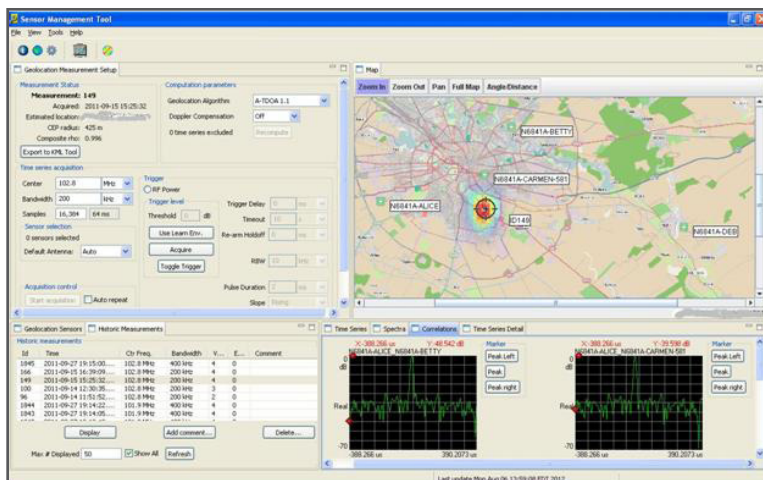


N6854A Geolocation System



This guide will help you configure a geolocation system that meets your needs and includes the measurement options and capabilities you require.

N6854A Geolocation System

This step by step process will help you prepare a quotation or purchase order for a Keysight Technologies, Inc. Geolocation System using the N6841A RF Sensor.

Geolocation System

There are five elements that need to be configured:

- Sensors
- Software
- Bundle
- Training and Consulting Services
- Support

STEP 1. Select the number and configuration of your RF Sensors

N6841A Keysight RF Sensor

Included with this part number is the RF Sensor, mounting bracket with hardware and the core Sensor Management Tool (SMT) software. The minimum number of sensors required to make a geolocation measurement is three. However, depending on the kind of signals and physical terrain of your monitoring area, more sensors may be required. Work with your local Application Engineer or Factory contacts (listed at the end of this document) to help determine the right number of RF Sensors to meet your needs. Many first time customers begin with five RF Sensors.

There are three options available on the N6841A:

- **Option N6841A-GPS** supplies a GPS antenna with 2 meter cable. Select this option if the sensor is to be used outdoors so that timing reference and location data can automatically be sent to the Sensor Management Tool software.
- **Option N6841A-SP1** supplies an indoor-rated AC adapter to power the N6841A with either 120 or 240 VAC. This option is highly recommended for rapid setup and configuration prior to deployment.
- **Option N6841A-GFP** enables the RF Sensor to be used by the Keysight N6854A Geolocation Server Software. This option is required to use the sensor as part of a Geolocation system. It is not required if the use of the RF Sensor will be only spectrum monitoring or signal analysis.

For additional information on the N6841A, refer to the "N6841A RF Sensor for Signal Monitoring Networks - Data Sheet", literature number 5990-3839EN.

If you already have RF Sensors, but require a hardware upgrade, follow the guidance provided below.

N6841AF-UG1 hardware upgrade

The N6841AF-UG1 upgrade adds these improvements to early versions of the N6841A (prior to serial number US50310599).

- Increased processor memory from 256 MBytes to 1 GByte to provide longer capture and LOOKback memory.
- Optimized DMA to improve data transfer speeds in the RF sensor and improved operation on slow data networks.
- Improved HW FFT which enables gapless signal search (in 20 MHz bandwidth) and improved signal search speeds.
- FFT averaging in RF sensor hardware to increase search performance and lower network traffic.
- New internal RF cabling for better RF performance.
- Simplified networking: fewer ports and easier setup when sensors are behind a Virtual Private Network (VPN) or firewalls.
- New firmware that supports enhanced geo-location algorithms and faster signal processing.
NOTE: If the RF Sensor has a sticker that reads "Upgraded to 5040", it has already been upgraded.
- For more information on the hardware upgrade, refer to Keysight Service Note N6841A-01.

