# S3602A/B Vector Network Analyzer

## Datasheet

Saluki Technology Inc.

## The document applies to the vector network analyzers of the following models:

- S3602A vector network analyzer (10MHz-13.5GHz).
- S3602B vector network analyzer (10MHz-26.5GHz).

## Options of the S3602 series vector network analyzer in addition to standard accessories:

- **S3602A:**

| Part No. | Name | Description |
|---|---|---|
| S3602A-201 | 2-Port ProgrammableStep Attenuator | Set two 70dB programmable step attenuators for the source path, and two 35dB programmable step attenuators for the receiver path. |
| S3602A-400 | 4-Port Measurement | Two-source stimulus configuration, four-port VNA configuration |
| S3602A-401 | 4-Port ProgrammableStep Attenuator | Set four 70dB programmable step attenuators for the source path, and four 35dB programmable step attenuators for the receiver path (Option 400 is needed) |
| S3602A-402 | Active Inter-modulation Measurement | For inter-modulation signal measurement of amplifier (Option 400, S80 is needed) |
| S3602A-003 | Vector Noise Figure Measurement | The built-in 10MHz-13.5GHz high-sensitivity noise receiver requires external electronic calibration components. Using advanced source matching error and vector error correction calibration techniques, the industry's highest noise figure measurement accuracy can be obtained. This option contains "Scalar Noise Figure Measurement" functions. |
| S3602A-008 | Pulse Measurement | For pulse S-parameter measurement |
| S3602A-3648 | Multi-port Network Parameter Expansion Device | Extended to 16-port network parameter measurement (10MHz-13.5GHz) |
| S3602A-S05 | S-parameter Signal Integrity Analysis | Used to display the frequency domain characteristics and time domain TDR characteristics of the system. Built-in crosstalk evaluation modules such as NEXT, FEXT, PSXT, ILD, ICR and ICN. Built-in standards such as IEEE 802.3, PCIe, SAS and SATA help to quickly evaluate whether S parameters Meet the design requirements. Can automatically convert the software graphic curve into Word or PPT report. Support a variety of Dk/Df extraction methods. Support NRZ, PAM-4 eye diagram drawing function. |
| S3602A-S07 | AFR Automatic Fixture Removal Option | Used for automatic testing and removal of single-ended and balanced device measurement fixtures. |

| Part No. | Name | Description |
|---|---|---|
| S3602A-S10 | Time Domain Measurement | For time-domain test, can locate and analyze the discontinuous positions in devices, fixtures or cables. |
| S3602A-S11 | Advanced Time Domain Analysis | Used for TDR time domain impedance test, eye diagram analysis, etc.. S10 option is included in S11. |
| S3602A-S80 | Frequency Offset Measurement | For frequency offset measurement. millimeter-wave frequency extension main unit needs this option |
| S3602A-S82 | Mixer Scalar Measurement | For the scalar parameter measurement of mixers (Option 400, S80 is needed) |
| S3602A-S83 | Mixer Vector Measurement | For the vector parameter measurement of mixers (Option 400, S80 is needed) |
| S3602A-S84 | Embedded LO Frequency Converter Measurement | For the measurement of embedded LO frequency converters (Option 400, S82 or S83, S80 are needed) |
| S3602A-S86 | Gain Compression Two-Dimension Sweep Measurement | For the gain compression two-dimension sweep test of amplifier |
| S3602A-S88 | Phase Scan Option | Used for phase scan measurement (need option S3602A-400) |
| 31121 | 3.5mm Calibration Kit | For calibration of the VNA |
| SCAVNA26FM-(3.5/3.5) | 3.5mm Test Cable | For measurement of the analyzer, 3.5mm (female) to 3.5mm (male) |
| SCAVNA26FF-(3.5/3.5) | 3.5mm Test Cable | For measurement of the analyzer, 3.5mm (female) to 3.5mm (female) |
| 20403 | E-Cal Kit | For calibration of the analyzer (10MHz-26.5GHz, 2 ports) |
| 20405 | E-Cal Kit | For calibration of the analyzer (10MHz-20GHz, 4 ports) |
| S87232 | USB Power Probe | For 402, S82, S86 Options in the process of power calibration (50MHz-26.5GHz) |
| Top Rack | / | Easy to build the system and use on the cabinet |
| S3602A-EWT1 | Extend 1 year warranty | / |

