

In-Channel Carrier to Noise measurements should be performed using a bandpass filter at the analyzer's input as shown in Figure 1. This prevents overloading of the analyzer. To ensure accurate measurements, the bandpass filter needs to be tuned correctly. See the document on tuning bandpass filters "Proper Alignment of Tunable Bandpass Filters for Noise and Distortion Testing" (#AP-AT10-012-A).

A preamplifier is not normally needed because the AT2000 analyzer has its own internal pre-amp. A signal level of 5 dBmV will produce a 70 dB CNR dynamic range.

This type of CNR measurement makes the noise measurement in the bandwidth of the video of the channel. For that reason, this method requires the removal of the carrier or the modulation. This document will show the removal of the modulation.

From the Preset condition of the analyzer, take the following steps:

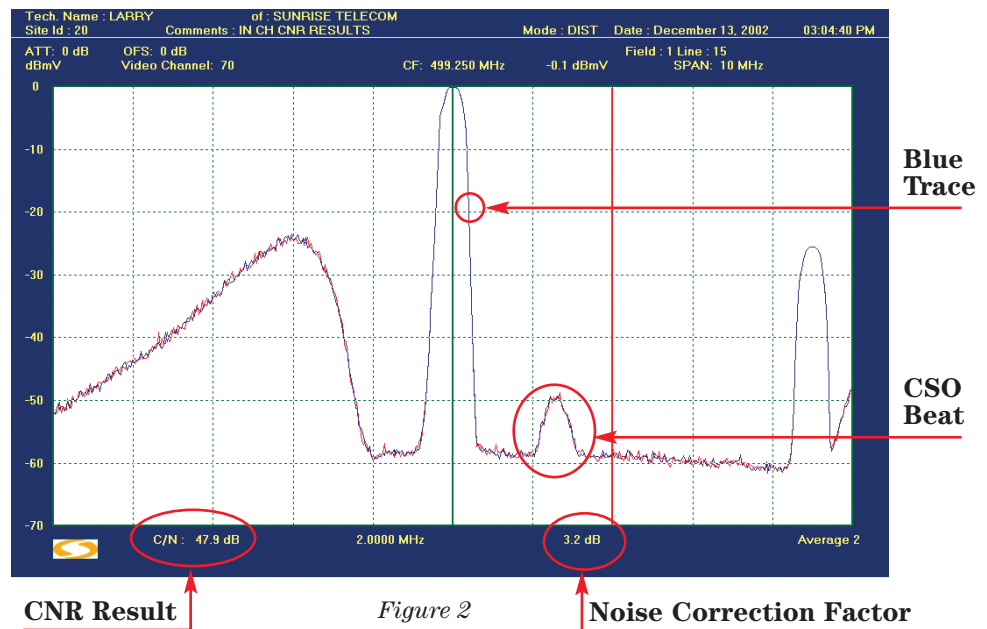
1. Connect the analyzer as shown in Figure 1.
2. Press the MENU hard key and select the C/N, CSO, CTB measurement.
3. Press the FREQ hard key and using the video carrier soft key, select the desired channel. Press the TRACE hard key and select No Averaging.
4. Tune the filter as shown in the tuning the bandpass filter document mentioned above.
5. Press the Average 2 soft key and then the ESC hard key. Make sure "Single Measurement" is selected on the top soft key.

This display also shows a significant CSO beat at +1.25 MHz from the video carrier.



Figure 1

6. On the second soft key, make sure that C/N is selected.
7. This is an in-channel measurement so be sure that in-channel is selected on the third soft key.
8. Since a filter is being used, select YES on the external filter soft key.
9. Press the Set Measurement Parameters soft key. Press the Reset Defaults soft key, then save the set up with the Save soft key. This returns you to the measurement menu.
10. Press the Measure soft key to get an indication to remove the carrier. At this point either the carrier or the modulation can be removed.
11. Press the AMPLITUDE hard key and set the attenuator so that the video carrier is near the reference line as shown by the blue trace in Figure 2. This has the effect of pulling the system noise out of the noise floor of the analyzer and minimizes the noise correction factor. Repeat this step as necessary until the noise correction factor is less than 5 dB.
12. Press ENTER and the measurement will continue. The results are displayed on the bottom of the screen as shown in Figure 2. Notice also the noise correction factor. The lower this number, the better the accuracy of the measurement. A correction factor of 5 dB or more indicates inaccuracy.



CNR Result

Figure 2

Noise Correction Factor