

# N9321C/N9322C/N9323C/N9324C Basic Spectrum Analyzer (BSA)

## Configure your Keysight N932xC Basic Spectrum Analyzer (BSA)

This configuration guide contains information to help you configure your N9321C, N9322C, N9323C and N9324C Basic Spectrum Analyzer (BSA) to meet your requirements. Ordering optional capabilities at time of purchase provides the lowest overall cost.



## Ordering Information

This step-by-step process will help you determine which option numbers to specify when ordering your Keysight N932xC BSA.

### Step 1. Select base model

| Description                                  | Model number | Additional information                                                                                   |
|----------------------------------------------|--------------|----------------------------------------------------------------------------------------------------------|
| Basic spectrum analyzer<br>9 kHz to 4 GHz    | N9321C       | Accessories supplied as standard with each analyzer: USB cable, N-BNC adapter, BNC cable and power cord. |
| Basic spectrum analyzer<br>9 kHz to 7 GHz    | N9322C       |                                                                                                          |
| Basic spectrum analyzer<br>1 MHz to 13.6 GHz | N9323C       |                                                                                                          |
| Basic spectrum analyzer<br>1 MHz to 20 GHz   | N9324C       |                                                                                                          |

### Step 2. Add a preamplifier

| Description            | Option number | Additional information |
|------------------------|---------------|------------------------|
| Preamplifier, 4 GHz    | N9321C-P04    | For N9321C             |
| Preamplifier, 7 GHz    | N9322C-P07    | For N9322C             |
| Preamplifier, 13.6 GHz | N9323C-P13    | For N9323C             |
| Preamplifier, 20 GHz   | N9324C-P20    | For N9324C             |

### Step 3. Add a tracking generator

| Description               | Option number | Additional information                                                                              |
|---------------------------|---------------|-----------------------------------------------------------------------------------------------------|
| Tracking generator, 4 GHz | N9321C-TG4    | Provides transmission measurement of RF devices. Output level from –20 dBm to 0 dBm, in 1 dB steps. |
| Tracking generator, 7 GHz | N9322C-TG7    |                                                                                                     |
| Tracking generator, 7 GHz | N9323C-TG7    |                                                                                                     |
| Tracking generator, 7 GHz | N9324C-TG7    |                                                                                                     |

#### Step 4. Add reflection measurement capability

| Description                                     | Option number | Additional information                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reflection measurement<br>(requires Option TG7) | N9321C-RM4    | <ul style="list-style-type: none"> <li>Only available on N9321C and N9322C.</li> <li>Provides reflection measurements including return loss, VSWR, insertion loss, and distance-to-fault.</li> <li>Requires the tracking generator module (Option TG4/TG7).</li> <li>Recommended accessories include N9311X-201 precision mechanical calibrator (3-in-1 OSL) and N9311X-586 phase stable cable N(m) to N(f).</li> </ul> |
|                                                 | N9322C-RM7    |                                                                                                                                                                                                                                                                                                                                                                                                                         |

#### Step 5. Add precision frequency reference

| Description                   | Option number | Additional information                                                                                                                                                                                                                |
|-------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Precision frequency reference | N932xC-PFR    | <ul style="list-style-type: none"> <li>Reduces frequency drift for more accurate measurements; aging rate: <math>\pm 1 \times 10^{-7}</math>/year.</li> <li>Orderable only with initial purchase of the N932xC base model.</li> </ul> |

#### Step 6. Add baseband input capability

| Description    | Option number | Additional information                                                                                                                                                                                                               |
|----------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Baseband input | N9321C-BB1    | <ul style="list-style-type: none"> <li>Only available on N9321C and N9322C.</li> <li>Optimizes DANL <sup>1</sup> and phase noise performance in the low frequency band for xDSL and AM/FM IBOC <sup>2</sup> measurements.</li> </ul> |
|                | N9322C-BB1    |                                                                                                                                                                                                                                      |

