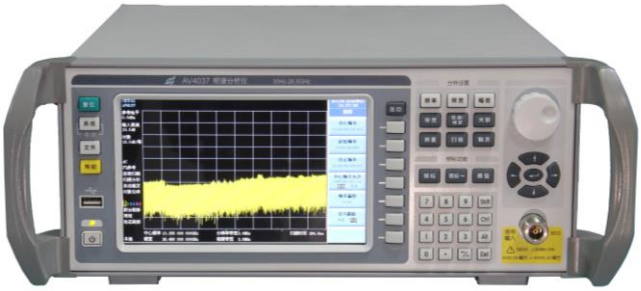
AV4037A/B　Spectrum Analyzer

（30Hz～3GHz/6GHz）



Product Overview

AV4037 Series Spectrum Analyzers attach great importance to optimization of performance and cost. The two product lines contain 10 models to meet demands of medium-to-high and economy market. The design is cutting-edge and mature, and the comprehensive performance is excellent. The flexibility and convenience provide users a wonderful usage experience. Fast tests can be accomplished by auto testing and auto calibration. Stable performance ensures test data repeatability. SCPI order set and VISA and IVI drive libraries support highly efficient program development.

The analyzers are designed in series to meet diversified needs by adding and deleting options. Chinese/English operation interfaces and 7 inch high brightness color micro anti-reflection LCD provide high resolution and wide angle of view to adapt to environments in various lights. The standard 3U portable cabinets make the analyzers solid in structure and light in weight. AV4037 analyzers are mainly used for electronic product development, on-line testing of production lines, composition of auto testing systems etc..