STEP 2. Select and configure the Software applications you need

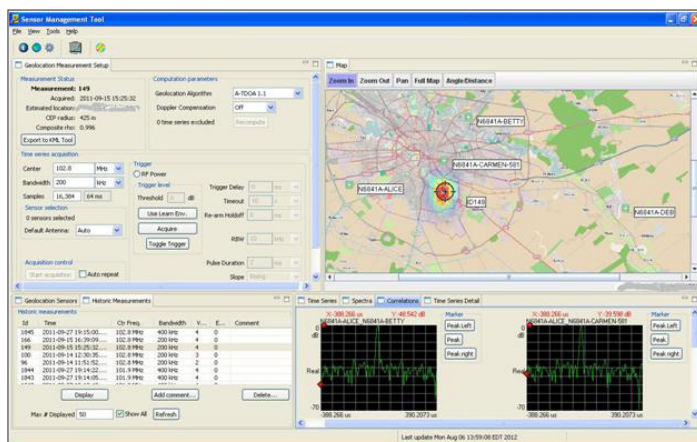
N6854A Geolocation Server Software

The Keysight Geolocation Server Software is an easy-to-use application for manual geolocation measurements initiated by Time or RF power trigger.

Supplied with this part number is a DVD with the core RF SMT software plus the Geolocation Server Software. This software is also downloadable from www.keysight.com/find/N6854A and requires a license to run. A license is issued with an order of N6841A RF Sensors with option GFP. When the software is received and installed on the target PC, the license file is sent to the user.

Option N6854A-103 (Required) provides the Geolocation Server Software with Time Difference of Arrival (TDOA), Received Signal Strength (RSS) and Hybrid (adaptive TDOA plus RSS) geolocation algorithms.

If N6841A's are already owned by your organization and you wish to add geolocation software, you can order the N6854A-103 plus a quantity of N6841A-GFP that represents the number of sensors in your network.



For more information, refer to the "N6854A RF Geolocation Server Software - Technical Overview", literature number 5989-9207EN.

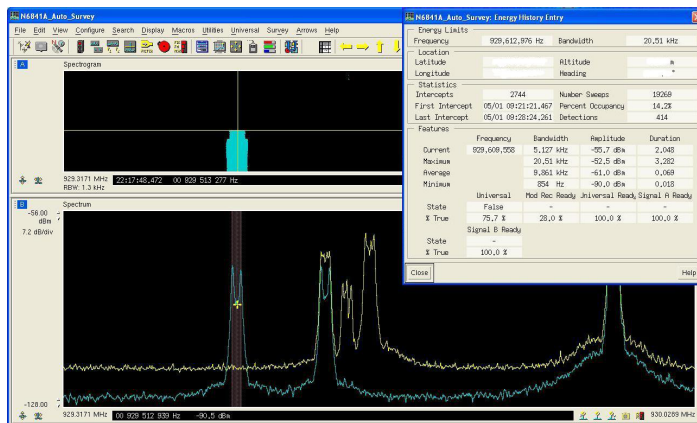
STEP 2. Select and configure the Software applications you need (Continued)

N6820ES Signal Surveyor 4D Software

Signal Surveyor 4D is spectrum monitoring software capable of automating signal search and survey functions. It tasks internal or external processes to capture and analyze spectrum events or conduct comprehensive surveys of the RF environment. Real-time audio is a standard feature of Signal Surveyor 4D.

When configuring Signal Surveyor 4D, you must either order the bundle, N6820ES-B02 or the Core software, N6820ES-114.

- **Option N6820ES-114** (Required, UNLESS the B02 bundle - see below - is ordered) supplies the core Surveyor 4D software.
- **Option N6820ES-ASD** supplies user programming of custom filters, features, GUI and alarms.
- **Option N6820ES-USD** supplies the Universal Signal Detector.
- **Option N6820ES-MR1** supplies Modulation Recognition.
- **Option N6820ES-EDF** supplies a user interface, features and filters for operation with narrowband Direction Finding Systems (programming is required).
- **Option N6820ES-SSY** Option SSY supplies a Client-Server application, GUI, and utilities to perform synchronous sweeping of multiple RF Sensors (programming is required).
- **Option B02** supplies a software bundle that includes all the options listed above plus.
- **Option 1RU** (one-year software subscription).
- **Option N6820ES-1RU** supplies one year of software subscription service.
- **Option N6820ES-2RU** supplies two years of software subscription service.



