

SSR/RSA Features of the 1G DSP

Introduction

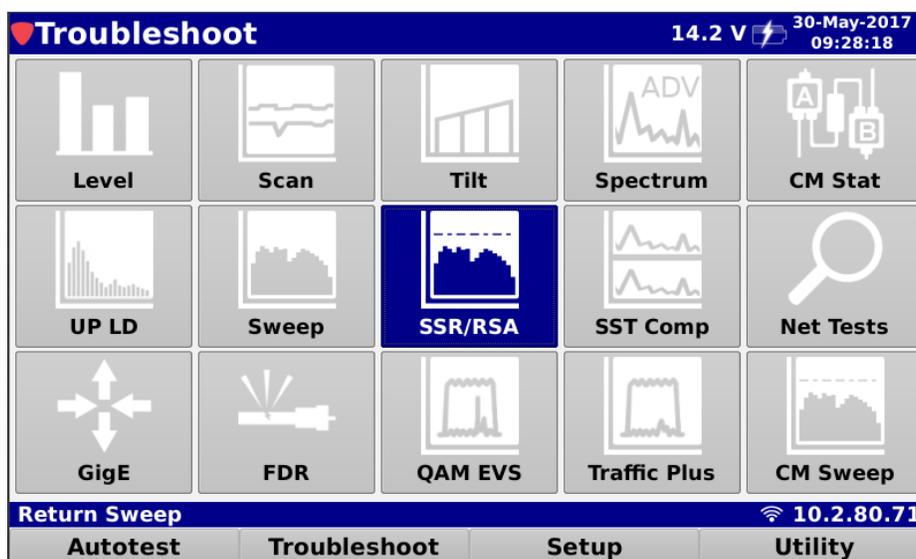
This document will describe in detail the proper operation of the SSR (high-speed return sweep) and RSA (high-resolution return sweep) features of the 1G DSP signal level meter.

To use these options, you must have either the Trilithic 9581 SST R4 or R5 headend unit or the 8310 RSA headend unit installed in your system.

SSR High-Speed Return Sweep

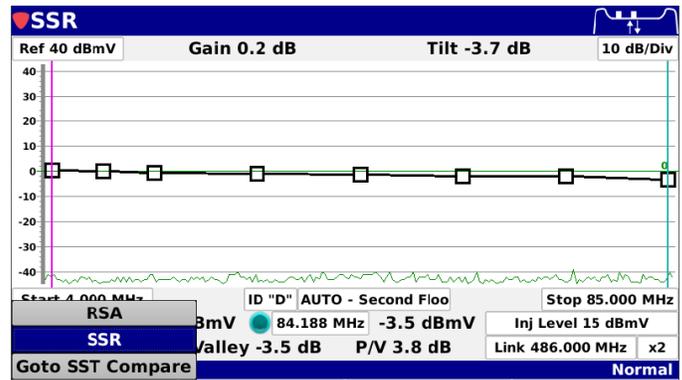
The SSR feature works with the 9581 SST R4 or R5 headend unit.

To access this feature, select the **SSR/RSA** icon from the **Troubleshoot** menu, as shown below.



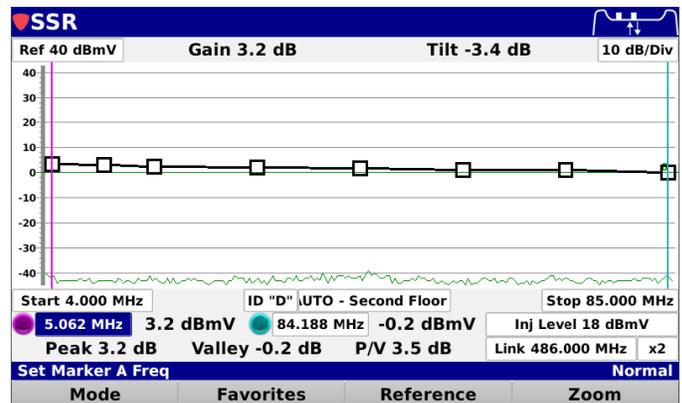
innovative technology to keep you a *step ahead*

Press the **Mode** softkey, select the SSR button, and press **Enter**.

