

The DirecTV Slimline SWM ODU LNB

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DBSTalk.com presents a First Look of the Single Wire Multiswitch (SWM) Outdoor Unit (ODU) Low Noise Block (LNB). The SWM ODU LNB is a direct replacement for the Slimline LNB, see Figure 1 below. It essentially works the same as the standalone SWM.



Figure 1 Slimline Reflector and LNB

Compatibility

There are a number of compatible satellite receivers. DirecTV refers to these satellite receivers as IRDs. The IRDs are:

- D12 (all)
- HR20 (all)
- H20 (all)
- H21 (all)
- HR21 (all including Pro)
- R16
- R22

SWM Technical Understanding

The SWM and SWM ODU LNB both work with each IRD tuner to provide requested content in the form of whole satellite transponders sent down SWM channels. There are 8 SWM channels in the SWM ODU LNB plus one extra channel. IRDs are allocated their SWM channel(s) during the IRD's programming guide acquisition phase.

Just like a SWM module, the SWM ODU LNB requires a Power Inserter to work as the IRD doesn't supply

enough power directly. *BBC's are not to be used IRD tuners.*

Channel Assignment

The SWM equipment uses frequencies from 974 MHz to 1790 MHz for programming guide and content to IRD tuners. This embedded SWM LNB has 8 SWM channels that are assigned to each IRD tuner (the same as the SWM8) and they are as follows:

Channel	Frequency	Assignment
1	1076 MHz	Program Content
2	1178 MHz	Program Content
3	1280 MHz	Program Content
4	1382 MHz	Program Content
5	1484 MHz	Program Content
6	1586 MHz	Program Content
7	1688 MHz	Program Content
8	1790 MHz	Program Content

Each tuner on an IRD requires one SWM channel (thus, an HD DVR IRD would require two channels). Programming guide data is transmitted to each IRD on 974 MHz and presents itself on the SWM signal test page as an additional channel as shown in Figure 2.

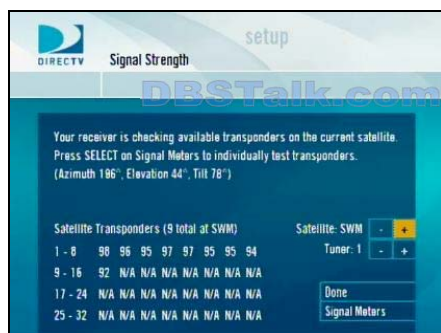


Figure 2 SWM Signal Test Page

Control Signal

The SWM ODU LNB is controlled by a 2.3 MHz signal. This signal is used to make the SWM channel allocations and transponder requests mentioned above. This 2.3MHz signal requires splitters and diplexers that handle frequencies that low.

SL5S SWM-ODU

The SWM Integrated LNB has a built in 8 channel SWM and can receive all five major orbital slots (119°/110°/-103°/101°/99°) which will include the latest satellite D11, recently launched.

Pictured in both Figure 3 and Figure 4 is the Power Inserter. The red coax connector indicates the power to the SWM ODU LNB and the white indicates non-powered side sending the signals to the tuners.



Figure 3 Power Inserter PI-28



Figure 4 PI-28 Head On

Setup & Installation

External Equipment Requirements

The installation instructions say that in order to use the SWM you may need a splitter, be it a 2 way, 4 way, or 8 way splitter to get channeled signals to respective IRD tuners.

The main requirement for SWM splitters they must pass frequencies 2 MHz to 2150 MHz. DIRECTV has certified a group of splitters: SWS-2/4/8 as having the specifications to handle the entire frequency range.