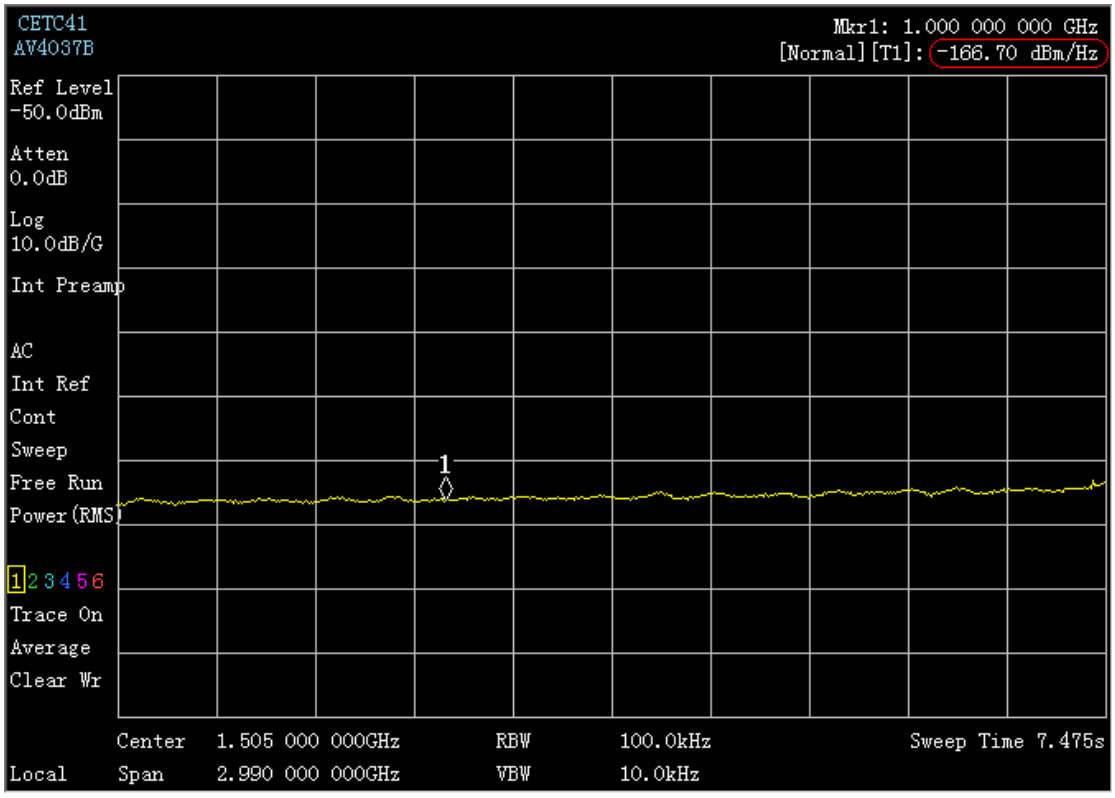
Main characteristics

- Wide frequency range, the lowest reaches 30Hz and the highest up to 6GHz.
- High dynamic range, 0dBm at 1dB gain compression, TOI（tri-order intercept point）+10dBm，DANL（display average noise level）is better than -165dBm（typical at 1GHz）.
- Excellent phase noise, -110dBc/Hz at 10kHz offset（typical）.
- Wide range of sweep time, non-zero span is 1ms～2000s, zero span is 1μs～4000s.
- Fast testing speed, testing ratio is as high as 90 counts/sec.
- All digital IF, high spectrum resolution, the min. resolution bandwidth reaches 1Hz.
- Auto calibration, strong circumstance adaptability.
- Two spectrum analysis modes, SF and FFT, can optimize test speed and dynamic range flexibly.
- Resolution bandwidth takes 1-2-3-5 steps, can generate the best coordination of frequency bandwidth and resolution bandwidth，and optimize spectrum resolution.
- Multiple video detection types are available, including normal, positive peak, negative peak, sampling, average value etc. Users are able to select flexibly when they test different types of signals to obtain fast testing results.

- As many as 6 traces are displayed to support simultaneous tests of multiple traces in diversified video detection modes. Can supply 12 scalars at most with flexible reading modes, support scale cross-trace identification.
- Embedded computer and multi-task operation system, convenient for storage, print and data sharing of testing results.
- 7 inch high brightness color micro anti-reflection LCD with high resolution and wide view angle. It is capable of clear display even under bright sunshine.
- Easy menu operation and comprehensive parameter settings. Support tests with external mouse, keyboard and VGA.
- 3 USB2.0 interfaces. Support movable storage devices and plug-play peripheral devices.
- Support 10M/100M self-adaptive network interconnection.
- Support GPIB, LAN programmable control, the instruction set conforms to SCPI 1999.0. Qualified VISA and IVI drive libraries, which passed strict examinations, are available for users to construct their own automatic testing systems.

Extremely-Low Display Average Noise Level

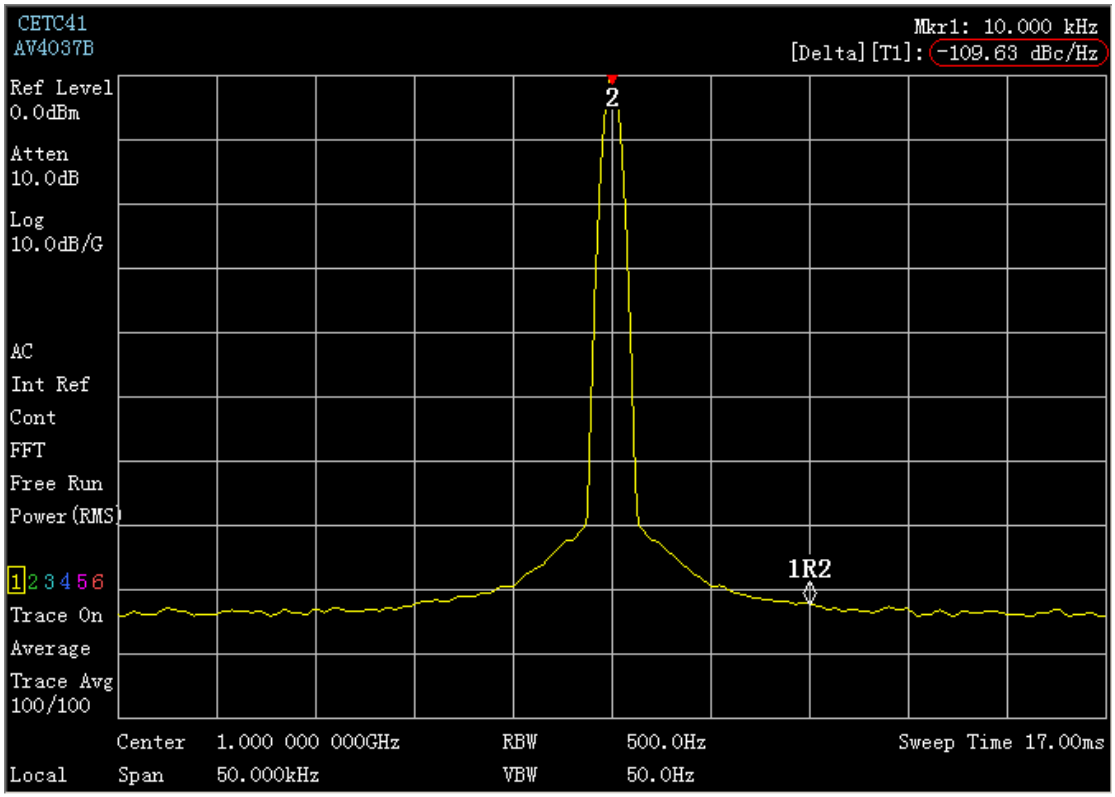
Turn on the built-in preamplifier, the displayed average noise level (DANL) is as low as -165Bm/Hz (Typical: 1GHz）.