- **S3602B**

| Part No. | Name | Description |
|---|---|---|
| S3602B-201 | 2-Port ProgrammableStep Attenuator | Set two 70dB programmable step attenuators for the source path, and |

| Part No. | Name | Description |
|---|---|---|
| | | two 35dB programmable step attenuators for the receiver path. |
| S3602B-400 | 4-Port Measurement | Two-source stimulus configuration, four-port VNA configuration |
| S3602B-401 | 4-Port ProgrammableStep Attenuator | Set four 70dB programmable step attenuators for the source path, and four 35dB programmable step attenuators for the receiver path (Option 400 is needed) |
| S3602B-402 | Active Inter-modulation Measurement | For inter-modulation signal measurement of amplifier (Option 400, S80 is needed) |
| S3602B-003 | Vector Noise Figure Measurement | The built-in 10MHz-26.5GHz high-sensitivity noise receiver requires external electronic calibration components. Using advanced source matching error and vector error correction calibration techniques, the industry's highest noise figure measurement accuracy can be obtained. This option contains "Scalar Noise Figure Measurement" functions. |
| S3602B-008 | Pulse Measurement | For pulse S-parameter measurement |
| S3602B-3648 | Multi-port Network Parameter Expansion Device | Extended to 16-port network parameter measurement (10MHz-26.5GHz) |
| S3602B-S05 | S-parameter Signal Integrity Analysis | Used to display the frequency domain characteristics and time domain TDR characteristics of the system. Built-in crosstalk evaluation modules such as NEXT, FEXT, PSXT, ILD, ICR and ICN. Built-in standards such as IEEE 802.3, PCIe, SAS and SATA help to quickly evaluate whether S parameters Meet the design requirements. Can automatically convert the software graphic curve into Word or PPT report. Support a variety of Dk/Df extraction methods. Support NRZ, PAM-4 eye diagram drawing function. |
| S3602B-S06 | MiliMeter Extension Port Power Control | Special for Saluki VNA. Suitable for extension modules with power adjustable function such as 3643P S-parameter extension module. |
| S3602B-S07 | AFR Automatic Fixture Removal Option | Used for automatic testing and removal of single-ended and balanced device measurement fixtures. |
| S3602B-S10 | Time Domain Measurement | For time-domain test, can locate and analyze the discontinuous positions in devices, fixtures or cables. |
| S3602B-S11 | Advanced Time Domain Analysis | Used for TDR time domain impedance test, eye diagram analysis, etc.. S10 option is included in S11. |
| S3602B-S80 | Frequency Offset Measurement | For frequency offset measurement. millimeter-wave frequency |

| Part No. | Name | Description |
|---|---|---|
| | | extension main unit needs this option |
| S3602B-S82 | Mixer Scalar Measurement | For the scalar parameter measurement of mixers (Option 400, S80 is needed) |
| S3602B-S83 | Mixer Vector Measurement | For the vector parameter measurement of mixers (Option 400, S80 is needed) |
| S3602B-S84 | Embedded LO Frequency Converter Measurement | For the measurement of embedded LO frequency converters (Option 400, S82 or S83, S80 are needed) |
| S3602B-S86 | Gain Compression Two-Dimension Sweep Measurement | For the gain compression two-dimension sweep test of amplifier |
| S3602B-S88 | Phase Scan Option | Used for phase scan measurement (need option S3602B-400) |
| 31121 | 3.5mm Calibration Kit | For calibration of the VNA |
| SCAVNA26FM-(3.5/3.5) | 3.5mm Test Cable | For measurement of the analyzer, 3.5mm (female) to 3.5mm (male) |
| SCAVNA26FF-(3.5/3.5) | 3.5mm Test Cable | For measurement of the analyzer, 3.5mm (female) to 3.5mm (female) |
| 20403 | E-Cal Kit | For calibration of the analyzer (10MHz-26.5GHz, 2 ports) |
| 20405 | E-Cal Kit | For calibration of the analyzer (10MHz-20GHz, 4 ports) |
| S87232 | USB Power Probe | For 402, S82, S86 Options in the process of power calibration (50MHz-26.5GHz) |
| Top Rack | / | Easy to build the system and use on the cabinet |
| S3602B-EWT1 | Extend 1 year warranty | / |