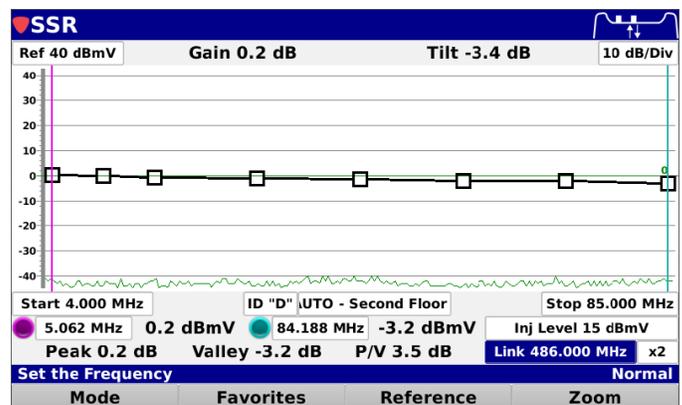


The display should look something like this.

The first thing you will need to set is the Link frequency of the downstream, or forward telemetry carrier. The telemetry carrier is how the headend unit communicates with the meter in the field. You will need to be connected to a location in the field that has both forward and return frequencies. To set the Link frequency, highlight the Link field as shown below and press Enter. You can then type in the specific frequency:

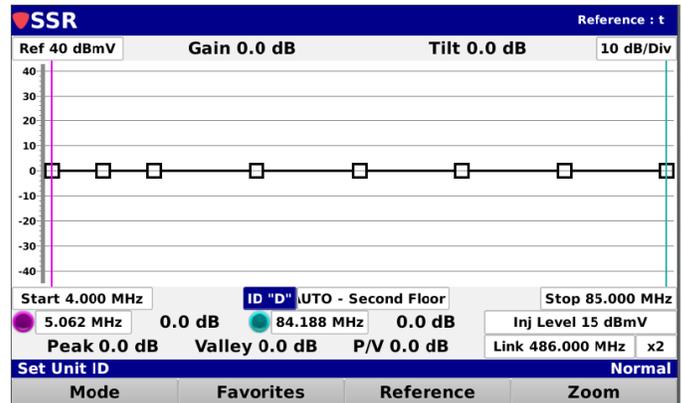


Use the right arrow button to select the x1, x2 field. The x1 setting is used for the 9581 SST R4, the x2 setting is used for the 9581 SST R5. After the correct Link frequency has been entered and the correct x1,x2 field has been entered, you should see the noise floor and the return carriers. If they are not both visible you may need to adjust the Ref (Reference) level at the upper left of the display or the dB/Div level at the upper right.

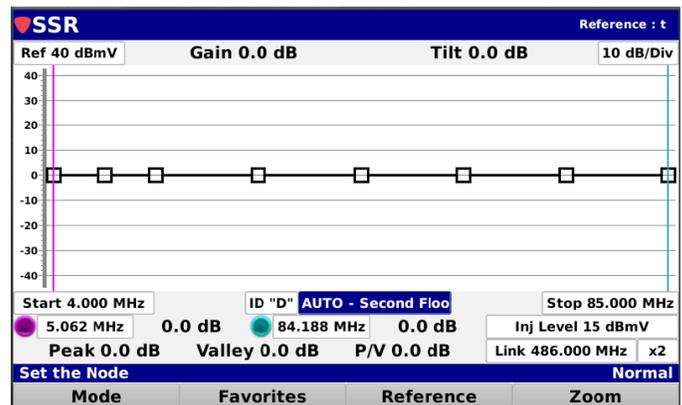


If you see the carriers but cannot see the noise floor, make sure the word Reference is not visible at the upper right of the display. If it is, select the Reference soft key and select Remove. If you notice the carriers are jumping up and down dramatically, select the ID field and select a different meter ID. You can select A-F. The alternate meter IDs allow for up to six 1Gs to sweep nodes on the same SST at the same time:

