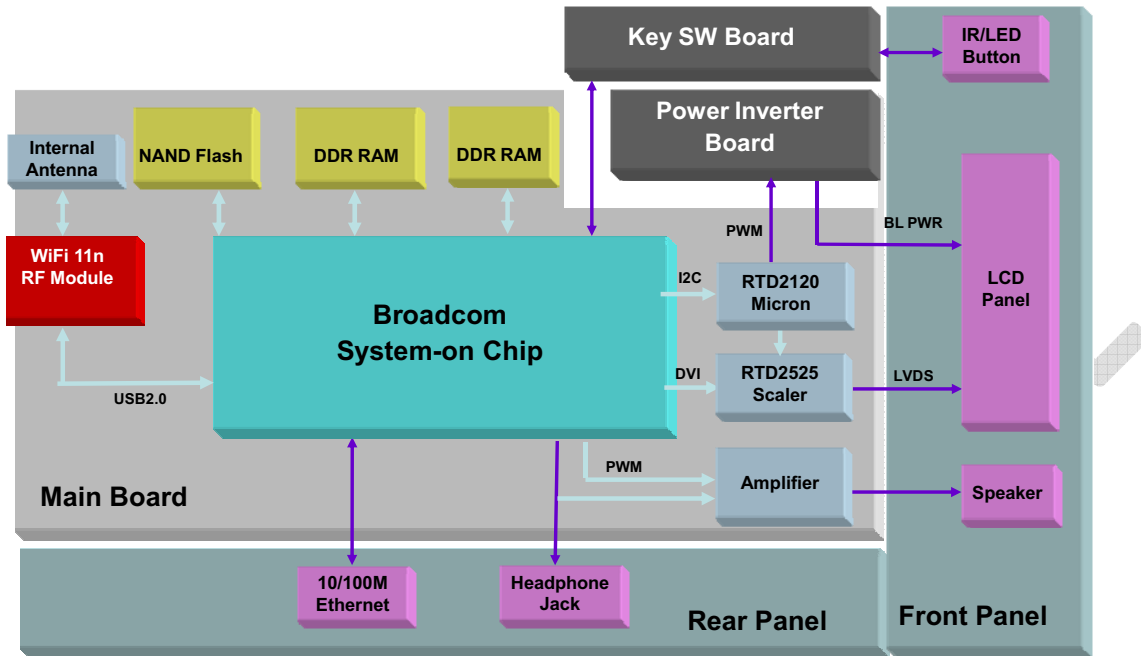
Figure 1: WiFi Monitor Ecosystem



WiFi Monitor Block Diagram

Figure 2 is the system block diagram for WiFi Monitor.

Figure 2: WiFi Monitor Block Diagram



WiFi Monitor Technical Specifications

Item	Description
Network Interfaces	
Ethernet 10/100 M	RJ-45 Ethernet jack
WiFi 802.11a/b/g/n	Support infrastructure modes
WiFi frequency	2.4 GHz and 5GHz selectable dual band
WiFi Antenna	2x MIMO Internal Antenna
WiFi Security	WEP, WPA/WPA-2 (PSK) encryption
Audio Interfaces	
Headphone out	3.5mm stereo headphone jack
Panel Interfaces	
Panel size	15.6" Wide Aspect TFT active matrix panel
Display size	344.232(H) × 193.536(V) (15.6" diagonal)
Power & Control Interface	
IR	
IR receiver sensor	IR receiver

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Power	Physical power switch
Physical Switches X8 (capacitive touch, backlit)	Blue LED backlight.
Volume	Up/Down
Channel	Up/Down
Menu	Select
Mute	On/Off
OK	OK
Live TV	Switch to Live TV from anywhere in the UI
Power input	12VDC – 3.5A – Desktop type
Power input jack	DC jack
Dimensions	
Unit dimension (wxhxd)	TBD
Weight	
Net weight	TBD
Gross weight	TBD
Accessory	
Power Adapter	
Power Adapter	External 120V/60Hz AC adapter
Power adapter in	100~240 VAC, 50/60Hz
Power adapter out	12VDC – 3.5A
Remote Controller	
RC IR resolution	Infrared, 1XIR transmitter
Number of keys	24 keys

