



# Application Note

10/26/2009

## Limit Scan Feature

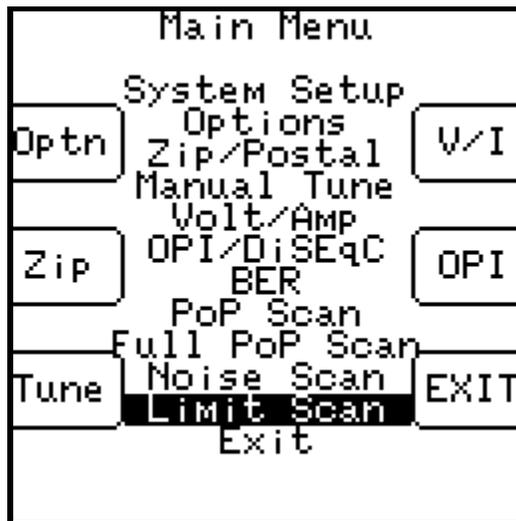
The Super Buddy™ Signal Level Meter includes a Limit Scan feature that performs a quick scan of up to 5 transponders on a satellite, checks the values against pre-determined limits, and provides a pass/fail indication. Use this test to quickly verify your installation against recommended quality values.

### Specifications

- 1) Up to 5 transponders per satellite may be tested
- 2) Up to 10 total satellites may be stored
- 3) Signal quality test (IRD signal quality number)
- 4) Signal level test
- 5) Signal quality limits defined for individual transponders
- 6) Signal level limit defined overall
- 7) Limits are changeable and are stored in the instrument

### Setup

Use the normal meter setup for whatever type of system you are installing. When the installation is complete, select "Limit Scan" from the main menu:



## Scanning

The menu option will start the Limit Scan screen. If limits are already defined for the presently selected satellite, the scanning will start immediately.

Note: The Limit Scan is only useful if the LNB is being powered by the meter. Press the LNB soft-key to power the LNB. On a multi-LNB setup, press the LNB soft key more than once to toggle from LNB1 to LNB2 to LNB3, etc. The satellite orbital position (i.e. 110.0W) related to each selected LNB port will be displayed in the top left corner of the LCD screen.

The screenshot shows the 'LIMIT SCAN' screen with the following data and controls:

Tr	dBm	Req	IRD
14	-59.8	40	??
15	-39.7	40	58
16	-34.4	40	64
21		40	

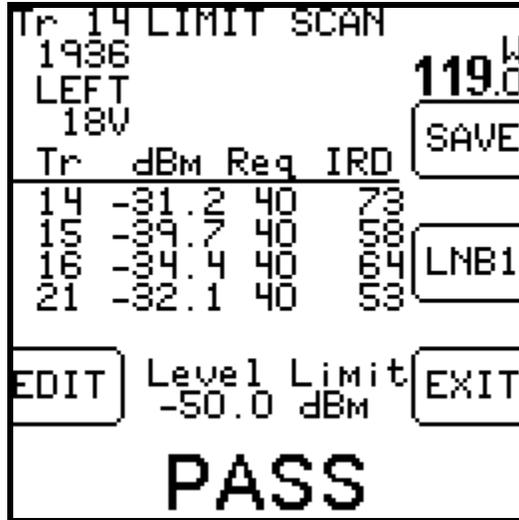
Additional screen elements include: 'Tr 16 LIMIT SCAN' at the top, '1907 LEFT 18V' on the left, '119.0 W' at the top right, 'SAVE' and 'LNB1' buttons on the right, and 'EDIT Level Limit -50.0 dBm EXIT' at the bottom.

For each transponder to scan, the screen shows:

- 1) Tr – The transponder numbers to be scanned (transponders must be defined by user)
- 2) dBm – The received dBm signal level value corresponding to each specified transponder
- 3) Req - The required minimum IRD signal quality value Limit (must be defined by the user)
- 4) IRD – The received IRD signal quality value corresponding to each specified transponder
- 5) The Level Limit field (found at the very bottom center of the LCD screen) displays the minimum desired Signal Level dBm value Limit (must be specified by user).

If a lock is not obtained, the IRD column will display “??” instead. The table will be filled in as the transponders are measured in sequence. When all transponders are measured, the pass/fail indication will appear.