## Preface

Thanks for choosing S3602 vector network 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.

## Document No.

S3602-02-01

## Version

Rev03 2017.02

Saluki Technology

## Document Authorization



## Product Quality Assurance

The warranty period of the product is 36 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.

## Contacts

| | |
|---|---|
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# Content

# 1. Overview

S3602 Series VNA is a top level VNA with excellent specifications. Its frequency ranges from 10MHz to 67GHz. With Saluki frequency extension modules, S3602 can reaches 325GHz. S3602 has a wide dynamic range, low trace noise, flexible interfaces and friendly UI.

S3602 series VNA can be universally implemented in fields including transmission/reception module measurement, dielectric material property measurement and microwave pulse characteristic measurement; It is a necessary instrument in the scientific research, production process of systems like radar, communication and navigation.

This document will show technical specifications of S3602A (10MHz - 13.5GHz) and S3602B (10MHz - 26.5GHz).

## Definitions

**Instrument specifications listed in this datasheet applies to all different configurations S3602 VNA unless options are clearly noted.**

**Specification (Spec.)**

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

- 90 min warming up
- Environmental temperature of 25℃ (± 5℃) with less than 1℃ deviation from the calibration temperature
- Specifications include 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℃. 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.

## Calibration Kit and Ecal Modules

Corrected system in this document is calibrated with following calibration kit:

- SAV31121 3.5mm Mechanical Calibration Kit
- SAV20403 Ecal kit (10MHz - 26.5GHz, 2 port)

# 2. Specifications

## 2. 1. Frequency

| | |
|---|---|
| **Frequency Range** | S3602A: 10MHz - 13.5GHz |
| | S3602B: 10MHz - 26.5GHz |
| **Frequency Resolution** | 1Hz |
| **Frequency Accuracy** | $\pm 1\times10^{-7}$ (23℃±3℃) |

## 2. 2. Test Port Specification

### 2. 2. 1. Maximum Output Power

- **2-port configuration (Standard), signal source**
  - Specification

| **Frequency** | **Port 1** | | **Port 2 (dBm)** |
|---|---|---|---|
| | **Filtering mode (dBm)** | **High-power mode (dBm)** | |
| 10MHz - 50MHz | ≥+1dBm | ≥+9dBm | ≥+13dBm |
| 0.05GHz - 4GHz | ≥0dBm | ≥+6dBm | ≥+13dBm |
| 4GHz - 10GHz | ≥+13dBm | | ≥+10dBm |
| 10GHz - 13.5GHz | ≥+8dBm | | ≥+9dBm |
| 13.5GHz - 20GHz | ≥+6dBm | | ≥+6dBm |
| 20GHz - 26.5GHz | ≥+4dBm | | ≥+2dBm |

  - Typical

| **Frequency** | **Port 1** | | **Port 2 (dBm)** |
|---|---|---|---|
| | **Filtering mode (dBm)** | **High-power mode (dBm)** | |
| 10MHz - 50MHz | - | ≥+16dBm | ≥+16dBm |
| 0.05GHz - 4GHz | - | ≥+11dBm | ≥+16dBm |
| 4GHz - 10GHz | ≥+16dBm | | ≥+16dBm |
| 10GHz - 13.5GHz | ≥+14dBm | | ≥+15dBm |
| 13.5GHz - 20GHz | ≥+11dBm | | ≥+13dBm |
| 20GHz - 26.5GHz | ≥+9dBm | | ≥+8dBm |

