



SAT LITE Changing Configuration Settings

Introduction

This application note describes in detail how to manually change or enter a satellite configuration into the XFTP SAT LITE satellite meter. Due to changes made by the service provider – or if the default configuration profiles do not allow you to lock onto a particular satellite – it may be necessary to change the configuration parameters of the SAT LITE satellite meter.

Configuration Parameters

The individual configuration parameters, and a definition of each parameter, are reviewed in this section.

Name: This is the name of the satellite. This name can be changed and does not affect whether or not the meter will lock onto the satellite.

LO: Local oscillator frequency. This is the internal oscillator frequency of the satellite dish LNB. The LNB mixes the signal received from the satellite (F) with the local oscillator frequency (LO) and outputs the difference between the two signals (IF). The difference between the two should always fall between 950 and 2150 MHz.

Example:

$F - LO = IF$ (950 to 2150 MHz)

Note: When in the C-band, the difference may be calculated with the following formula: $LO - F = IF$

The local oscillator frequency can be obtained from the LNB or dish manufacturer. For DirecTV and Dish Network dishes, this frequency is typically 11,250 MHz.

F: Satellite transponder frequency. This is the frequency broadcast by the satellite and received by the satellite dish. Satellites have multiple transponders with different frequencies. If a specific frequency is weak in your area, a different transponder frequency on the same satellite could be used to align the dish.

SR: Symbol rate. This is the rate that data is being transmitted from the satellite. Typically, this is in the 20,000 to 30,000 range but varies by satellite.

LNB: LNB voltage. This is the DC voltage used to power the LNB. This can be set to 13V, 18V, or 0V. The LNB must be powered for the meter to receive a signal. The LNB voltage should only be set to 0V if a set top box is providing power to the LNB. Selecting 13V or 18V will determine the polarity of the signal. 13V is used for right-hand circular polarization (R) or vertical polarization (V); 18V is used for left-hand circular polarization (L) or horizontal polarization (H).

L: Longitude. This is the location of the satellite. All geosynchronous satellites are located directly above the equator at a fixed longitude.

22 KHz: 22 KHz tone. This value is either ON or OFF. For multiple LNB dishes, the 22 KHz tone is sometimes used to turn specific LNBs on or off, or to switch between different LO frequencies in the LNB. Whether this is needed or not is dependant on the type of dish or LNB used.

Mode: QPSK modulation type. Most DBS (direct broadcast satellite) systems use DVB type modulation; DirecTV uses a proprietary QPSK modulation known as DSS (DTV).

FEC: Forward error correction. This value is a ratio of the number of bits used for data over the total number of bits in the symbol. For example, an FEC setting of $\frac{3}{4}$ would mean that $\frac{3}{4}$ of the symbol is data and $\frac{1}{4}$ of the symbol is used for error correction.

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Verify. This is a value exclusive to the SAT LITE satellite meter. This is used to help prevent false positives and to ensure the satellite you are trying to align to is the correct one. This typically will be set to 0 (Null). Changing this setting can have a direct impact on whether or not the satellite meter can lock onto a signal and will be discussed in detail later in this note.

Where do I find this Information?

Now that the basic configuration parameters have been identified, the next step is to determine values for each of the configuration parameters. There are several websites that provide satellite configuration information. One of the more commonly-used is www.lyngsat.com.









From this site you can select the satellite which you are targeting the dish on, and specific data for each satellite transponder can be identified. A sample page and how to read it are as follows:

**Transponder Frequency (F)
Polarity (LNB Volt)**

**Satellite Name and
Longitude**



DirecTV 4S/8 © Lyngemark Satellite, last updated 2008-07-22 - <http://www.lyngsat.com/dtv101.html>

Freq. Tr	Provider Name Channel Name	Video Encryption	SR-FEC SID-VPID	NID-TID Audio	Beam	Source Updated
12224 R tp 1	 DirecTV USA	A P DSS Videoguard	20000-6/7		USA	R Hewitt 020130
12239 L tp 2	 DirecTV USA	A P DSS Videoguard	20000-6/7		USA	R Hewitt 020130
12253 R tp 3	 DirecTV USA	A P DSS Videoguard	20000-6/7		USA	R Hewitt 020130
12268 L tp 4	 DirecTV USA	A P DSS Videoguard	20000-6/7		Spot	R Hewitt 020130
12282 R tp 5	 DirecTV USA	A P DSS Videoguard	20000-6/7		USA	R Hewitt 020130
12297 L tp 6	 DirecTV USA	A P DSS Videoguard	20000-6/7		USA	R Hewitt 020130
12311 R tp 7	 DirecTV USA	A P DSS Videoguard	20000-6/7		USA	R Hewitt 020130
12326 L tp 8	 DirecTV USA	A P DSS Videoguard	20000-6/7		USA	R Hewitt 020130