Excellent Phase Noise Performance

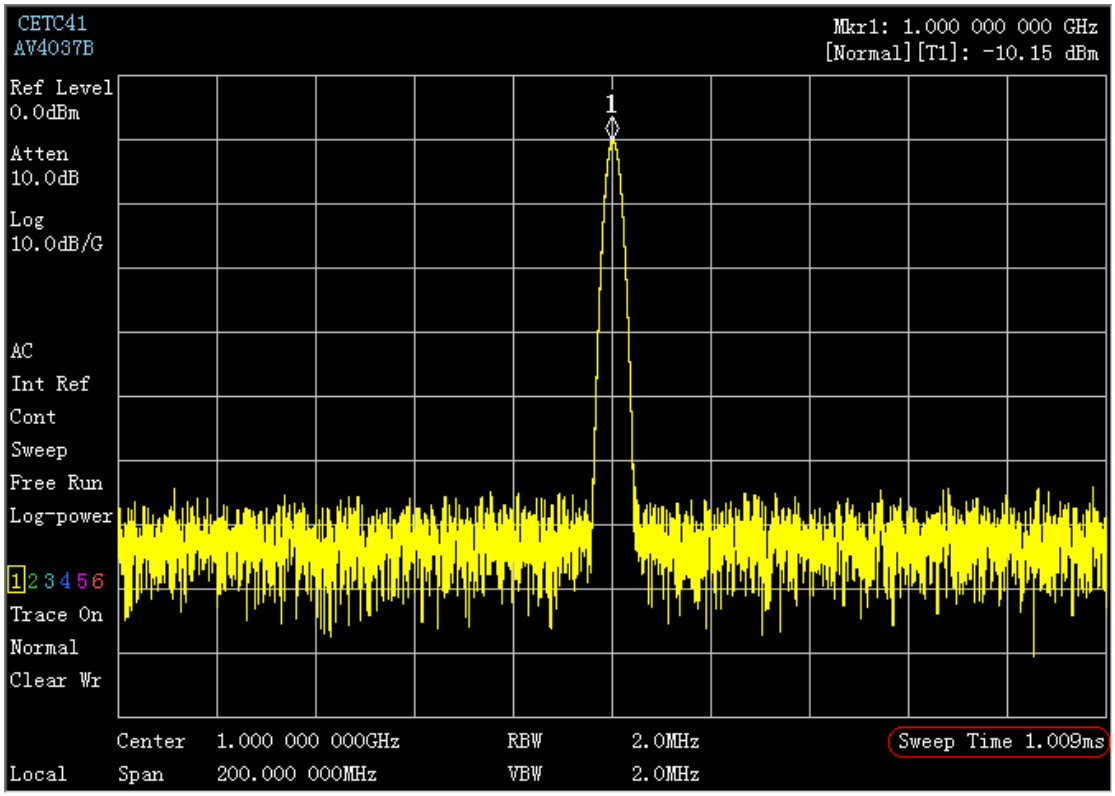
This analyzer provides the best phase noise performance compared with other medium-grade

spectrum analyzers made in China. Noise sideband：-110dBc/Hz at 10kHz offset（1GHz carrier）(typical).