- **2-port configuration (Option 201), signal source**
  - Specification

| Frequency | Port 1 | | Port 2 (dBm) |
|---|---|---|---|
| | Filtering mode (dBm) | High-power mode (dBm) | |
| 10MHz - 50MHz | ≥+1dBm | ≥+9dBm | ≥+13dBm |
| 0.05GHz - 4GHz | ≥0dBm | ≥+6dBm | ≥+13dBm |
| 4GHz - 10GHz | ≥+13dBm | | ≥+10dBm |
| 10GHz - 13.5GHz | ≥+8dBm | | ≥+9dBm |
| 13.5GHz - 20GHz | ≥+6dBm | | ≥+6dBm |
| 20GHz - 26.5GHz | ≥+2dBm | | ≥+0dBm |

  - Typical

| Frequency | Port 1 | | Port 2 (dBm) |
|---|---|---|---|
| | Filtering mode (dBm) | High-power mode (dBm) | |
| 10MHz - 50MHz | - | ≥+15dBm | ≥+15dBm |
| 0.05GHz - 4GHz | - | ≥+10dBm | ≥+15dBm |
| 4GHz - 10GHz | ≥+15dBm | | ≥+15dBm |
| 10GHz - 13.5GHz | ≥+13dBm | | ≥+14dBm |
| 13.5GHz - 20GHz | ≥+10dBm | | ≥+12dBm |
| 20GHz - 26.5GHz | ≥+8dBm | | ≥+7dBm |

- **4-port configuration (Option 400), 2 sources**
  - Specification

| Frequency | Port 1,3 | | Port 2,4 (dBm) |
|---|---|---|---|
| | Filtering mode (dBm) | High-power mode (dBm) | |
| 10MHz - 50MHz | ≥+1dBm | ≥+9dBm | ≥+13dBm |
| 0.05GHz - 4GHz | ≥0dBm | ≥+6dBm | ≥+13dBm |
| 4GHz - 10GHz | ≥+13dBm | | ≥+10dBm |
| 10GHz - 13.5GHz | ≥+8dBm | | ≥+9dBm |
| 13.5GHz - 20GHz | ≥+6dBm | | ≥+6dBm |
| 20GHz - 26.5GHz | ≥+4dBm | | ≥+2dBm |

- Typical

| Frequency | Port 1,3 | | Port 2,4 (dBm) |
|---|---|---|---|
| | Filtering mode (dBm) | High-power mode (dBm) | |
| 10MHz - 50MHz | - | ≥+16dBm | ≥+16dBm |
| 0.05GHz - 4GHz | - | ≥+11dBm | ≥+16dBm |
| 4GHz - 10GHz | ≥+16dBm | | ≥+16dBm |
| 10GHz - 13.5GHz | ≥+14dBm | | ≥+15dBm |
| 13.5GHz - 20GHz | ≥+11dBm | | ≥+13dBm |
| 20GHz - 26.5GHz | ≥+9dBm | | ≥+8dBm |

- **4-port configuration (Option 401, 402), 2 sources**
  - Specification

| Frequency | Port 1,3 | | Port 2,4 (dBm) |
|---|---|---|---|
| | Filtering mode (dBm) | High-power mode (dBm) | |
| 10MHz - 50MHz | ≥+1dBm | ≥+9dBm | ≥+13dBm |
| 0.05GHz - 1GHz | ≥0dBm | ≥+6dBm | ≥+13dBm |
| 4GHz - 10GHz | ≥+13dBm | | ≥+10dBm |
| 10GHz - 13.5GHz | ≥+8dBm | | ≥+8dBm |
| 13.5GHz - 20GHz | ≥+6dBm | | ≥+6dBm |
| 20GHz - 26.5GHz | ≥+2dBm | | ≥+0dBm |