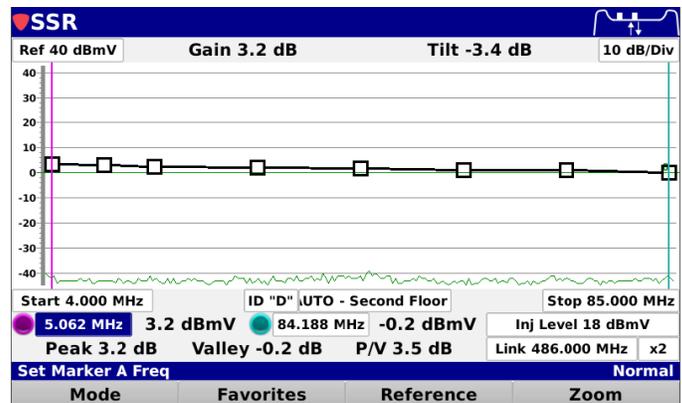
If you highlight the Node Field next to ID you can select the specific node to sweep, or, if you select Auto, the SST will detect which node you are on and select it automatically.



At this point you should be connected to the SST, see the Sweep carriers, and see the noise floor. In this example we are using an 85 MHz return path. If your return path is 5-42 MHz or 5-65 MHz, you can adjust the Start/Stop values below the graph.



Note: Here is a brief overview of how this function works: The meter locks on to the forward telemetry carrier. This carrier tells the meter which upstream carriers (frequencies) to generate and send back to the headend. There can be up to eight. All carriers must be within your return path. These frequencies are pre-configured in the SST and cannot be changed in the meter. You can turn individual carriers on and off, say, if one of them is incorrectly set outside your return path or one of them is set too low where you know you have low-end noise.



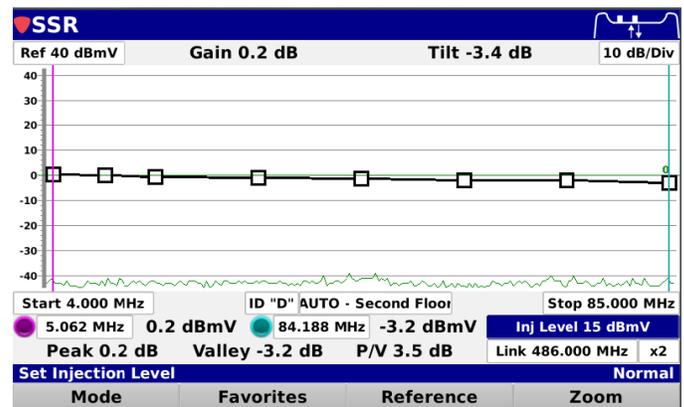
The carriers' level at the meter is determined by the Inj Level field at the bottom right of the display. If you notice a small TP (x) at the upper right of the graph you have the Test Point Compensation turned on. Select Function (Fn) key, Test Point Compensation to adjust.

Set your injection level to the correct transmit level for your location. For example, if, at your current location you know that the modem transmit level should be 35 dBmV, set the injection level to 35 dBmV. The graph will then show you at what level those carriers are hitting the SST at the headend.

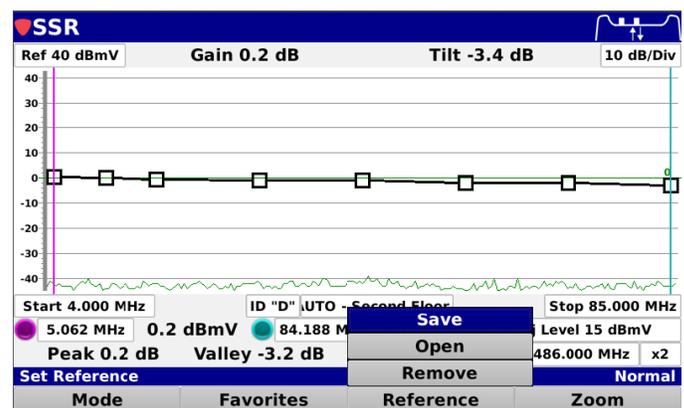
In most cases, if the modem is supposed to hit the CMTS at 0 dBmV then the SST is configured so that the return carriers from the field hit the SST at 0 dBmV. You may notice a line and small zero at the right of the graph. This shows the level at which the SST is expecting those carriers to be at.