Home testing included the following splitters and their outcome:

2-WAY

- Ideal - 85-332 - Power Pass (One) - 5-2300MHz - **PASS**
- Philips - SDW50100/17 - Power Pass (All) - 5-2300MHz - **PASS**
- Skywalker - SKY23302D - Power Pass (All) - 5-2300MHz - **PASS**
- SVI - 25-HFS22DN - 5-2300MHz - **PASS**

3-WAY

- Ideal - 85-333 - Power Pass (One) - 5-2300MHz - **PASS**

4-WAY

- AudioQuest - F4F - Power Pass (One) - 5-3000MHz - **PASS**
- Dynaflex - S-14 - 5-1000MHz - **FAIL**
- Eagle Aspen - P-2150-4AP-GX - Power Pass (All) - **PASS**
- Ideal - 85-334 - Power Pass (One) - 5-2300MHz - **PASS**
- GE - 22694 - Power Pass (All) - 5-2300MHz - **PASS**
- Perfect Vision - PV23-304 - Power Pass (One) - 5-2300MHz - **PASS**
- Philips - SDW50120/17 - Power Pass (All) - 5-2300MHz - **PASS**
- MCR - ES-104D - Power Pass (One) - 5-3000MHz - **PASS**
- Skywalker - SKY23304D - Power Pass (All) - 5-2300MHz - **PASS**
- Radio Shack - 16-2570 - Power Pass (All) - 40- 2150 MHz - **PASS**

NOTES/TIPS

Place the Power Inserter immediately after the dish and before the first splitter or set of splitters.

There must be at least 15 feet between the dish and power inserter to maximize rain fade margin.

Terminating unused ports may help to increase signal strength and/or signal issues. - **RECOMENDED BY DirecTV**

Connecting to the IRD

A single wire is connected to the SWM port of the (compatible; listed above) IRD. If an IRD had a BBC attached previously, the BBC was no longer needed and thus removed from the setup. Depicted in Figure 5 are the backs of some IRDs and their respective SWM connections. In the case of DVRs, only one line is needed, connecting to the SWM RF connection the IRD would take two of the eight available channels for the two tuners within the IRD.



Figure 5 SWM Port on HR20, HR21, and H21 (from DirecTV Install Presentation)

Design Considerations

There are many different designs for hooking up the systems, but you need to make certain that the power passing ports combine to get back to the SWM ODU LNB. Here are a few designs that were utilized during our testing:

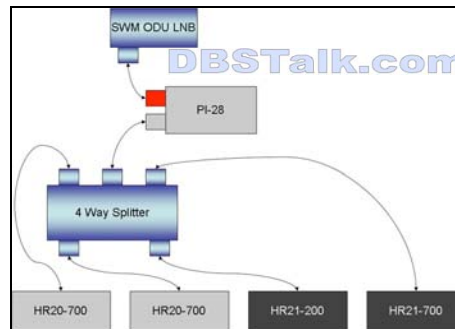


Figure 6 Recommended RF Setup

Some testers tried diplexing over the air signals. This is not a recommended configuration by DirecTV. A semblance of that is depicted here Figure 7 and Figure 8.

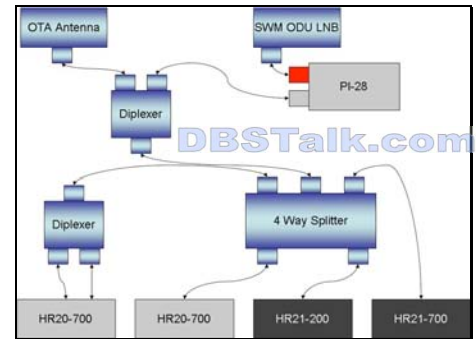


Figure 7 Diplexing OTA



Figure 8 Diplexed OTA Setup

Conclusions

The build quality on these SWM LNB units appears to be as solid as ever within the DirecTV lineup. The documentation was clear and concise such that it made it easy to install and setup. With the exception of some non-recommended splitters not working properly the whole experience was quite easy and rewarding.

Note: This article was supplemented with review and/or added information provided by the following DBSTalk.com members: MIAMI1683, jwd45244, Hansen, RobertE, bwaldron, bakers12, Alebob911, SAIBO, NR4P, David Ortiz, spoonman, houskamp, Coffey77, Doug Brott, Stuart Sweet, and Tom Robertson. Additionally, the templates for this First Look were provided by HDTVfan0001 and AirRocker.