  - Typical

| Frequency | Port 1,3 | | Port 2,4 (dBm) |
|---|---|---|---|
| | Filtering mode (dBm) | High-power mode (dBm) | |
| 10MHz - 50MHz | - | ≥+15dBm | ≥+15dBm |
| 0.05GHz - 4GHz | - | ≥+10dBm | ≥+15dBm |
| 4GHz - 10GHz | ≥+15dBm | | ≥+15dBm |
| 10GHz - 13.5GHz | ≥+13dBm | | ≥+14dBm |
| 13.5GHz - 20GHz | ≥+10dBm | | ≥+12dBm |
| 20GHz - 26.5GHz | ≥+8dBm | | ≥+7dBm |

### 2. 2. 2. Output Power Setting Range

| | |
|---|---|
| **Standard/Option 400** | -25dBm - +20dBm |
| **With Attenuator (Option 201,401)** | -85dBm - +20dBm |

### 2. 2. 3. Stable Minimum Output Power

| | |
|---|---|
| **Without Attenuator** | -25dBm (Typ.) |
| **With Attenuator (Option 201,401)** | -85dBm (Typ.) |

### 2. 2. 4. Power Resolution

| | |
|---|---|
| **Power Resolution** | 0.01dB |

### 2. 2. 5. Temperature Stability

| | |
|---|---|
| **Temperature Stability** | 0.06dB/℃ |

### 2. 2. 6. Power Accuracy

| | |
|---|---|
| 10MHz≤f≤13.5GHz | ±1.5dB |
| 13.5GHz<f≤26.5GHz | ±2.0dB |

### 2. 2. 7. Port Damage Level

| | |
|---|---|
| **Damage Level** | +28dBm, +30V DC |

### 2. 2. 8. Power Sweep Range

| Frequency | Spec. | Typ. |
|---|---|---|
| 10MHz - 500MHz | ≥33dB | ≥40dB |
| 0.5GHz - 4GHz | ≥32dB | ≥37dB |
| 4GHz - 10GHz | ≥38dB | ≥42dB |
| 10GHz - 13.5GHz | ≥37dB | ≥41dB |
| 13.5GHz - 20GHz | ≥35dB | ≥38dB |
| 20GHz - 26.5GHz | ≥25dB | ≥35dB |

### 2. 2. 9. 1dB Compression Point

| Frequency range | Spec (dBm) |
|---|---|
| 10MHz - 13.5GHz | ≥+10dBm |
| 13.5GHz - 16GHz | ≥+10 dBm |
| 16GHz - 26.5GHz | ≥+2 dBm |

## 2. 2. 10. Power Linearity

| | |
|---|---|
| **Power Linearity (23℃±3℃)** | ±2.0dB |

## 2. 2. 11. Port Harmonics Suppression

- **2-port configuration (Standard, Option 201)**

| | Frequency | Spec |
|---|---|---|
| **Port 1 Harmonic Suppression** | 0.01GHz - 4GHz | ≤-51dBc |
| | 4GHz - 13.5GHz | ≤-60dBc |
| | 13.5GHz - 26.5GHz | ≤-60dBc |
| **Port 2 Harmonic Suppression** | 0.01GHz - 4GHz | ≤-13dBc |
| | 4GHz - 13.5GHz | ≤-21dBc |
| | 13.5GHz - 26.5GHz | ≤-21dBc |
| **Port non-harmonic Suppression** | 0.01GHz - 13.5GHz | ≤-40dBc |
| | 13.5GHz - 16GHz | ≤-40dBc |
| | 16GHz - 26.5GHz | ≤-30dBc |

- **4-port configuration (Option 400, Option 401)**

| | Frequency | Spec |
|---|---|---|
| **Port 1,3 Harmonic Suppression** | 0.01GHz - 4GHz | ≤-51dBc |
| | 4GHz - 13.5GHz | ≤-60dBc |
| | 13.5GHz - 26.5GHz | ≤-60dBc |
| **Port 2,4 Harmonic Suppression** | 0.01GHz - 4GHz | ≤-13dBc |
| | 4GHz - 13.5GHz | ≤-21dBc |
| | 13.5GHz - 26.5GHz | ≤-21dBc |
| **Port non-harmonic Suppression** | 0.01GHz - 13.5GHz | ≤-40dBc |
| | 13.5GHz - 16GHz | ≤-40dBc |
| | 16GHz - 26.5GHz | ≤-30dBc |