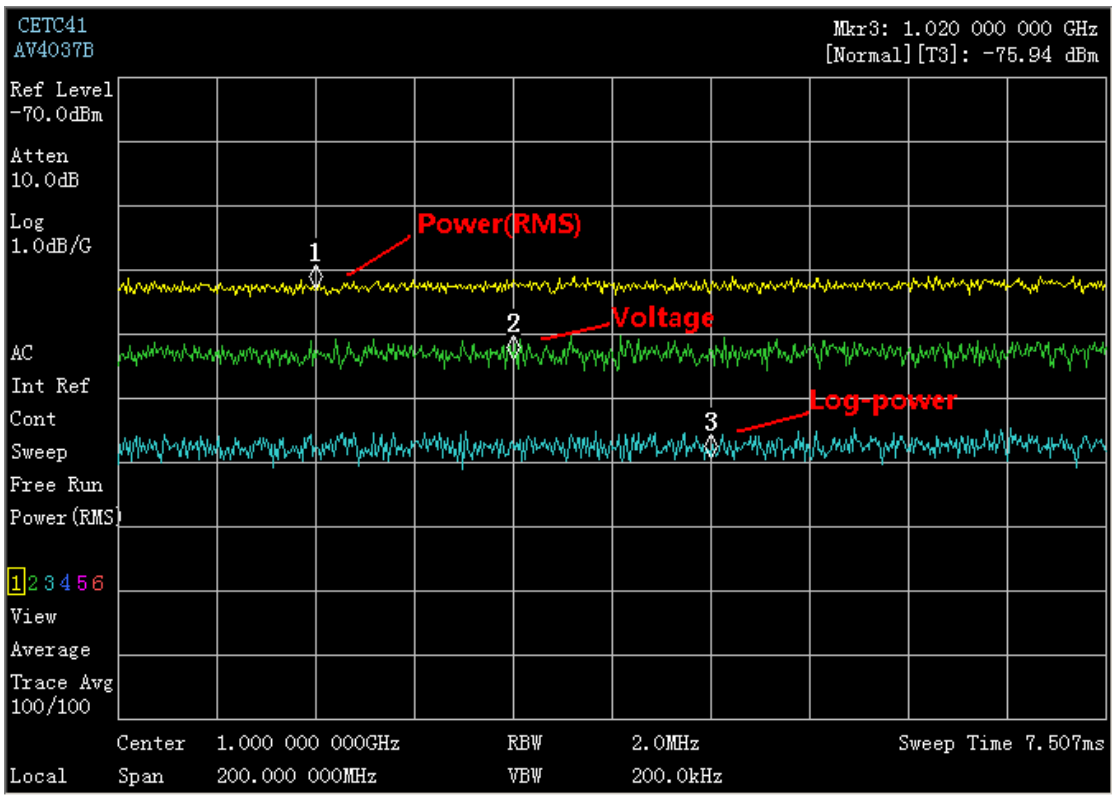
Super-Fast Measurement Speed

The analyzer is equipped with the fastest testing speed compared with other medium-grade spectrum analyzers made in China. Sweep time of non-zero frequency bandwidth is as low as 1ms, the highest testing speed can reach 90 times per sec.



