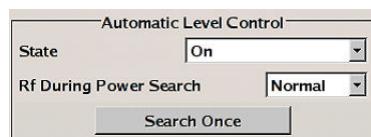


Automatic Level Control Settings



To open the "Automatic Level Control" dialog, select "RF" > "Configure" > "Automatic Level Control" or use the [MENU] key under "RF".

The combined dialog "ALC / UCOR" is divided into the several sections and provides access to the "Automatic Level Control" settings and to function "User Correction", see [Chapter 4.3.5.6, "User Correction", on page 159](#).



State - ALC

Activates/deactivates internal level control.

"Auto" The instrument selects the most appropriate ALC mode automatically.
ALC is on in most operating conditions. Default state.

"On" Activates ALC, regardless of the operating conditions.

"Off (Sample & Hold)"

Deactivates internal level control.
Sample & hold closes the level control loop at every frequency and
level change for a short period of time. The level control voltage is
sampled and then clamped.

Remote command:

[\[:SOURce<hw>\]:POWER:ALC\[:STATe\]](#) on page 383

RF During Power Search - ALC

Activates the mode for the mechanical step attenuator and for output during ALC power search.

"Normal" The RF output is active during power search.

"Minimum" The RF output is inactive during power search.

Remote command:

[:OUTPut<hw>:ALC:SEARch:MODE](#) on page 315

Search Once - ALC

Forces the generator to execute level adjustment once, although the "Sample & Hold" mode is active.

Remote command:

[\[:SOURce<hw>\]:POWER:ALC:SONCe](#) on page 383

4.3.5.5 NRP Level Control

With the NRP Level Control function, you can achieve a very stable and accurate RF power supplied to your DUT. With the aid of a downstream control circuit, a CLPC (Closed Loop Power Control), you can detect frequency response characteristics of the used components, such as losses due to cables, modules or components like power amplifiers, and compensate these effects accordingly.

Example: How to set up a closed loop power control

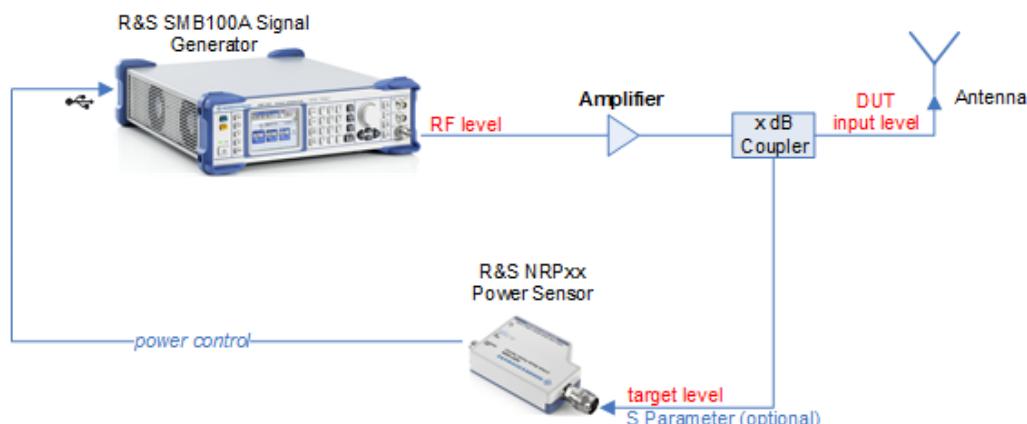


Figure 4-4: Example of a test setup with NRP Level Control

As shown in the example, the sensor measures a proportional power in defined time intervals, derived from a coupler. It considers optionally given S-parameters and returns the results to the generator. The signal generator compares the measured level with the set value and adjusts its output level accordingly.

This allows you to control the external signal level continuously and reliably reach a constant input level at the DUT in real time.



Impact of the NRP Level Control and the Operating Modes

Since the frequency and level of the RF output signal are continuously adjusted during "NRP Level Control", this operating mode interferes those with varying frequency and level values.

The reason is, that the generator regularly transmits the output frequency to the connected R&S NRPxx power sensor, which in turn requests the signal generator to adjust the output level according to its measurement. In contrast to this real time control loop, for example the list operating mode already generates the RF output signal on previously optimized frequency and level value pairs. In this case, the "NRP Level Control" as a second control loop would impact the already determined RF signal values and also considerably slow down the measurement. Similar impacts occur in sweep mode, and also the "NRP Power Viewer" and "NRP Level Control" affect each other's functionality.

Hence, the operating modes exclude each other as follows:

- "NRP Level Control" automatically disables [NRP Power Viewer](#), and vice versa.
- Activating the RF frequency sweep, RF level sweep or the list mode instantly deactivates a running "NRP Level Control".
- A running list or RF sweep mode blocks "NRP Level Control". It can not be activated.

Also keep in mind that modulated signals may differ from CW signals regarding mean power and peak power. This affects the operation of "NRP Level Control".