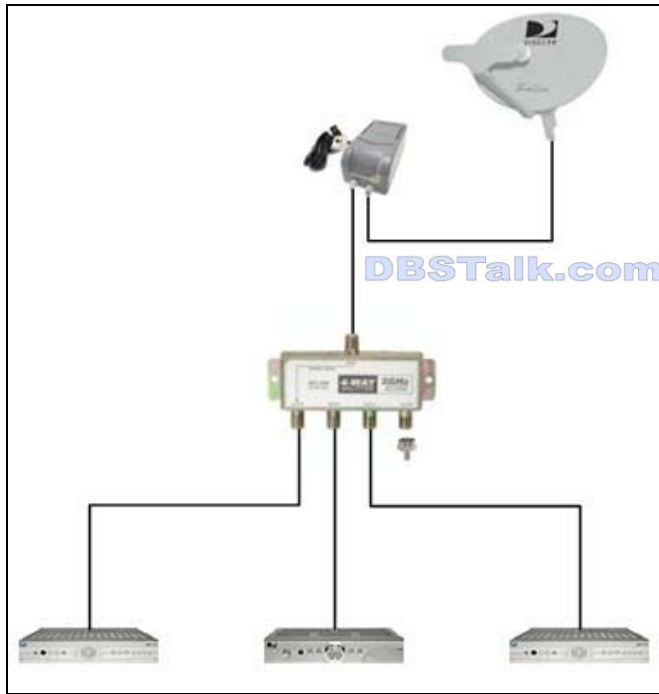


Figure 9 Recommended SWMLine Setup



Figure 10 Power Passing 4 Way Splitter Setup

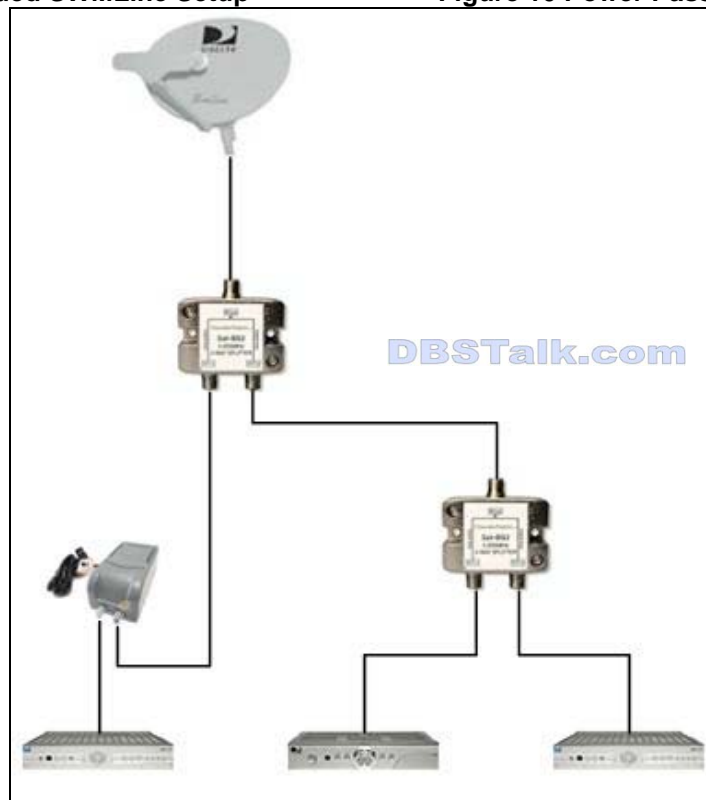


Figure 11 Yet Another Confirmed Setup



Figure 12 AT-9 with Side Car LNB



Figure 13 New SWMLine Reflector and SWM ODU LNB



Figure 14 Direct Comparison between the two LNBs; Note the 4 Ports versus 1 Port Only on the SWM ODU LNB