

## Speed Up Low Level Signal Search with the Agilent N9340B Handheld Spectrum Analyzer

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### Introduction

Whether in the lab or in field installation and maintenance, engineers and technicians frequently have to search for low level signals utilizing a spectrum analyzer. These low amplitude signals can be wireless RF interference, spurious emissions from a device under test or even signals from a mobile handset or communication system.

In most cases, it is desirable to search for low level signals with the spectrum analyzer adjusted to provide a combination of high sensitivity and a wide frequency span. High sensitivity can be achieved by choosing a narrow RBW (resolution bandwidth). However, using a narrow RBW when combined with a wide frequency span normally requires a long sweep time (in order to maintain frequency and amplitude accuracy), which is an obstacle to improving low level measurement speed.

To speed up low level signal search, the Agilent N9340B spectrum analyzer provides a fast sweep mode, which greatly improves measurement speed in wide frequency spans with minimal compromise of measurement accuracy.

### Searching for spurious and interference signals in installation and maintenance

Spurious emissions are unwanted emissions, emanating from the equipment under test. In CATV and communication systems, spur search is an essential step to guarantee service quality. The impact of interference on communication quality has become increasingly serious and more difficult to predict and control. Thus, the search for and detection of interference has grown into one of the toughest challenges for engineers in network optimization and maintenance.

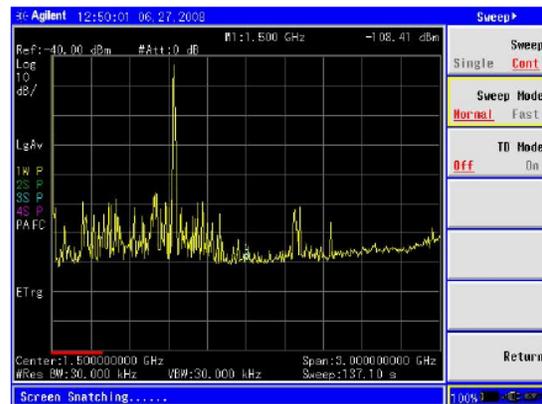
The high measurement speed provided by the fast sweep mode of the N9340B analyzer makes it one of the most effective and efficient RF measurement tools available for installation and maintenance.

### Fast sweep mode dramatically improves measurement speed

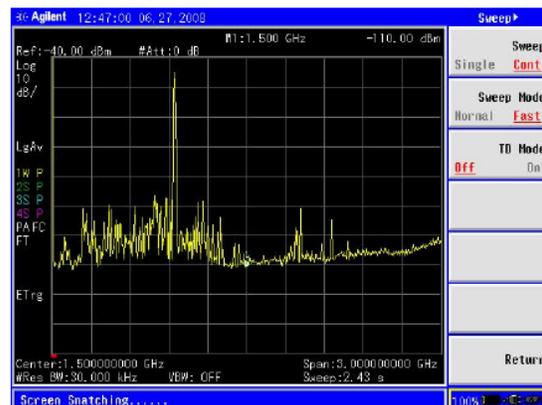
To optimize signal search speed in wide spans, the N9340B analyzer provides a fast sweep mode when the

span is > 50 MHz and the RBW > 30 kHz. The resulting improvement to sweep time and measurement speed is normally, at least 10 times faster. In this fast sweep mode, the video bandwidth filter is disabled, and the frequency and amplitude accuracy is slightly degraded. The maximum additional frequency error is RBW/6 and the additional amplitude error is 0.34 dB.

As shown in the figure below, in full span, with a 30 kHz RBW, the normal sweep time is 137.10 seconds.



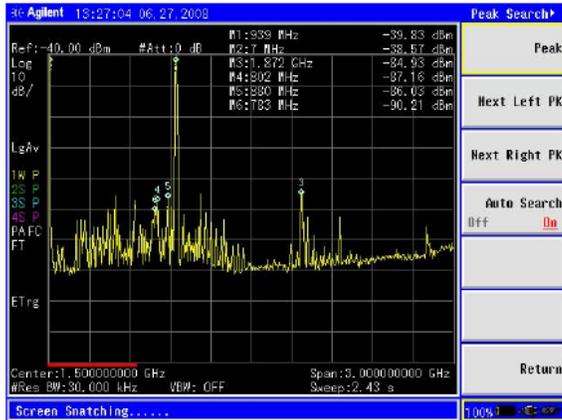
With exactly the same setting, if we switch to fast sweep mode, the sweep time is only 2.43 seconds, over 50 times faster.



With this fast sweep function, the N9340B provides reasonable sensitivity with significantly faster measurement time. Operating efficiency will be greatly improved especially when measurement averaging is needed.

## Faster identification of multiple signal peaks

The N9340B analyzer has an auto search function which can locate and measure the 6 highest signals in a selected frequency range. Using multiple markers, it can be accessed by simply pressing [Marker] -> {Peak Search} -> {Auto Search on}. The six highest signals will automatically be identified with markers and their measurement results displayed in a marker table as shown in the figure below.



The N9340B handheld spectrum analyzer is designed to be a very accurate and highly efficient RF measurement tool for installation and maintenance applications. It provides superior price/performance including low levels of displayed average noise (DANL) for best sensitivity, and wide dynamic range together with optimized functions including fast sweep mode, auto search and marker table to help engineers and technicians speed up their measurement tasks in the field. The resulting efficiency improvements can positively impact customers' ROIC.

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