



SAV502 NB-IoT Modular Signal Analyzer

Datasheet



Saluki Technology Inc.

The document applies to following models:

- SAV502 NB-IoT Modular Signal Analyzer

Standard Accessories

- Main machine
- Power adapter
- Power cable
- USB cable

Options

| | |
|------------|-----------------|
| SAV102-001 | GSM License |
| SAV102-002 | WCDMA License |
| SAV102-003 | TDD-LTE License |
| SAV102-004 | FDD-LTE License |
| SAV102-005 | NB-IoT License |
| SAV102-006 | LoRa License |

Preface

Thank you for choosing SAV502 NB-IoT Modular Signal Analyzer produced by Saluki Technology Inc.

We devote ourselves to meeting your demands, providing you high-quality measuring instrument and the best after-sales service. We persist with "superior quality and considerate service", and are committed to offering satisfactory products and service for our clients.

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Saluki Technology

Document Authorization

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Product Quality Assurance

The warranty period of the product is 18 months from the date of delivery. The instrument manufacturer will repair or replace damaged parts according to the actual situation within the warranty period.

Product Quality Certificate

The product meets the indicator requirements of the document at the time of delivery. Calibration and measurement are completed by the measuring organization with qualifications specified by the state, and relevant data are provided for reference.

Quality/Settings Management

Research, development, manufacturing and testing of the product comply with the requirements of the quality and environmental management system.

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1. Overview

SAV502 NB-IoT Modular Signal Analyzer is designed with a small shape which allow it to be easily integrate to any instrument. With excellent testing performance and measurement sensitiveness, SAV502 NB-IoT Modular Signal Analyzer suits the testing requirement of the majority of RF signals. SAV502 NB-IoT Modular Signal Analyzer satisfy the needs of general spectrum test, and further secondary development is also allowed based on the API function library.

Key feature

- Frequency range: 10MHz-4200MHz
- DANL: -168 dBm @1GHz (Sensitivity set to High, normalized to 1Hz)
- Resolution bandwidth: 10Hz-5MHz
- Signal storage depth of 1Gbit for signal capture and analysis
- Small (193mm×93mm×34mm), lightweight (only 0.8kg), and easy to carry.
- Provide API function library to support secondary development.

1. 1. Definitions

Specification (Spec.)

Specifications describe the performance of parameters within the warranty of the instrument. Product specifications applies under the following conditions:

- 1) Two hours storage at ambient temperature(0-40°C) followed by 30 minutes warm-up operation
- 2) Specified environmental conditions met
- 3) Instrument is within its calibration cycle.
- 4) The specification listed in the datasheet includes measurement uncertainties.

Data in this document are Spec. unless otherwise noted.

Typical (typ.)

Typical data is not guaranteed by instrument warranty. It describes additional product performance information that 80 percent of the units exhibit. Typical data only valid at 25°C. Typical performance does not include measurement uncertainty.

Nominal(nom.)

Nominal values indicate expected performance, or describe product performance that is useful in the application of the product, but are not covered by the product warranty.

2. Specifications

2. 1. Frequency & Sweep

2. 1. 1. Frequency Range

| Model | Frequency Range |
|--------|-----------------|
| SAV502 | 10MHz - 4.2GHz |

2. 1. 2. Frequency Reference

| Frequency Resolution | 1Hz | |
|----------------------|-------------------------|-------------------|
| 10MHz Reference | Frequency Span Accuracy | $\pm 1\%$ |
| | Aging Rate | $\pm 1\text{ppm}$ |

2. 1. 3. Span

| Range | 0Hz (Zero Span) |
|-------|-----------------------|
| | 10Hz - Max. Frequency |

2. 1. 4. Sweep

| Sweep Time | Span \geq 10Hz | 1.1ms - 1600s |
|------------|------------------|----------------|
| | Span=0Hz | 2.69ms - 1600s |

2. 1. 5. RBW & VBW

| Range | 10Hz - 5MHz |
|--------------|---|
| RBW Accuracy | RBW>1MHz, $\pm 10\%$ RBW<1MHz, $\pm 2\%$ |