1. DANL: Displayed average noise level.

2. IBOC: BOC: In-band On-channel.

## Step 7. Add measurement features

| Description                                         | Option number | Additional information                                                                                                                                                                                                                           |
|-----------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Time-gated spectrum analysis                        | N932xC-TMG    | Measures any one of several signals separated in time or excludes periodic interfering signals.                                                                                                                                                  |
| Signal monitor with spectrogram record and playback | N932xC-MNT    | Adds spectrogram view, record, and playback for spectrum monitoring.                                                                                                                                                                             |
| Channel scanner                                     | N932xC-SCN    | Provides channel power measurement of multiple channels, max. 20 channels.                                                                                                                                                                       |
| Task planner                                        | N932xC-TPN    | Implements customized test task that includes 20 consecutive instrument setups. Improves test efficiency for repetitive tasks. Find more information at <a href="http://www.keysight.com/find/taskplanner">www.keysight.com/find/taskplanner</a> |
| EMI filters and quasi-peak detector                 | N932xC-EMC    | Provides CISPR compliant resolution bandwidth (200 Hz, 9 kHz, 120 kHz and 1 MHz) and quasi-peak detector for basic EMI precompliance test.                                                                                                       |
| AM and FM demodulation analysis                     | N932xC-AMA    | Provides modulation metrics of an AM or FM signal: carrier power, modulation rate, AM depth, frequency deviation, SINAD <sup>3</sup> , and carrier frequency offset.                                                                             |
| ASK and FSK demodulation analysis                   | N932xC-DMA    | Provides modulation metrics of an ASK or FSK signal: carrier power, ASK error, depth, and index, FSK deviation, FSK error, magnitude error, and carrier frequency offset.                                                                        |

## Step 8. Add additional features and connectivity

| Description                                                     | Option number | Additional information                                      |
|-----------------------------------------------------------------|---------------|-------------------------------------------------------------|
| USB average power sensor support (U2000 Series)                 | N932xC-PWM    | Requires the Keysight U2000 Series USB power sensor.        |
| USB peak and average power sensor support (U2020/2040 X-Series) | N932xC-PWP    | Requires the Keysight U2020/2040 X-Series USB power sensor. |
| Security features                                               | N932xC-SEC    | Includes user data sanitation and port control.             |
| GPIB interface                                                  | N932xC-G01    | IEEE-488 bus connector, used in test automation systems     |

3. SINAD: Signal-to-noise and distortion ratio.

### Step 9. Choose accessories

| Description                                 | Option number | Additional information                                                                                   |
|---------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------|
| Hard transit case                           | Y1820A        | 645 x 444 x 268 mm, 13 kg nominal                                                                        |
| Rack mount kit                              | Y1821A        | Includes a rack mount flange. Fits standard 9-inch rack and occupies three units (3U) of rack space.     |
| Rack mount and handle kit                   | Y1822A        | Includes a rack mount flange and front handle kit. Fits standard 9-inch rack and occupies 3U rack space. |
| Precision mechanical calibrator, 3-in-1 OSL | N9311X-201    | DC to 7 GHz, N (m) connector                                                                             |
| Minimum loss pad                            | N9311X-548    | 50 to 75 $\Omega$ adapter, DC to 1 GHz                                                                   |
| Near field probes                           | N9311X-100    | 4 pieces of H-field probes                                                                               |
| RF training kit                             | Y1800A        | Consists of RF transceiver and pre-written lab sheets.                                                   |

Looking for more N9311X series RF accessories? Visit [www.keysight.com/find/n9311x](http://www.keysight.com/find/n9311x)

### Step 10. Choose localized User's Guide

| Description                     | Option number | Additional information |
|---------------------------------|---------------|------------------------|
| English User's Guide            | N932xC-ABA    |                        |
| Simplified Chinese User's Guide | N932xC-AB2    |                        |
| Japanese User's Guide           | N932xC-ABJ    |                        |

### Step 11. Add calibration service

| Description                                            | Option number | Additional information                                                                                                      |
|--------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------|
| Commercial calibration certificate with test data      | N932xC-UK6    | Keysight provides a commercial calibration certification; only available at time of purchase; provides measurement results. |
| 3-year calibration assurance plan (return to Keysight) | R-50C-011-3   | Priority calibration service covering all calibration costs for 3 years; 15% cheaper than buying stand-alone calibrations.  |
| 5-year calibration assurance plan (return to Keysight) | R-50C-011-5   | Priority calibration service covering all calibration costs for 5 years; 20% cheaper than buying stand-alone calibrations.  |