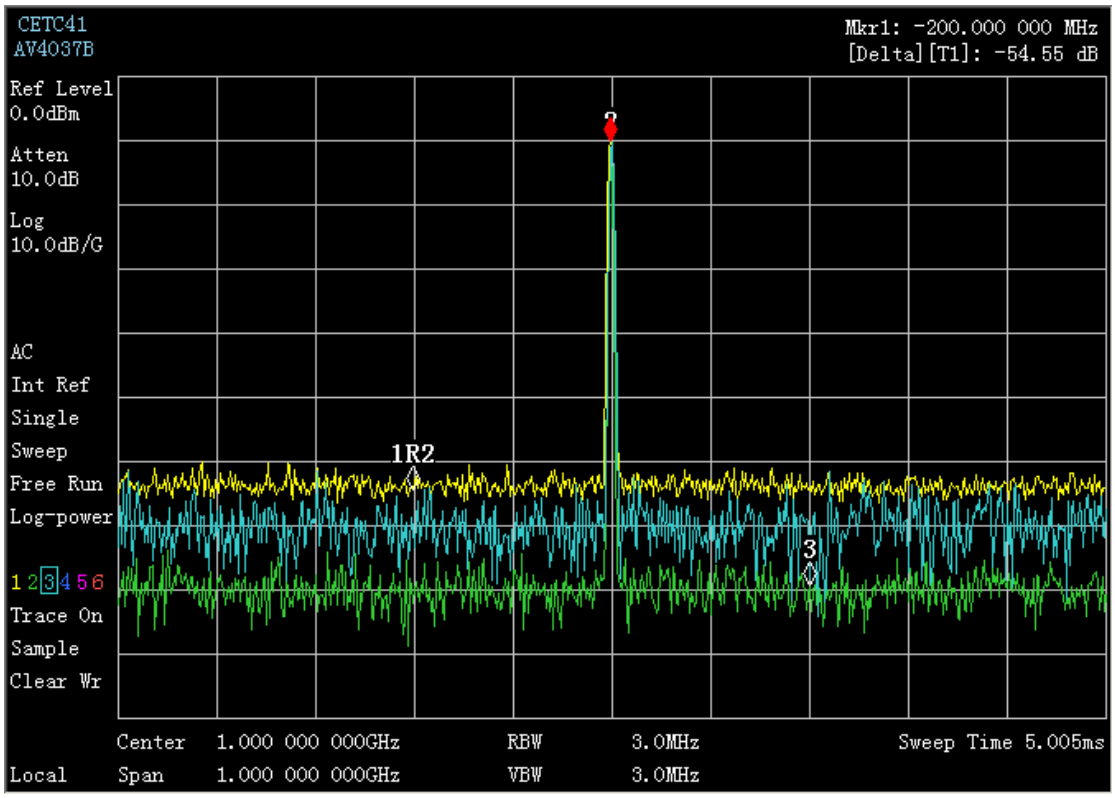
Multiple Average Value Detection Modes

Three average value detection modes are available: power (RMS), voltage and logarithm power. Users can select proper detection modes according to characteristics of signals to be tested to quickly acquire accurate average data.



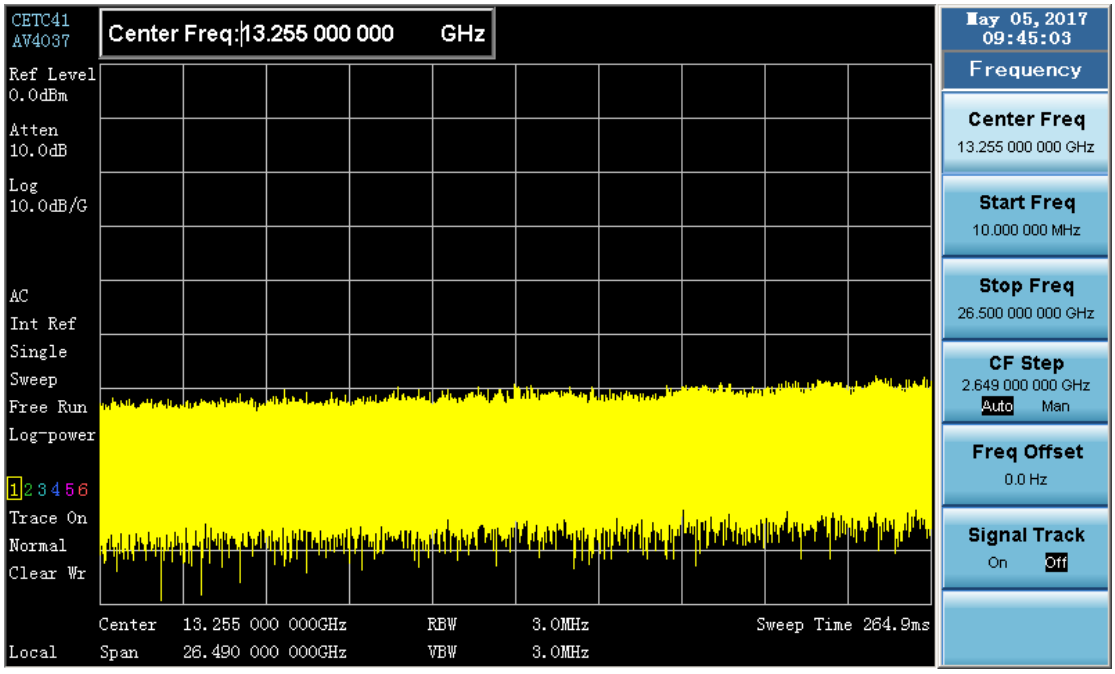
Multi-Trace Synchronous Test and Flexible Scalar Reading

The analyzer provides as many as 6 traces and 12 frequency scalars. Users can activate multiple traces at the same time and select diversified video detection modes for synchronous signal tests. The flexible scalar functions are able to simultaneously activate many scalars in multiple traces and support mutual-reference between cross-trace scalars, so as to carry out relative parameters measurement.