## 2. 3. Network Specifications

### 2. 3. 1. System Dynamic Range

- IF bandwidth = 1Hz
- Averaging factor = 8

| Frequency range | Spec.(dB) | Typ. (dB) |
|---|---|---|
| 10MHz – 500MHz | ≥95dB | ≥100dB |
| 500MHz – 1GHz | ≥110dB | ≥120dB |
| 1GHz - 4GHz | ≥127dB | ≥135dB |
| 4GHz - 10GHz | ≥130dB | ≥135dB |
| 10GHz - 20GHz | ≥126dB | ≥132dB |
| 20GHz - 24GHz | ≥122dB | ≥129dB |
| 24GHz - 26.5GHz | ≥117dB | ≥125dB |

### 2. 3. 2. Noise Floor

| Frequency range | Spec (dBm) |
|---|---|
| 10MHz - 1GHz | ≤ -85dBm |
| 1GHz - 4GHz | ≤ -117dBm |
| 4GHz - 10GHz | ≤ -120dBm |
| 10GHz - 13.5GHz | ≤ -118dBm |
| 13.5GHz - 20GHz | ≤ -120dBm |
| 20GHz - 24GHz | ≤ -118dBm |
| 24GHz - 26.5GHz | ≤ -117dBm |

### 2. 3. 3. Corrected System Performance

Measurement environmental temperature 23° ±3 °C, with < 1 °C deviation from calibration temperature.

Following test cables are used in this test:

| | | |
|---|---|---|
| FB0HA0HB025.0 | 3.5mm Test Cable (Male DUT end) | Applicable for Whole-Machine Measurement |
| FB0HA0HC025.0 | 3.5mm Test Cable (Female DUT end) | Applicable for Whole-Machine Measurement |

- **Mechanical Calibration Kit SAV 31121.**

| | Frequency | Spec. | Typ. |
|---|---|---|---|
| **Effective Directivity** | 0.01 GHz - 2GHz | ≥48dB | ≥60dB |
| | 2 GHz - 13.5GHz | ≥44dB | ≥53dB |
| | 13.5 GHz - 26.5GHz | ≥44dB | ≥53dB |

| | Frequency | Spec. | Typ. |
|---|---|---|---|
| Effective Source Match | 0.01 GHz - 2GHz | ≥40dB | ≥46dB |
| | 2 GHz - 13.5GHz | ≥30dB | ≥36dB |
| | 13.5 GHz - 26.5GHz | ≥30dB | ≥36dB |
| Effective Load Match | 0.01 GHz - 2GHz | ≥48dB | ≥60dB |
| | 2 GHz - 13.5GHz | ≥44dB | ≥51dB |
| | 13.5 GHz - 26.5GHz | ≥44dB | ≥51dB |
| Reflection Tracking | 0.01 GHz - 2GHz | ±0.04dB | ±0.004dB |
| | 2 GHz - 13.5GHz | ±0.04dB | ±0.01dB |
| | 13.5 GHz - 26.5GHz | ±0.05dB | ±0.01dB |
| Transmission Tracking | 0.01GHz - 2GHz | ±0.10dB | ±0.005dB |
| | 2 GHz - 13.5GHz | ±0.11dB | ±0.015dB |
| | 13.5 GHz - 26.5GHz | ±0.12dB | ±0.015dB |