You will notice purple and teal markers on the graph. If you highlight the marker field and use the up/down arrows on the meter you can select which carrier to place the marker on. The purple marker calculates the Gain, the difference between the purple marker and the teal marker is the Tilt. If your injection level is the correct value, but your Gain value at the top of the display says 3 dB, then you are hitting the SST 3dB too high and need to adjust the pads in the device accordingly. If the Tilt value is incorrect then you need to adjust the EQ settings in the device.

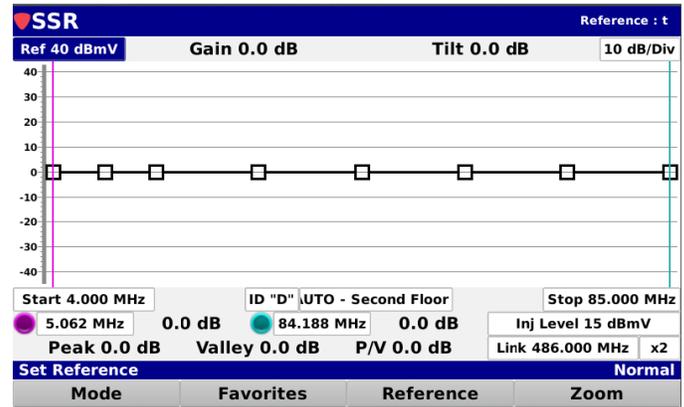
In the example shown below, with an injection level of 15 dBmV, the Gain is pretty much correct but the Tilt is at -3.4 dB and needs to be adjusted in the device. All carriers should hit the SST at 0 dBmV if everything is balanced correctly.



Once you are satisfied that the Gain and Tilt values are correct for your location, most likely the node, now is when you want to take a reference. Select the **Reference** soft key and select Save. You will be prompted to name the reference. Name is something you will remember for use at the next device location.

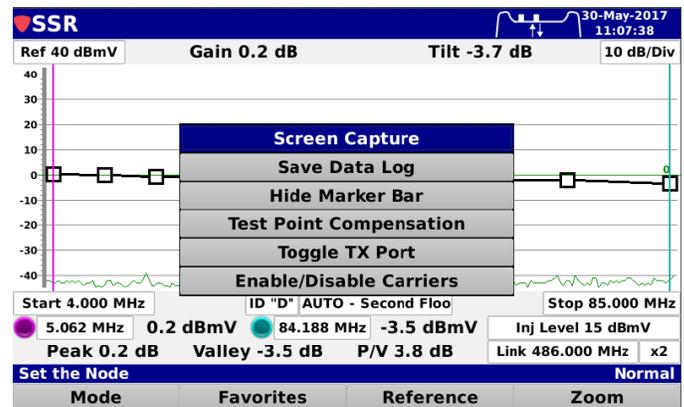


Now you will see the reference name in the upper right of the screen (t). The Gain and Tilt should read 0.0 since you are at the same location:



Now you are ready to move out to the next device. When using a reference, the Gain and Tilt values shown are the difference between your current location and the location where the reference was taken, most likely the node. By continuing this method to all devices down the line this will make sure you have unity gain in the return path.

The **Function** button will bring up the other options.