2. 2. Amplitude

2. 2. 1. Amplitude Range

| Measurement Range | DANL to +20dBm |
|-------------------|--------------------|
| Attenuator Range | 0 - 30dB, 1dB Step |

2. 2. 2. Maximum Input Level

| | |
|--------------------------|--|
| Maximum Safe Input Level | +30dBm (Sensitivity Low) 0dBm (Sensitivity Medium) -20dBm (Sensitivity High) |
|--------------------------|--|

2. 2. 3. Input-Related Response

| | |
|---------------------|---------|
| 10MHz-1.285GHz | <-70dBc |
| 1.285GHz - 1.625GHz | <-42dBc |
| 1.625GHz - 1.775GHz | <-55dBc |
| 1.775GHz - 2.35GHz | <-42dBc |
| 2.35GHz - 2.71GHz | <-25dBc |
| 2.71GHz - 3.22GHz | <-42dBc |
| 3.22GHz - 3.7GHz | <-70dBc |
| 3.7GHz - 4.2GHz | <-35dBc |

2. 2. 4. Absolute Amplitude Accuracy

| | |
|---------------|--------|
| All Frequency | ±1.5dB |
|---------------|--------|

2. 2. 5. Display Scale Switching Uncertainty

| RBW Range | Specification |
|-------------|---------------|
| 10Hz - 5MHz | ±0.3dB |

2. 2. 6. Reference Level

| | |
|--------------|----------------------------------|
| Range | -140dBm to +20dBm |
| Linear Scale | 707pV - 7.07V, 0.01dB resolution |
| Accuracy | Reference Level >-60dBm, ±0.8dB |

2. 3. Dynamic Range Specifications

2. 3. 1. 1dB Gain Compression

| | |
|------|-------|
| P1dB | +5dBm |
|------|-------|

2. 3. 2. DANL

CF=1GHz

| Sensitivity Mode | DANL |
|---------------------|-----------------------------------|
| Sensitivity: Low | -131dBm/Hz (typically -133dBm/Hz) |
| Sensitivity: Medium | -151dBm/Hz (typically -153dBm/Hz) |
| Sensitivity: High | -168dBm/Hz (typically -169dBm/Hz) |

2. 4. Residues, SHI, TOI, Phase Noise

2. 4. 1. Residual Response

| | |
|------------|--------|
| Full Range | -75dBm |
|------------|--------|

2. 4. 2. Second Harmonic Distortion(SHI)

| Frequency Range | SHI |
|-----------------|--------|
| Full Range | -70dBc |

2. 4. 3. Third Order Intermodulation Distortion

-10dBm tones, 1MHz apart, Sensitivity set to low, Ref set to -10 dBm

| Frequency Range | TOI (Nom.) |
|-----------------|------------|
| Full Range | +15dBm |

2. 4. 4. Phase Noise

- Settings: CF=1GHz, RBW= 10Hz, VBW = 10Hz

| Frequency Offset | Phase Noise |
|------------------|-------------|
| 10kHz | -96dBc/Hz |
| 1MHz | -118dBc/Hz |

2. 5. Storage

| | |
|-----------------------|--------------------|
| Maximum storage depth | 1Gbit |
| Data format | I/Q two-way, 16bit |

2. 6. Interfaces

2. 7. General

| | |
|-----------------------|--|
| Operation System | Window XP/7 |
| Connectors | RF input: N-type USB: USB Type-C Power Interface: DC 12V |
| Operation Environment | Operating 0 to 50°C Storage -20 to 70°C |
| Dimension | 193*93*34 (mm) |
| Weight | 0.8kg |

2. 8. Compliant

2. 8. 1. CE



- EMC

Complies with the requirements of the EC EMC directive 2014/30/EU with amendments.

Test Standards:

EN 61326-1:2013

EN 61000-3-2:2014

EN 61000-3-3:2013

- Safety

Complies with EC LVD Directive 2014/35/EU with amendment.

Test Standard

EN61010-1:2010

2. 8. 2. ISO



- Manufacturing

This instrument is manufactured in an ISO-9001 registered facility

- End of Document -