The Limit Scan will continue running constantly until stopped by the user. You will receive a PASS or FAIL message after each cycle of limit scanning has been completed. A PASS message means that all of the received Signal Level (dBm) and IRD signal quality values were greater than the minimum limits defined by the user for the specified transponders. A FAIL message means that at least one of the received Signal Level (dBm) or IRD signal quality values were less than the minimum limits specified by the user.



The following keys are active while scanning:

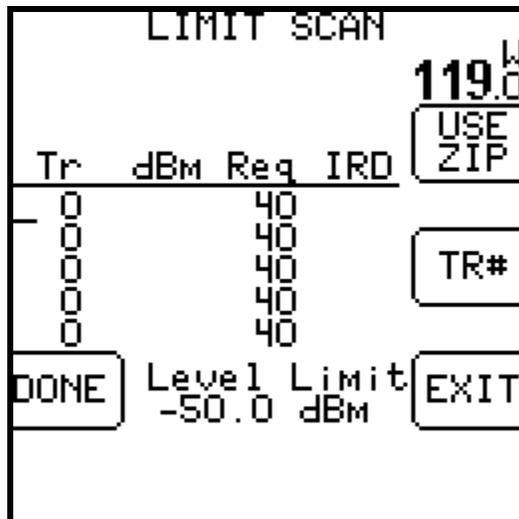
- EDIT – lets you edit the transponder list and limits (see below)
- SAVE – collects and stores a complete limit scan for upload to a PC
- LNB ON/OFF – also selects different LNBS in a multi-LNB system.
- EXIT - returns to the main Run screen
- Left / Right Arrows – scroll between satellites (as in the Run Screen)

## Editing

The limit editing function may be activated in three ways:

- 1) By pressing EDIT from the Limit Scan screen
- 2) By activating the Limit Scan from a satellite that does not have limits defined, or
- 3) By scrolling via arrow keys or the LNB soft-key to a satellite that does not have limits defined

When a satellite with no limits is selected, the edit screen contains zeros for all transponders:



You will see a small underline cursor on the field that may be modified. Use the up/down arrow keys to move cursor to next desired field when no editing is necessary. With the cursor on the correct field, use the numeric keypad to begin typing the desired value to define the transponders

you want to scan. Press the Enter key to move cursor to next field after typing in each desired value. You may edit the required IRD value for each transponder. These IRD values apply only to the selected satellite and specific transponder. You may also edit the signal level limit which applies to all transponders on all satellites.

LIMIT SCAN				101.0 <sup>W</sup>
Tr	dBm	Req	IRD	USE ZIP
5		91		
11		94		
18		94		TR#
28		90		
0		40		
DONE	Level Limit			EXIT
	-50.0 dBm			

To remove a transponder, enter zero for the transponder number. If all transponders have been zeroed for a satellite, that orbit will be removed from the table.

You may also use the "TR#" key to insert a valid transponder number from the list of transponders for that satellite. When your cursor is in the Transponder (Tr) column field, pressing the TR# soft key several times will allow you to numerically scroll through the different transponders.

Press DONE when you have entered the desired values to return to the Limit Scan screen to let the Limit Scan begin or press EXIT to return to the main Run screen where your bar graphs are found.

LIMIT SCAN				101.0 <sup>W</sup>
Tr	dBm	Req	IRD	SAVE
11				
1120				
RGHT				
13V				
5	-39.1	40	77	
11	-32.6	40	73	
18	-53.3	40	??	LNB1
28	-35.0	40	83	
EDIT	Level Limit			EXIT
	-50.0 dBm			
<b>FAIL</b>				