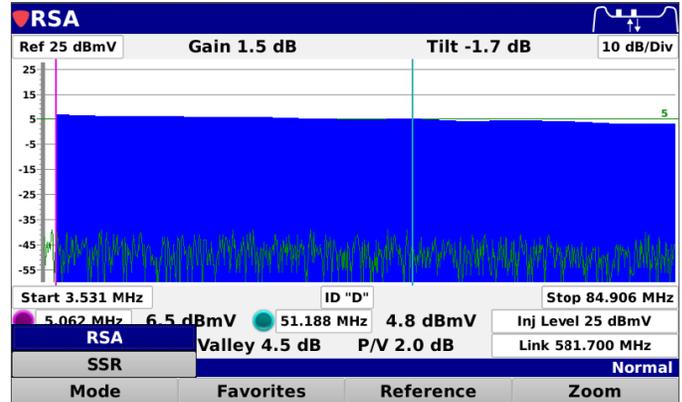


- **Screen Capture** – Save it to a file you can recall or upload to ViewPoint
- **Save Data Log** – Save the raw data to review or upload to Viewpoint
- **Test Point Compensation** – Allows you to adjust for test points
- **Toggle TX Port** – Allows you to use two cables to sweep
- **Enable/ Disable Carriers** – Allows you to turn sweep carriers on and off

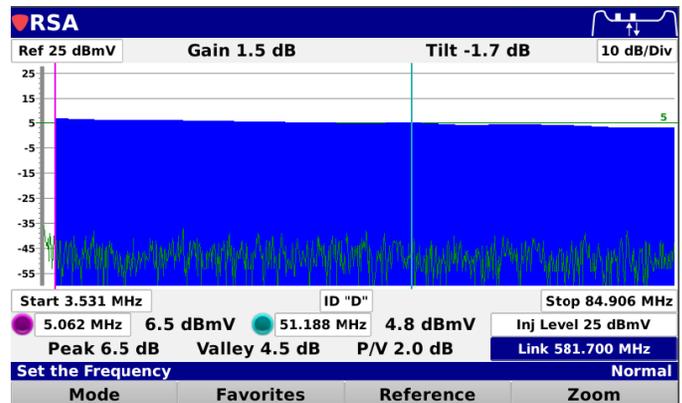
RSA Mode

The RSA mode works with the 8310 RSA headend unit.

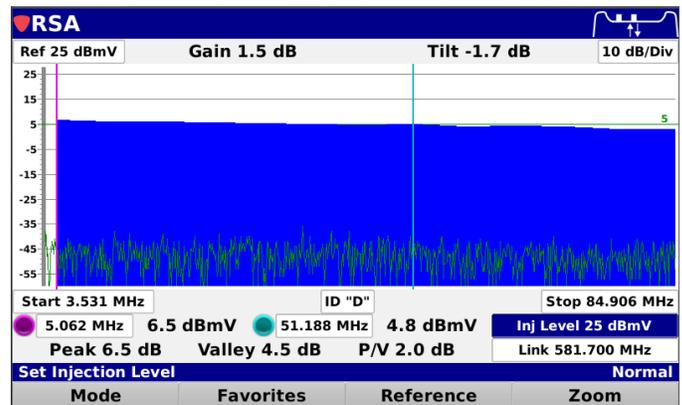
To select the RSA feature, press the **Mode** softkey, highlight the **RSA** button, and press **Enter**.



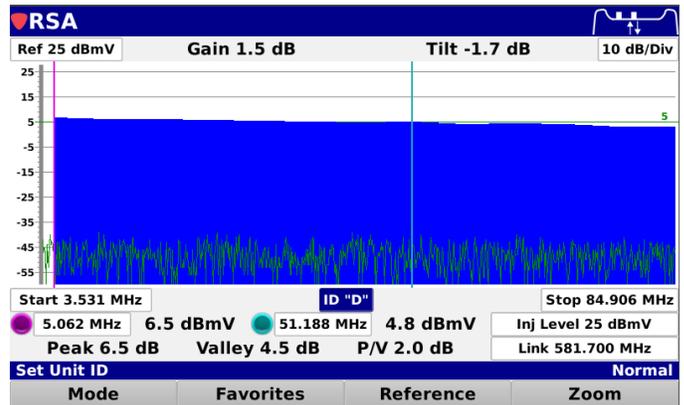
First, you will need to set the link frequency of the downstream carrier.