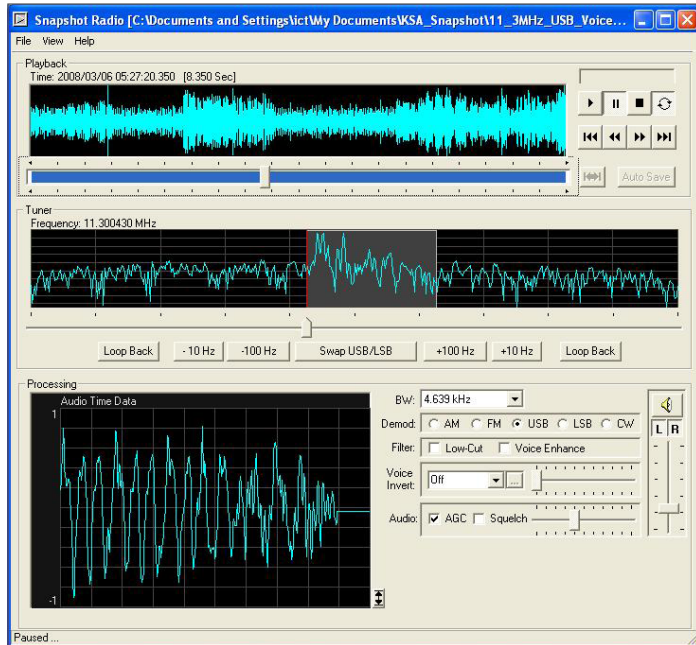
For more information, refer to the "N6820ES Signal Surveyor 4D Software - Technical Overview", literature number 5991-2242EN.

STEP 2. Select and configure the software applications you need (Continued)

N6829BS Snapshot Radio software

Snapshot Radio software enables a user to produce audio when playing back IQ or audio capture files created by Signal Surveyor 4D or VSA. Choices of demodulation schemes include AM, FM, U/LSB, and CW. A flexible tool for voice inversion and filtering is also supplied. The file management system makes processing large numbers of recordings quick and easy.

N6829BS-103 supplies the core Snapshot Radio software. No other options are needed.



For more information, refer to the “6829BS Snapshot Radio Software Application - Brochure”, literature number 5989-2839EN.

N6860A-VTP Vector Signal Analysis (VSA) Software

The VSA software is a widely used program capable of controlling many Keysight products including the N6841A. For more information, please refer to www.keysight.com/find/VSA

VSA for the RF Sensor is typically ordered as part number N6860A-VTP and it is configured as indicated below:

- 89601B-200 supplies the core VSA software.
- 89601B-300 enables hardware connectivity.
- 89601B-AYA supplies flexible demodulation analysis.
- Other specific demodulation formats may be added as needed.

STEP 2. Select and configure the Software applications you need (Continued)

PSX-10-100 Keysight Spectrum Visualizer (KSV) Software

KSV is a basic spectrum analyzer application that includes flexible trigger controls, markers and IQ recording. One license is required for each RF Sensor controlled by KSV. Each license costs \$5,000.00 USD. This product is sold and supported by Keysight's Application Engineering Organization (AEO). As such, it is ordered using a part number for services, PSX-10-100.

To get a quotation, contact:

Mr. Lon Hintze (719) 590-2135 | Mr. Ashley Weerpass (408) 345-8806

STEP 3. Consider using the RF Geolocation Bundle for ease of ordering

N6860A Keysight Geolocation bundle

This is the easiest and best way to purchase a Keysight Geolocation system. With one part number, you get all the elements needed for a successful installation with the exception of RF antennas, cable and the User network.

The N6860A Geolocation Bundle includes all the following items with a discount for ordering convenience:

5	N6841A-GFP/GPS/SP1	RF Sensors with Sensor Management Tool software
1	LTPC4	Laptop computer with software installed
1	N6820ES-B02	Signal Surveyor 4D license
1	N6854A-103	Geolocation Server Software license
1	N6829BS-103	Snapshot Radio software license
1	N6860A-VTP	Vector Signal analyzer license

STEP 4. Select the Training and Consulting Services you need

Three to five days of technical training and consulting are recommended with each new Keysight Geolocation system. This time will be used to assist with software installation, familiarization with the Sensor hardware, SMT, Geolocation Server software and operation of the RF Sensor network.

Factory consulting can be ordered as follows. Travel expense is not included and must be ordered separately. Factory override must be used to quote the services below, so factor in additional time to complete the quotation.