How To Setup WiFi Monitor

1. Required Items

The following items are needed in order to successfully setup WiFi Monitor:

- Dish Network ViP 922 Duo DVR satellite receiver or a Slingbox attached to a STB
- A broadband Internet connection connected to a home network router (wired or wireless)
- WiFi Monitor
- AC Adaptor

- Power Cord
- IR remote control
- 2x AAA Batteries

2. Installation Steps

Please follow these steps to install your WiFi Monitor.

Step 1: Install your ViP 922 Duo DVR satellite receiver or your set-top box with Slingbox attached.

This step must be performed by a Dish Network authorized installer. Your ViP922 or Slingbox must be installed and connected to your home network before WiFi Monitor is installed. Please call Dish Network to arrange for installation.

Step 2: Install your WiFi Monitor

- Unpack WiFi Monitor from the box, and place it in the desired location.
- Unpack the WiFi Monitor remote control, remove the battery door on the back of the unit, and insert the two included AAA batteries in the correct orientation.
- Connect the power plug (AC adapter) to WiFi Monitor. After a minute, the WiFi Monitor user interface will be displayed. Press the OK button on the remote control to begin the setup process.
- Follow the on-screen prompts to setup WiFi Monitor. WiFi Monitor will check to make sure it is connected to the network, and download the latest software updates. After the setup is complete, the WiFi Monitor will restart.
- After the system restarts, you will be prompted to press the OK key again to begin using the product. You are now ready to enjoy your TV programs anywhere in your home!

Using WiFi Monitor

The WiFi Monitor provides you with several powerful ways to find and enjoy live and recorded TV content from your Dish Network ViP 922 receiver or Slingbox. You can navigate through the WiFi Monitor user interface using the left, right and OK keys on the included remote control. Here are the key functionalities of the WiFi Monitor and how to use them.

1. Home

This menu can be accessed by pressing the “Menu” button on the remote control. Home provides access to the Program Guide, DVR, What’s On, and Settings menus.

2. Program Guide

Select this option from the Home menu or the remote control Guide button to see a grid showing you what television programming is available by channel, time, and date. Use the left / right arrows to highlight a program, and press the OK key to select it. On-screen menus will provide further information on what you can do with a particular event (watch it, record it, and more...)

3. DVR

This option provides full access to all of the DVR functionality of your ViP922 set-top box. You can watch recorded programs, see a list of all recorded programs, sort through the list by date and title, and search for programs of interest. You can also see what programs are scheduled to record, edit scheduled recordings, and resolve recording conflicts.

4. What's On

Select this option to find and watch live TV of interest, see what TV programs will be on later, and schedule recordings. Instead of having to search through a program guide, What's On allows you to search for programs more easily by arranging programs in a simple to navigate list that can be sorted by channel and searched by keywords. Once a program of interest is found, you can easily watch it, record it, or get more information about the program.

5. Settings

The settings menu contains all of the WiFi Monitor system settings. Within this menu, you can adjust network settings, display settings, audio settings, and other user preferences.

Warning statement

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

For operation within 5.15 ~ 5.25GHz frequency range, it is restricted to indoor environment.

IEEE 802.11b or 802.11g operation of this product in the U.S.A. is firmware-limited to channels 1 through 11.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Industry Canada Statement

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions:

- 1) this device may not cause interference and
- 2) this device must accept any interference, including interference that may cause undesired operation of the device

Caution:

(i) the device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-channel mobile satellite systems;

In addition, users should also be cautioned to take note that high-power radars are allocated as primary users (meaning they have priority) of the bands 5250-5350 MHz and 5650-5850 MHz and these radars could cause interference and/or damage to LE-LAN devices.

IMPORTANT NOTE:

IC Radiation Exposure Statement:

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.