Next you will want to set the injection level you want to insert into the node or amp.

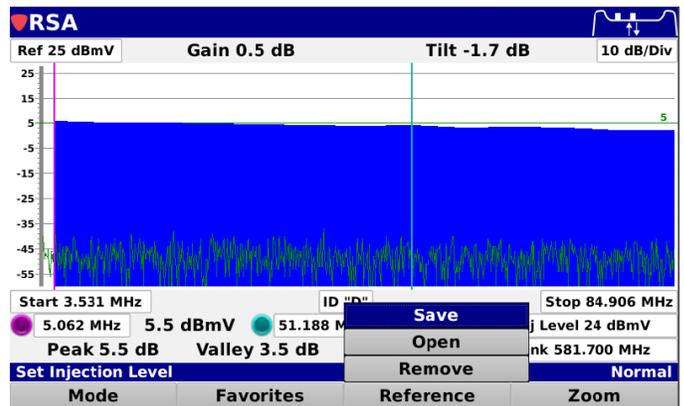


You can set your ID from A–J. This allows for up to 10 sweep meters per RSA.



Once you are satisfied with the response, you can save a reference.

Enter a name and save it.

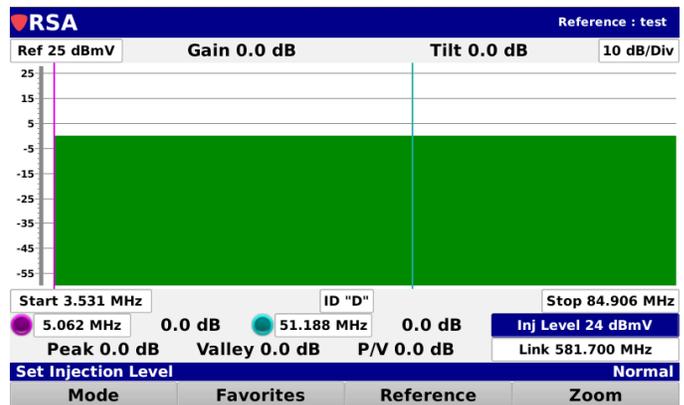


Now you will see the reference name in the upper right of the screen (test) and the display has changed to green, indicating it is referenced.

At this point you will see that the gain and tilt will go to zero, and the display should be flat.

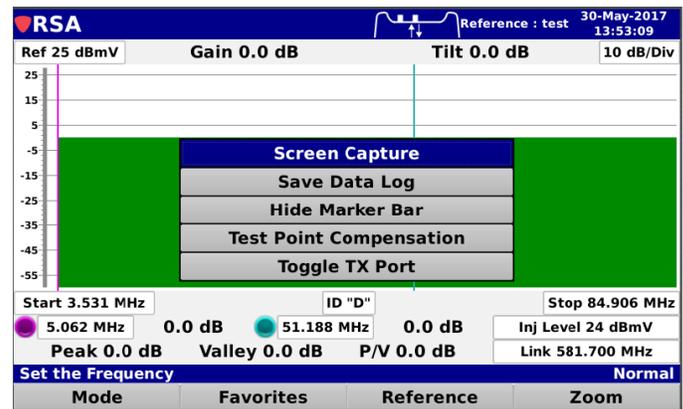
Now you are ready to move out to the next location and check the response and make it match what you referenced at the node.

This will make sure you have unity gain in the return path.



The **Function** button will bring up the other options.

- **Screen Capture** – Save it to a file you can recall or upload to ViewPoint
- **Save Data Log** – Save the raw data to review or upload to Viewpoint
- **Hide Marker Bar** – Remove the marker bar for a larger screen
- **Test Point Compensation** – Allows you to adjust for test points
- **Toggle TX Port** – Allows you to use two cables to sweep



NOTE

For Additional Help, Contact Trilithic Applications Engineering
1-800-344-2412 or 317-895-3600
support@trilithic.com or www.trilithic.com