## Preset Limits

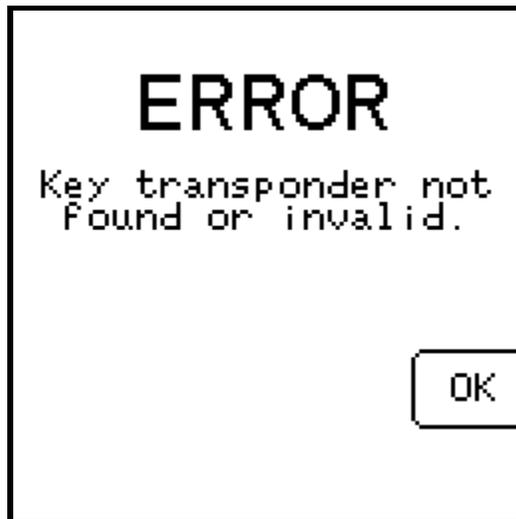
Note: At the present time, the soft key labeled "USE ZIP" is only usable for certain Dish Network satellites. For the USE ZIP soft key to be active, the service provider must send us the related files with their desired minimum IRD values and minimum Signal Level Limits (dBm) for each zip code. When there are preset minimum IRD and Signal Level values available for the satellite, pressing the USE ZIP soft key will auto-populate the fields with minimum values specified by the service provider.

To auto-populate the Required IRD value fields based on your geographic location (zip code) in the Limit Scan feature:

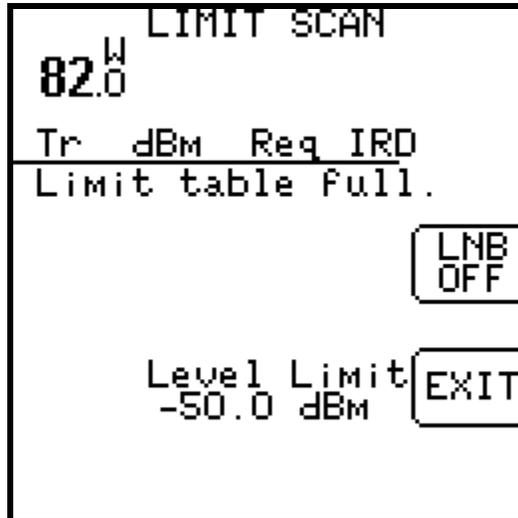
- 1) Using the soft keys, select Menu.
- 2) Using the arrow keys, highlight Limit Scan.
- 3) Press Enter.
- 4) Select the EDIT soft key.
- 5) Select the USE ZIP soft key.
- 6) Select the DONE soft key to return to the main Limit Scan screen to use this feature or select EXIT to return to the main Run screen.

## Errors

If you enter an invalid transponder number, the error will be detected after you press DONE and the system tries to scan that channel. The following error will appear and the invalid transponder will be removed from the list.



If you use all 10 orbital slots, the system will not be able to create a list for any additional satellites and the following message will appear when you scroll to or activate a satellite that does not have limits defined:



## Limitations

The transponder lists are stored simply by orbital position. No distinction is made for the frequency band. Therefore, if you store limits for 101 West, DirecTV, these same transponder numbers and limits will be used for 101 West AMC4 Ku band, and again for 101 West AMC4 C-Band.

## Initialization

The default values consist of the standard Dish Network set of transponders. The defaults may be restored by pressing the PRESET key in the Options screen.

## Saving Limit Scans

You may find it beneficial to document the Limit Scan to prove that the signal level and quality of the key transponders are adequate before you leave the site. To accomplish this, you may save the Limit Scan to the flash memory of the Super Buddy while out in the field. Then you can upload it to a PC when back at the office to store the documentation on your hard drive or forward it on to upper management if required. Since the Limit Scan function only scans the key transponders (up to five per satellite), it is much less time consuming to use than the Proof of Performance Scan feature that scans all transponders on the satellite.

To save a Limit Scan, press the SAVE soft-key in upper right hand corner of LCD screen. The meter will then perform a Limit Scan on the key transponders for LNB1. Then it will automatically send the necessary commands to toggle to LNB2 and LNB3 and will scan through those key transponders if you've indicated in the System Setup that you're connected to a multi-LNB assembly.

Tr 14 LIMIT SCAN  
 1936  
 LEFT  
 18V  
 119.0<sup>W</sup>

Tr	dBm	Req	IRD
14	-31.2	40	73
15	-34.7	40	58
16	-34.4	40	64
21	-32.1	40	53

SAVE  
 LNB1  
 EDIT Level Limit -50.0 dBm EXIT  
**PASS**

Tr 6 LIMIT SCAN  
 2053  
 LEFT  
 18V  
 110.0<sup>W</sup>

Tr	dBm	Req	IRD
2	-35.0	40	64
4	-38.5	40	58
6	-30.7	40	53
8	-37.9	40	??