Modulation type (MODE)

**Symbol Rate (SR)
and FEC**

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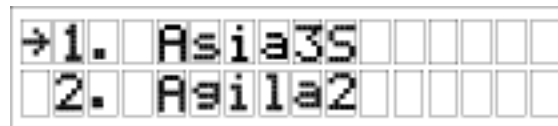
All of the configuration parameters can be found above except for Local Oscillator Frequency (LO), 22 KHz, and Verify. The Local Oscillator Frequency and 22 KHz information can be provided by the dish manufacturer or the LNB manufacturer. The Verify setting will be discussed later in this application note.

Note: All configuration parameters for each satellite stored in the SAT LITE have been selected to avoid a false-lock on an undesired satellite signal. Changing any parameter may permit the configuration to lock on to an undesired signal.

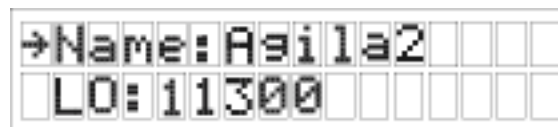
Changing Configuration Parameters on the Meter

Once you have selected the satellite and specific transponder you want to receive, the parameters can be entered into the meter.

First, turn on the power to the SAT LITE meter. After the initial screen appears, press the **Load** key. The following screen will appear (*note that the satellite names may be different on your meter*):



Select the satellite configuration to be changed. If you are entering a new configuration, select any satellite then press the **Enter** key. This will load the configuration into the meter and display the following screen:



Press the **Down** arrow key (▼) to select the specific parameter to be changed, and then press the **Enter** key. Type the desired value for each parameter using the alphanumeric keypad on the meter. After typing the correct value, press the **Enter** key again and proceed to the next parameter. For some parameters, the **Enter** key toggles between available values. In this case, press the **Enter** key until the desired value is displayed, then press the **Up/Down** arrow keys (▲▼). All of the parameters can be changed in this manner.

Some parameters have an “Auto” setting. If you know the value for the parameter, enter the value into the meter. If the value is not known, use the “Auto” setting.

Set the “Verify” parameter to 0 (Null).

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Saving the Configuration Changes

Note: This next step is important and should be done carefully.

After all the parameters have the desired values, press the **C/S** key to display the following screen:

*1.	Asia3S				
2.	Asila2				

Note the asterisk beside the number. This number is the location in the SAT LITE satellite meter's memory. There are 60 locations available. If you are changing parameters of a satellite's configuration, scroll down to the present location of the configuration that was just changed before pressing the **Enter** key. Any configuration currently in this location will be overwritten and is not retrievable. If you accidentally overwrite a configuration, it can be manually re-entered later if all the configuration parameters are known.

If you are saving a new configuration, there are several unused locations at the end of the list of satellites stored within the SAT LITE's memory. Scroll down to one of these locations and press the **Enter** key, then press the **Set** or **Find** key to exit this display.

This configuration can now be loaded into the meter and used to align the dish.

Understanding the "Verify" Parameter

The configuration parameters in the SAT LITE satellite meter are designed to confirm that the signal which is being received is indeed the desired signal. The SAT LITE is also utilized to help prevent false positives. The meter will display a signal level but will not display a quality level unless all of the correct parameters are met. The best way to eliminate locking onto the wrong satellite is to double check the dish installation and by verifying that the configuration parameters are correct. Ensure that the mounting post is plumb and accurately pre-set your elevation and tilt.

The SAT LITE has an additional parameter that can be used if you are receiving a signal and quality reading from the wrong satellite. Since satellites are spaced closely together – and with the introduction of multiple LNB dishes – it is possible to lock onto the wrong satellite. If this happens, the "Verify" parameter can be used.

The "Verify" parameter value is a number from 0 to 60. This number corresponds to a configuration setting stored in the SAT LITE's memory.

The "Verify" function is used to confirm the *absence* of a satellite signal. The number entered in the "Verify" field should correspond to a stored satellite configuration that has a transponder frequency or other parameter of the false satellite that is not found on the correct satellite. This information can be difficult to obtain. When the meter is detecting a signal, it will only display a quality reading if the configuration parameters referenced to in the "Verify" field are *not* detected.

Conclusion

Read and understand the XFTP SAT LITE operation manual. This application note was designed to explain the configuration settings for the SAT LITE satellite meter.

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