



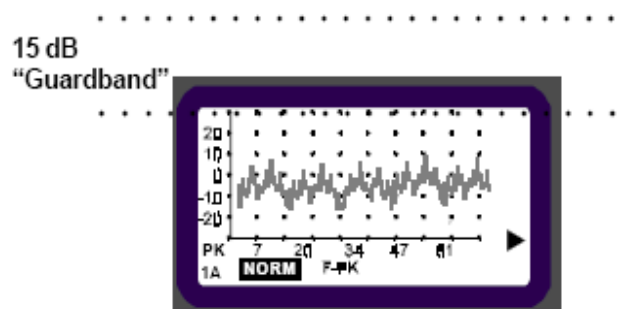
### Extending the Measurement Range of the 9581 SST R4

#### Interoperability

9580 SSRs that have firmware version 2.00 or higher, are equipped with major new features that were not included in earlier firmware versions. While the firmware upgrades have been designed in such a way that the older and newer units will interoperate, you need to be aware that some of the more recent functions may not operate if you are using an earlier version of the 9580 SSR with the 9581R4 SST. Also, 9580 SSRs with firmware versions less than 4.00 have firmware and hardware limitations so that they can be used only to 42 MHz.

#### Extending the Measurement Range

When the SST is setup according to the [9581 SST R4 Operation Manual](#), it reserves about 15 dB of its amplitude measurement range to prevent the digitizer from being overloaded by powerful ingress transients. 10 dB of this “guard band” is visible as the top division on the 9581 SST R4’s spectrum display with an additional 5 dB above that.



Experience has indicated that 15 dB is much more margin than is needed in all but the “dirtiest” systems. Up to 10 dB of the “guard band” can be reassigned to extend the 9581 SST R4’s measurement dynamic range. You can reassign the offset via a simple variation of the normal 9581 SST R4 set up procedure. You will also need to adjust the field pieces.

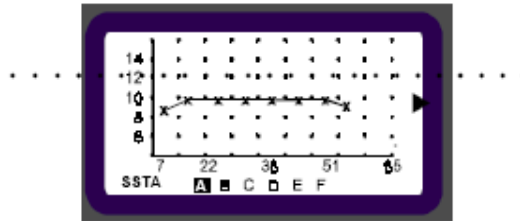
For Additional Help Contact  
Trilithic Applications Engineering  
1-800-344-2412 or 317-895-3600  
[support@trilithic.com](mailto:support@trilithic.com) or  
[www.trilithic.com](http://www.trilithic.com)

Extending the Measurement Range of the 9581 SST R4  
P/N 0010275037 – Rev 1/08  
1 of 3



### Reconfigure the 9581 SST R4 for Greater Range

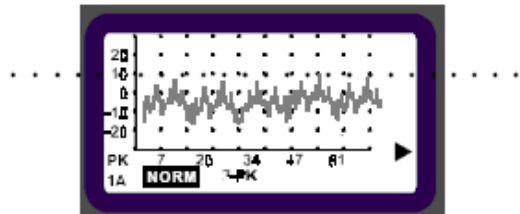
The 9581 SST R4 evaluates system performance against a user-settable “reference level”. This is the “nominal” RF amplitude expected from a return fiber receiver when a test signal of the proper amplitude is injected into a return amplifier in the field. The SST automatically sets whatever reference level you choose to the middle of the display when it is in SWEEP Mode.



It also sets the level 10 dB BELOW the top of the display when in SPECTRUM Mode.

### Increase Sensitivity and Range

To increase the sensitivity and range of the 9581 SST R4 in SPECTRUM Mode, simply set the reference to a LOWER level. This enables the 9581 SST R4 to “borrow” some of the operating “guard band”. In most systems, as much as 10 dB can be added to the 9581 SST R4’s operating range.



For example, suppose that the nominal return system reference level should be 20 dBmV. Setting the 9581 SST R4 for a reference level of 10 dBmV recalibrates the SPECTRUM Mode display so that the 20 dBmV line is now at the TOP of the display rather than 10 dB below. The lowest level that can be observed now decreases to -20 dBmV. This increase in the 9581 SST R4’s measurement sensitivity is equal to the amount of the offset.

For Additional Help Contact  
Trilithic Applications Engineering  
1-800-344-2412 or 317-895-3600  
[support@trilithic.com](mailto:support@trilithic.com) or  
[www.trilithic.com](http://www.trilithic.com)

Extending the Measurement Range of the 9581 SST R4  
P/N 0010275037 – Rev 1/08  
2 of 3



### Effect of Offset on 9580 SSR and 860 DSPi Units

The reference settings for the 9581 SST R4's SWEEP and SPECTRUM Modes are linked. This means that offsetting the SPECTRUM Mode's reference level will also offset the reference for the SWEEP Mode by the same amount. To keep the field piece's "normal" sweep output from being TOO large, you simply need to reduce the field piece's sweep output level by the same offset amount.

**NOTE:** Regardless of the offset amount, the SPECTRUM display will read correctly.

### Effect of Offset on RSVP<sup>2</sup> Units

The RSVP<sup>2</sup> measures the "launch level" from the subscriber's house and the carrier/noise ratio of the path back to the hub. If the SST's reference level is offset, the RSVP<sup>2</sup> will report launch level and carrier/noise readings that are reduced by the amount of the offset. Measurements can be made by simply reducing the RSVP<sup>2</sup>'s launch level and C/N PASS/FAIL settings by the value of the offset.

Problems may occur when testing through low-value taps since the 9581 SST R4 may instruct the RSVP<sup>2</sup> to operate below it's minimum output, 30 dBmV.

**NOTE:** The RSVP<sup>2</sup> has an extended range that enables you to test the return "launch level" through a wider range of tap and splitter values without using an external pad. The RSVP<sup>2</sup> has sufficient range to be connected directly to taps as low as 7dB; even in systems operating at reduced return levels or to services with as much as 35 dB isolation, operating at normal levels. For more information, refer to the [RSVP<sup>2</sup> Operation Manual](#).

This causes the RSVP<sup>2</sup> to display a "FAIL" message and show a launch level below 30 dBmV. If this happens, you can insert a **return step attenuator pad** (such as an ARCOM RSA-xx) in line with the test jumper. This raises the RSVP<sup>2</sup>'s launch level to within its operating range. You then retest the launch level and subtract the pad value from the measurement.

For example:

- At a house where the launch level is nominally 40 dBmV, offsetting the 9581 SST R4 by 5 dB causes the RSVP to report a launch level of 35 dBmV.
- At a house whose carrier/noise ratio is nominally 35 dB, offsetting the 9581 SST R4 by 5 dB causes the RSVP<sup>2</sup> to report a C/N of 30 dB.
- This particular distribution system is designed to require a launch level of no more than 50 dBmV. Offsetting the 9581 SST R4's reference level by 5 dB reduces the maximum acceptable level to 45 dBmV.
- At a house connected through a low-value tap, the RSVP<sup>2</sup> reports a "FAIL" and shows a level reading of less than 30 dBmV. Insert an RSA-10 pad between the test jumper and the RSVP<sup>2</sup>. Retest. The RSVP<sup>2</sup> now gives a "PASS" reading. Subtract the value of the pad (in this example, 10 dB) from the displayed reading.

For Additional Help Contact  
Trilithic Applications Engineering  
1-800-344-2412 or 317-895-3600  
[support@trilithic.com](mailto:support@trilithic.com) or  
[www.trilithic.com](http://www.trilithic.com)

Extending the Measurement Range of the 9581 SST R4  
P/N 0010275037 – Rev 1/08  
3 of 3