- **E-Cal Kit SAV 20403 (2-port)**

| | 10MHz-500MHz | 500MHz-2GHz | 2GHz - 10GHz | 10GHz - 20GHz | 20GHz - 26.5GHz |
|---|---|---|---|---|---|
| Effective Directivity | ≥41dB | ≥51dB | ≥46dB | ≥42dB | ≥38dB |
| Effective Source Match | ≥35dB | ≥41dB | ≥38dB | ≥37dB | ≥33dB |
| Effective Load Match | ≥38dB | ≥38dB | ≥45dB | ≥40dB | ≥36dB |
| Reflection Tracking | ±0.07dB | ±0.08dB | ±0.08dB | ±0.1dB | ±0.14dB |
| Transmission Tracking | ±0.05dB | ±0.05dB | ±0.08dB | ±0.12dB | ±0.13dB |

- **E-Cal kit SAV 20405(4-port)**

| | 10MHz-500MHz | 500MHz-2GHz | 2GHz - 10GHz | 10GHz - 20GHz |
|---|---|---|---|---|
| Effective Directivity | ≥47dB | ≥47dB | ≥42dB | ≥38dB |
| Effective Source Match | ≥38dB | ≥33dB | ≥33dB | ≥31dB |
| Effective Load Match | ≥40dB | ≥40dB | ≥38dB | ≥36dB |
| Reflection Tracking | ±0.05dB | ±0.06dB | ±0.08dB | ±0.18dB |
| Transmission Tracking | ±0.08dB | ±0.12dB | ±0.12dB | ±0.2dB |

### 2. 3. 4. Trace Noise

| | Frequency range | Spec (dB rms) |
|---|---|---|
| Trace Noise Magnitude<br>1KHz IF bandwidth | 10MHz - 100MHz | ≤ 0.007 |
| | 0.1GHz - 13.5GHz | ≤ 0.002 |
| | 13.5GHz - 22.5GHz | ≤ 0.002 |
| | 22.5GHz - 24GHz | ≤ 0.003 |
| | 24GHz - 26.5GHz | ≤ 0.005 |
| | **Frequency range** | **Spec (deg rms)** |
| Trace Noise Phase<br>1KHz IF bandwidth | 10MHz - 100MHz | ≤ 0.051 |
| | 0.1GHz - 13.5GHz | ≤ 0.015 |
| | 13.5GHz - 22.5GHz | ≤ 0.042 |
| | 22.5GHz - 24GHz | ≤ 0.054 |
| | 24GHz - 26.5GHz | ≤ 0.054 |

## 2. 4. Pulse Specifications

| Pulse Width Setting Range | 33ns - 60s | |
|---|---|---|
| Pulse transition time （10% - 90%） | 30ns | |
| Pulse off ratio | **Frequency range** | **Spec (dB)** |
| | 0.01GHz - 4GHz | 64dB |
| | 4GHz - 13.5GHz | 80dB |
| | 13.5GHz - 26.5GHz | 80dB |

## 2. 5. General

| | |
|---|---|
| **IF Bandwidth** | 1Hz - 5MHz |
| **Max. Sweep Point per Trace** | 32001 |
| **Magnitude Display Resolution** | 0.001dB/div |
| **Phase display Resolution** | 0.01°/div |
| **Reference Level Magnitude** | -500 to +500dB |
| **Input Reference Phase Range** | -500 to +500° |
| **Port Connector Type** | 3.5mm (M), 50 Ω impedance |
| **Measurement of Ports** | 2 port Standard, 4-port with option 400 |
| **Peripheral Interface** | 8 x USB type B, 1 x USB type A |
| | GPIB |
| | VGA |
| | LAN |
| **Operating System** | Windows 7 |
| **Storage Capability** | 160G SSD |
| **Screen** | 12.1 inch high resolution touch screen |
| **Dimension (W x H x D)** | 463 × 281 × 640 (W x H x D) |
| **Power** | 220V±10%, 50Hz - 60Hz |
| **Operating Temperature** | 0℃ to 50℃ |
| **Storage Temperature** | -30℃ to 70℃ |
| **The Maximum Power Consumption** | 400W |
| **Maximum Weight** | 42kg |

## 2. 6. Compliant

### 2. 6. 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. 6. 2. ISO

- Manufacturing

This instrument is manufactured in an ISO-9001 registered facility

**- End of Document -**