- Other calibration options may available, for more information on calibration, go to [www.keysight.com/find/calibration](http://www.keysight.com/find/calibration)
- For more information on training and application support services, got to [www.keysight.com/find/training](http://www.keysight.com/find/training)

## Instrument Upgrades

### Upgrade your existing N932xC

The majority of N932xC options support fast license-key that do not require additional hardware:

- Place an order for the upgrade with Keysight and request to receive the software entitlement certificate through email.
- Install the license key in the N932xC BSA. Upgrade firmware to the latest revision if required.
- Restart the N932xC.
- Begin using the new capability.

| Description                                         | Upgrade number             | Additional information                                                                 |
|-----------------------------------------------------|----------------------------|----------------------------------------------------------------------------------------|
| Preamplifier, 4 GHz                                 | N9321CK-P04                | For N9321C                                                                             |
| Preamplifier, 7 GHz                                 | N9322CK-P07                | For N9322C                                                                             |
| Preamplifier, 13.6 GHz                              | N9323CK-P13                | For N9323C                                                                             |
| Preamplifier, 20 GHz                                | N9324CK-P20                | For N9324C                                                                             |
| Baseband input                                      | N9321CK-BB1<br>N9322CK-BB1 | Only upgradable on N93221C and N9322C.                                                 |
| Tracking generator, 4 GHz                           | N9321CK-TG4                | Requires additional hardware.<br>Upgrade at Keysight local service center.             |
| Tracking generator, 7 GHz                           | N9322CK-TG7                |                                                                                        |
|                                                     | N9323CK-TG7                |                                                                                        |
|                                                     | N9324CK-TG7                |                                                                                        |
| Reflection measurement                              | N9321CK-RM4                | Only upgradable on N9321C and N9322C.<br>Requires tracking generator option (TG4/TG7). |
|                                                     | N9322CK-RM7                |                                                                                        |
| Time-gated spectrum analysis                        | N932xCK-TMG                |                                                                                        |
| Signal monitor with spectrogram record and playback | N932xCK-MNT                |                                                                                        |
| Channel scanner                                     | N932xCK-SCN                |                                                                                        |
| Task planner                                        | N932xCK-TPN                |                                                                                        |
| AM/FM demodulation analysis                         | N932xCK-AMA                |                                                                                        |
| ASK/FSK demodulation analysis                       | N932xCK-DMA                |                                                                                        |
| EMI filters and quasi-peak detector                 | N932xCK-EMC                |                                                                                        |
| USB average power sensor support (U2000 Series)     | N932xCK-PWM                |                                                                                        |
| USB peak and average power sensor support           | N932xCK-PWP                |                                                                                        |
| Security features                                   | N932xCK-SEC                |                                                                                        |
| GPIO interface                                      | N932xCK-G01                | Requires additional hardware                                                           |
| English User's Guide                                | N932xCK-ABA                |                                                                                        |
| Simplified Chinese User's Guide                     | N932xCK-AB2                |                                                                                        |
| Japanese User's Guide                               | N932xCK-ABJ                |                                                                                        |

## Additional Resources

### Related Keysight literature

| Publication number | Publication title                                  |
|--------------------|----------------------------------------------------|
| 3121-1285EN        | Keysight N9321C Basic Spectrum Analyzer Data Sheet |
| 5991-1167EN        | Keysight N9322C Basic Spectrum Analyzer Data Sheet |
| 3121-1286EN        | Keysight N9323C Basic Spectrum Analyzer Data Sheet |
| 3121-1287EN        | Keysight N9324C Basic Spectrum Analyzer Data Sheet |

Learn more at: [www.keysight.com](http://www.keysight.com)

For more information on Keysight Technologies' products, applications, or services, please contact your local Keysight office. The complete list is available at: [www.keysight.com/find/contactus](http://www.keysight.com/find/contactus)