Chinese/English Operation Interfaces, Wide-Screen Color LCD

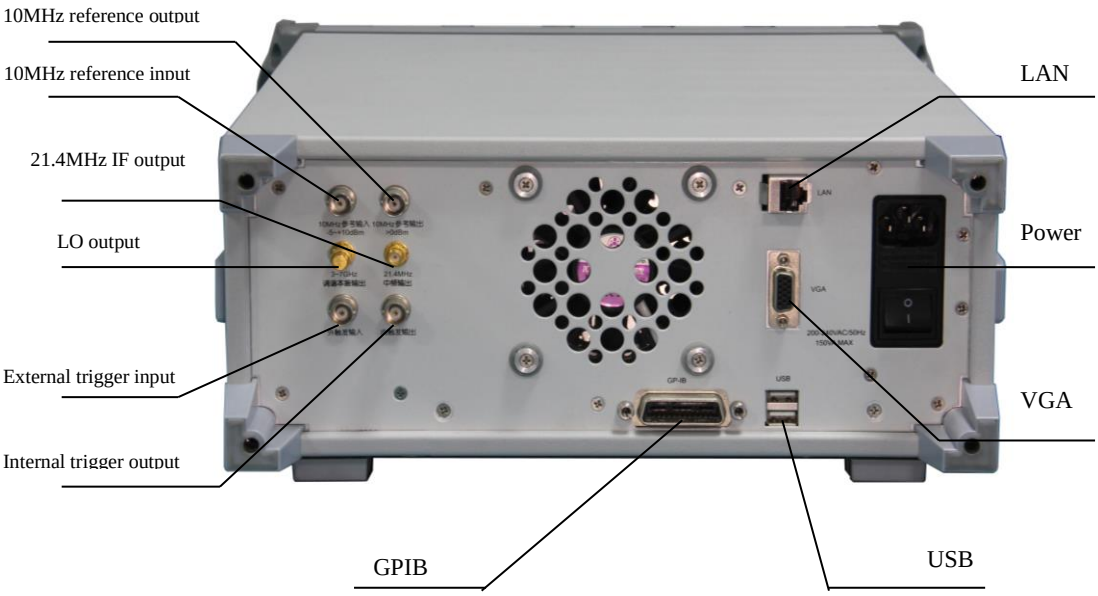
Chinese/English operation interfaces are available. Users can choose menus based on different intentions. 7 inch high-brightness color micro anti-reflection LCD can ensure clear images of parameter settings. Track graphs are exquisite. Users can get clear sight even under highlight.



Powerful Interactive Interfaces

Besides fundamental time-base and trigger interfaces, USB, GPIB and LAN interfaces are available for data and file transmission, copy, as well as programmable interconnection

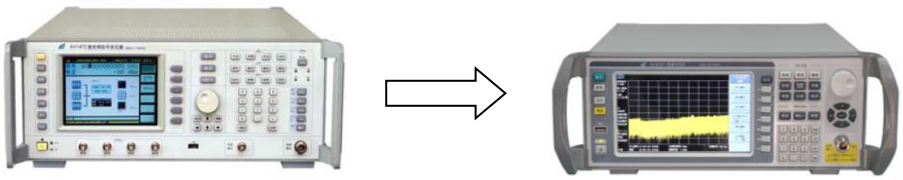
applications. VGA interface provides video information synchronized with the LCD, easy for monitoring or demonstration.



Typical Applications

Kinds of Transmitters and Oscillator Source Test

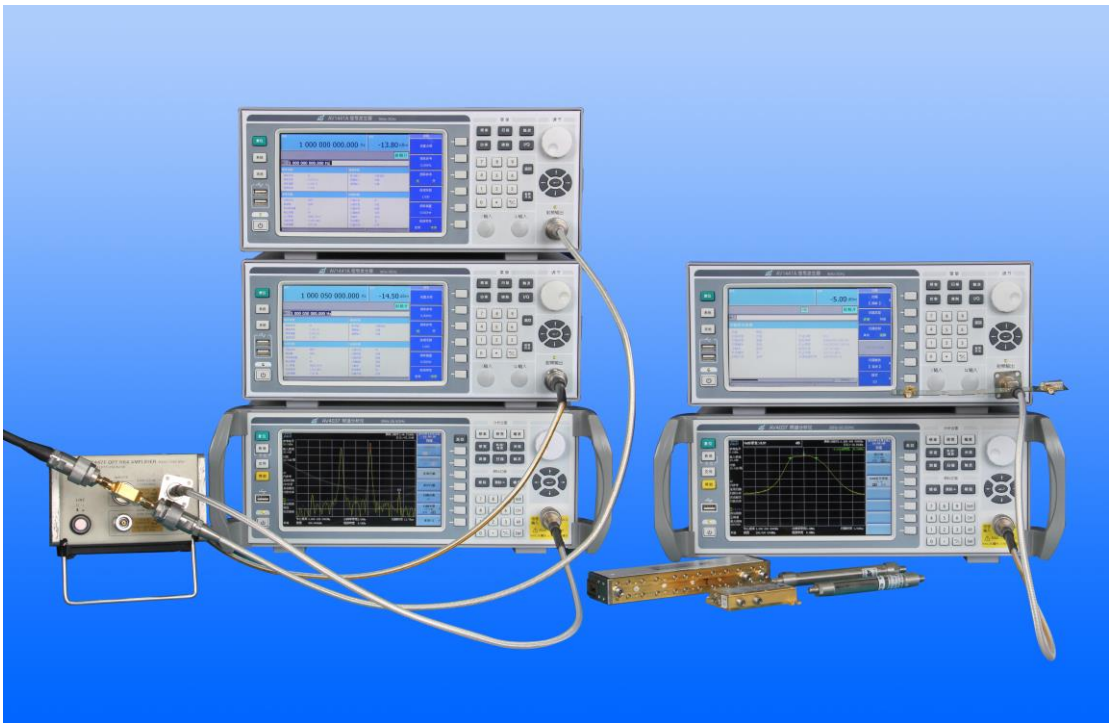
AV4037 series analyzers can be used for development, production, debugging and tests of LO and signal generators of various transmitters as well as oscillators. The following specification tests are available, frequency, power, spurious, harmonic distortion, phase noise, modulation etc..