R2002A Assistance Services

R2002A-007 Hourly Consulting/Principal Engineer Assistance (order one week as quantity 40)

Use this part number to order travel for Factory consulting:

- J7826A-707 Customer site training.
- Typical costs for travel in the U.S. are \$2.5K per week.
- Typical costs for travel outside the U.S. range from \$3.5 to \$6K per week depending on the location.

STEP 4. Select the Training and Consulting Services you need (Continued)

If there is a local Keysight Application Engineer able to deliver startup assistance and training, Field consulting can be ordered as follows. To determine the availability of local AE support, contact your Field Engineer or the Keysight Contact Center, (800) 829-4444.

PS-S20-100 Daily Productivity Assistance (order one week as quantity 5)

For more information about Field AEO Services, refer to “Agilent Training and Application Engineering Services Catalog” literature number 5988-9120EN. Training and consulting for Signal Surveyor 4D should also be ordered to assure quick startup and development of use cases tailored to the specific needs of the customer. This training can be ordered using the same part numbers shown above and usually requires 3 days.

Configure your Support Plan

Service prices and availability – United States

Recommended calibration interval

Since the N6841A uses GPS or a GPS disciplined Grand Master to periodically calibrate the reference oscillator, no regular factory calibration is required.

Repair services

A repair service agreement is available for the N6841A with turnaround time of 15 days and annual cost of \$303.12. The repair includes post-data calibration and return shipment. Price is subject to change without notice. Taxes and shipping/handling charges not included unless otherwise noted.

Per-incident repair is also available for the N6841A and quotations can be requested on www.keysight.com

Software subscription and maintenance

An annual software subscription service is available for the N6820ES Surveyor 4D software. This service should be purchased annually by all users for each license to assure you have the latest function and a connection to phone based technical support. It is ordered by model number N6820ES-1RU (one year) for \$1,500.00 or N6820ES-2RU for \$3,000.00 (two year).

There is currently no software subscription service needed for the N6829BS Snapshot Radio or N6854A Geolocation Server software. This is likely to change during calendar year 2014.

Quote and Order Configuration Guide

Part number	Description	Quantity	Remarks
Sensors			
N6841A	N6841A	RF sensor	<input type="checkbox"/>
	N6841A-SP1	AC power supply (indoor only)	<input type="checkbox"/>
	N6841A-GPS	GPS antenna	<input type="checkbox"/>
	N6841A-GFP	Enables sensor for geolocation measurements	<input type="checkbox"/>
N6841AF	N6841AF-UG1	Upgrade of existing early version RF sensor (Upgrade)	<input type="checkbox"/>
Software			
N6854A	N6854A-103	Core Geolocation Server Software with TDOA algorithm [REQUIRED]	<input type="checkbox"/>
	LTPC4	Provides a high-performance laptop PC with software pre-loaded	<input type="checkbox"/>
N6820ES	N6820ES	Signal surveyor 4D software	<input type="checkbox"/>
	N6820ES-114	Core software [REQUIRED unless ordering N6820ES-B02 bundle]	<input type="checkbox"/>
	N6820ES-ASD	User programming	<input type="checkbox"/>
	N6820ES-USD	Universal signal detector	<input type="checkbox"/>
	N6820ES-MR1	Modulation recognition	<input type="checkbox"/>
	N6820ES-EDF	Enables interface to DF system	<input type="checkbox"/>
	N6820ES-SSY	Enables synchronous sweep of multiple RF sensors	<input type="checkbox"/>
	N6820ES-B02	Software bundle of all options (N6820ES-114 is NOT required)	<input type="checkbox"/>
N6829BS	N6829BS-103	Snapshot radio software	<input type="checkbox"/>
PX-X10-100	PX-X10-100	Keysight spectrum visualizer	<input type="checkbox"/>
Training and consulting services			
	PS-S20-100	Application engineer training services, Daily	<input type="checkbox"/>
	R2002A-007	Factory consulting services, hourly (Factory override needed)	<input type="checkbox"/>
	J7826A-707	Travel expense for factory consulting (Factory override needed)	<input type="checkbox"/>
Support			
	N6820ES-1RU	Signal surveyor 4D software subscription service, 1 year	<input type="checkbox"/>
	N6820ES-2RU	Signal surveyor 4D software subscription service, 2 years	<input type="checkbox"/>
Factory contacts			

For any additional questions about this Configuration Guide, please contact either one below:

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