SAVE  
 LNB2  
 EDIT Level Limit -50.0 dBm EXIT  
**FAIL**

Tr 3 LIMIT SCAN  
 1003  
 RGHT  
 18V  
 129.0<sup>W</sup>

Tr	dBm	Req	IRD
1	-30.9	40	53
3	-31.3	40	73
5	-39.1	40	58
7	-36.5	40	64

SAVE  
 LNB3  
 EDIT Level Limit -50.0 dBm EXIT  
**PASS**

After the Limit Scan is complete, a screen will appear that allows you to type in the date, location, technician name or ID number, and any notes. Use the numeric keypad to fill in these fields and then press the SAVE soft-key.

```
Limit Scan
Date MM/dd/yyyy
09/16/2009
Location
NEW YORK
Technician
MICHAEL
Notes
119W
SAVE CLR
EXIT
```

Then you must type in a unique file name for this Limit Scan. An error message will appear if you enter a name that has already been used. At present, there is no method for determining which names have been used on the instrument other than by running the SatTransfer program.

After you type in the file name using the numeric keypad, press "SAVE" again and the system will copy the file from temporary storage to flash file storage. The instrument must then restart and go through the initialization count-down.

```
Limit Scan
File name
119W_
SAVE CLR
EXIT
```



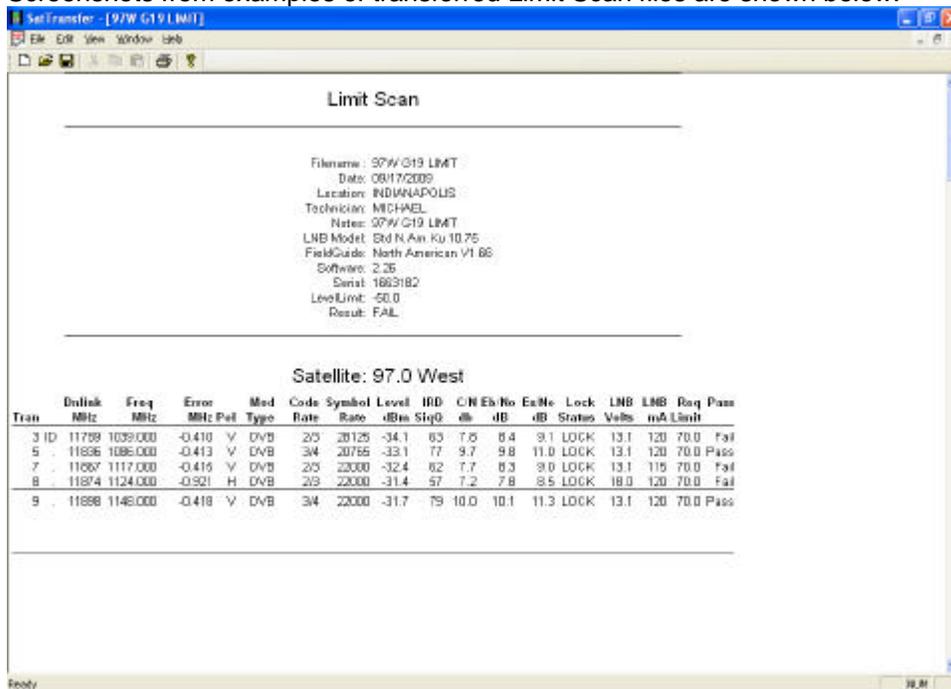
If an error occurs during the copy process or if the flash storage area is too full, the message “Flash copy failed” will appear and the test data will be lost.

There is file storage space for about 70 files. The actual limit depends on the number of transponders used.

## Install PC Software & Transferring Data Files to PC

The process for transferring the saved Limit Scans to your PC is identical to the process for transferred saved Proof of Performance scans. Please see the Proof of Performance Testing section of the operation manual for instructions of how to transfer the saved files to your PC using the SatTransfer application.

Screenshots from examples of transferred Limit Scan files are shown below.



It is recommended to select File/Properties/Results Only before printing Limit Scans to reduce the number of columns printed. Most field technicians do not need to or want to see the transponder parameters (modulation type, code rate, baud rate). Screenshots of the Properties settings change and the subsequent trimmed down Limit Scan results are shown below.