Components and Modules Performance Test

Besides routine spectrum analysis and test, when an AV4037 analyzer combined with one synthesized signal generator, a high dynamic range scalar network testing system can be built, which can measure transmission parameters of components and modules, like filters, amplifiers, cables, connectors, including gain, insertion loss, frequency response, bandwidth, harmonic distortion etc.. Reflection parameter can be measured when it works together with a bridge. When the analyzer works together with two synthesized signal generators, they are capable of gain compression, tri-order inter-modulation distortion and other parameter tests of active or non-linear

parts, like amplifiers, mixers and so on.



Electronic Product Production Line Test and Maintenance, Examination and Repair of Outdoor Devices

Market position of AV4037 series analzyers is medium-to-high grade. With the characteristics of fast test speed, high precision and flexible reading, they are highly suitable for on-line tests for production lines. Meanwhile, the analyzers realize perfect combination of performance and structure. On one hand, the size, weight and power consumpiton are reduced, and on the other hand, high performance specifications are maintained. Hence, they are ideal for filed tests, especially the occassions needs field breakdown diagnosis and repair.

Auto Test System Building

AV4037 series have the great capability of interconnectivity. The program instruction set conforms to SCPI 1999.0. VISA and IVI instruments drive libraries, which have been tested strictly and meet relevant requirements, help users to build test system easily.

Technical Specifications

Technical Specifications on Frequency and Time	
Frequency Range	AV4037A 30 Hz ～ 3 GHz AV4037B 30 Hz ～ 6 GHz
10MHz Frequency Reference	Aging rate：±0.1pm/year（30 days after continuous power-On） Temperature Stability Degree：±0.1pm（0℃～+50℃，compared to +25℃）
Frequency Readout Accuracy	±（Frequency Reading×Frequency Reference Error＋（0.5％＋1/（Sweep Point-1））Frequency Bandwidth＋5％ Resolution Bandwidth＋10Hz）
Frequency Counting Accuracy and Counting Resolution	Counting Accuracy：±（Frequency Reading×Frequency Reference Error ＋Frequency Counting Resolution＋Residue FM） Counting Resolution：1Hz to10kHz selectable, 10 times steps selectable.
Sweep Bandwidth	Range： AV4037A, 0Hz，100Hz～3 GHz AV4037B, 0Hz，100Hz～6 GHz Accuracy：±（0.5%＋2/（Sweep Point-1））× Frequency Bandwidth，
Sweep Time	Range： 1μs～4000s（Frequency Bandwidth ＝ 0Hz） 1ms～2000s（Frequency Bandwidth ≥ 100Hz） Accuracy： ±1%（Frequency Bandwidth=0 Hz，Sweep Analysis）

Trigger Mode	Free, Single, Video, External
Resolution Bandwidth	Range： 1Hz～5MHz, 1－2－3－5 steps Accuracy： ±5％（1Hz~3MHz）；±20％（5MHz） Transmission Error：±0.5dB
Video Bandwidth	Range:1Hz～5MHz, 1－2－3－5 steps, 50MHz

