



8/23/04

Super Home Nodes and Dual-Tuner Receivers with Agile Modulated Outputs

This document provides DISH Network installers a basic understanding of the use and proper installation of a Super Home Node.

A Super Home Node is a device that can simplify a satellite receiver installation by combining the functions of a splitter, signal combiner, and in-line amplifier. This document explains what a Super Home Node is, how it is used, and how it can be a benefit to installations with dual-tuner receiver with Agile modulated outputs.

WHAT IS A HOME NODE?

A home node is the junction point to a home's pre-wired coaxial distribution system. In other words, it's the single location to which all of the coaxial cables within the home converge. It's often a 2, 3, or 4 port splitter located in or on the home near where the off-air or CATV (cable), telephone, and power wiring enter the home. Alternately, it could be found in the basement, mechanical room, crawl space, or closet.

HOW IS A HOME NODE SET UP?

The input of the home node can come from a "drop" off of the CATV trunk, or from an off-air antenna mounted either on the roof or in the attic. Each home node source should have its own ground block and be properly grounded per local electrical codes.

It is possible to leave some output ports of the home node splitter unused – these ports should be terminated with a 75 ohm terminator for best results.

WHAT SPLITTERS CAN BE USED?

At the minimum, the frequency response of any splitter carrying off-air or CATV signals should be at least up to 806 MHz.

Important Note: When surveying the home wiring, if you find more coaxial wall outputs than there are outputs on the splitter, beware! This is a tell-tale sign that there are additional "buried" splitters in the home distribution system, and they must also be checked.



© 2004, EchoStar Technologies Corp. All rights reserved.

SUPER HOME NODES AND DUAL-TUNER RECEIVERS WITH AGILE MODULATED OUTPUTS

8/23/04

Splitters have other specifications that should be examined to see if they are of reasonable quality.

Insertion loss (I.L.) indicates how much of the off-air or CATV signal is lost by going through the splitter. Typical loss values on a 2-way splitter are 3.5-4.0 dB, on a 4-way splitter 6.5-7.0 dB, and a 8-way splitter 9.5-10 dB. If the splitter ports are “diode isolated” add another 1 dB loss to the above ranges.

Isolation prevents signal leakage from one output port to another. For a good quality splitter, there should be a minimum of 15-20 dB isolation, though better quality ones have 25-30 dB.

CAN A SPLITTER BE USED AS A COMBINER?

A splitter may be connected in reverse to combine two or more sources when the frequency ranges of those sources is the same, such as CATV and a receiver’s coaxial output. The insertion loss is the same whether used as a splitter or combiner.

Important Note: Do not attempt to use a splitter in place of a diplexer.

WHEN CAN THE EXISTING HOME NODE BE USED, AND WHEN DO I HAVE TO USE A SUPER HOME NODE?

For basic installations that will feed just the receiver’s Agile modulated output to multiple TVs throughout the home, the existing home node can be reused.

For installations that will require both the receiver’s Agile modulated output and an off-air antenna or CATV signal fed to multiple TVs throughout the home, a Super Home Node will be required.

WHAT IS A SUPER HOME NODE, AND WHAT MAKES IT SO SUPER?

We recommend the Eagle/Aspen Super Home Node pictured in Figure 1, which is effectively a signal combiner, 4-port splitter, and in-line amplifier (for the Antenna/CATV In port). It is designed to combine the Agile modulated output and an off-air or CATV signal and distribute it throughout a home to multiple TVs. In addition, its design not only helps ensure low signal loss, but also isolates the Agile modulated output from the off-air antenna (in accordance with FCC regulations) so that the home doesn’t become its own mini TV broadcast station.

SUPER HOME NODES AND DUAL-TUNER RECEIVERS WITH AGILE MODULATED OUTPUTS

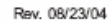
8/23/04

The Eagle/Aspen Super Home Node needs to be powered from an external DC power source. A separate indoor power inserter and power supply is included to complete this installation. The Eagle/Aspen Super Home Node can accept the DC power source from the modulator input port, or from any of the four TV output ports. If feeding power through a TV output port, the power inserter does not need to be connected to an active TV to function. While the power inserter and supply must be located indoors, the Super Home Node can be located indoors or outdoors.



Figure 1

8/23/04



CAN THE SUPER HOME NODE BE USED TO DISTRIBUTE BOTH TV1 AND TV2 FROM A DUAL-TUNER RECEIVER WITH AN AGILE MODULATED OUTPUT?

© 2004, EchoStar Technologies Corp. All rights reserved.