Technical Specifications on Amplitude Precision and Range	
Reference Level Range	-150dBm～+30dBm Min. 0.01 dB steps（1% of the range currently displayed.）
Reference Level Uncertainty	±0.3dB （10dB input attenuation, 0～-80dbm reference level shift）
Display Scale Fidelity	±0.5dB （-10dBm ≥ level of input mixer signal ≥ -90dBm）
Frequency Response （10db Input Attenuation, 20～30℃）	The Preamplifier is Off: 10MHz～3GHz ±0.8dB 3GHz～6GHz ±1.0dB The Preamplifier is On: 10MHz～3GHz ±1.2dB 3GHz～6GHz ±1.5dB
Absolute Amplitude Measurement Accuracy（50MHz，-25dBm）	±0.3dB
Input Attenuator	Range：0～40dB，1dB steps Shift Uncertainty（50MHz，take 10db input attenuation for reference）：±0.5dB
RF Input VSWR (Input Attenuation≥ 10db）	50MHz～4.8GHz ≤1.5：1 4.8GHz～6GHz ≤1.8：1
Max. Secure Input Level	CW Power +30dBm（1W）（≥10dB input attenuation） DC Voltage 0Vdc（DC coupler），±50Vdc（AC coupler）
Display Scale	Logarithm Scale：0.1, 0.2, 0.5dB/per space and 1～20dB/ per space，1dB steps，10 spaces in total Linear Scale： 10 Spaces Amplitude Unit：dBm, dBmV , dBμV, Volts, Watts
Detection Mode	Regular, Positive Peak, Negative Peak, Average Value, Sample
Frequency Range of the Preamplifier	AV4037A: 100kHz～3GHz AV4037B: 100kHz～6GHz

Technical Specifications on Dynamic Range	
1dB Gain Compression Point（Dual-Tone Method Test, Mixer Total RF Input Signal Power）	50MHz～6GHz >0dBm（The Preamplifier is Off.） >-15dBm（The Amplifier is On.）
Display Average Noise Level（Input End Connects Matching Load，0db Input Attenuation，Sampling Detection）	1Hz RBW，1Hz VBW, the present Amplifier is Off: 100kHz～1MHz <-130dBm 1MHz～10MHz <-142dBm 10MHz～3GHz <-135dBm 3GHz～6GHz <-133dBm 1Hz RBW，1Hz VBW，the present Amplifier is On: 100kHz～1MHz <-145dBm 1MHz～10MHz <-155dBm 10MHz～3GHz <-151dBm 3GHz～6GHz <-150dBm
Two Harmonic Distortion（Single-Tone Signal Input，20～30℃）	10MHz～200MHz <-65dBc（Input Mixer Level -30dBm） 200MHz～1.5GHz <-80dBc（Input Mixer Level -30dBm） 1.5GHz～3GHz <-70dBc（Input Mixer Level -10dBm）
Tri-Order Inter-Modulation Distortion（Frequency Interval ≥50khz Dual-Tone Single Input，Mixer Level -30dbm，20～30℃）	100MHz～3GHz <-80dBc 3GHz～6GHz <-80dBc
Input Relevant Spurious Response（Single-Tone Signal Input，Mixer Level-10dBm）	In-Band Response（Offset Carrier>30kHz）: <-60dBc Out-Band Response：<-80dBc
Residual Response（RF Input Match, 0dB Input Attenuation）	Preamplifier is Off < -90dBm Preamplifier is On < -105dBm（Exceptional Frequency：2.9572GHz, 3.6GHz, 4.1572GHz, 6GHz）
Noise Sideband（Central Frequency 1GHz）	Frequency Offset＞1kHz ≤-90dBc/Hz Frequency Offset＞10kHz ≤-105dBc/Hz Frequency Offset＞100kHz ≤-110dBc/Hz
Residual FM	（10Hz resolution bandwidth, 10hz video bandwidth, 20ms peak value） ≤ 2Hz×N （N is times of mixing harmonic）

Common Technical Specifications	
Power Requirements	50Hz Single-Phase AC, Rating Voltage is 220V. Permissible Range of Steady Voltage：Rating Value ±10% Permissible Range of Steady Frequency：Rating Value ±5%
Power Consumption	<100W
Temperature Range	Operating Temperature：0℃～+50℃ Storage Temperature：-40℃～+70℃
Safety	Conforms to Item 3.10 of GJB 3947A-2009
EM Compatibility	Conforms to Item 3.9 of GJB 3947A-2009
Size （W×H×D）	Without handles, stand and side belt： 320 mm×133 mm×400 mm With handles, stand and side belt： 393 mm×144 mm×465 mm
Weight	Approx.11.5 kg
Input Connector	Type N（F），impedance 50Ω

Ordering Information

Main Unit： AV4037A Spectrum Analyzer 30Hz ～ 3GHz

AV4037B Spectrum Analyzer 30Hz ～ 6GHz

Standard Package

No.	Description	Remarks
1	Power Cord	Standard 10A tri-prong power cord
2	User Manual	Operation Guide
3	Programming Manual	Programming Design Guide
4	Certificate of Conformity	Outgoing Certificate includes model number, serial number, date of issue etc..