AV4051 Series Signal Analyzer

3Hz～4GHz/9GHz/13.2GHz/18GHz/26.5GHz/40GHz/45GHz/50GHz

Product Overview:

AV4051 series signal analyzer have the advantages of broad bandwidth, high resolution, high dynamic range, high precision, low phase noise and fast measurement speed. AV4051 can provide the high performance services such as high sensitivity spectrum analysis, power analysis, analog demodulation test, multi-domain analysis, pulse parameter analysis, audio analysis, phase noise testing, millimeter wave frequency extension, noise figure testing and USB power meter.

AV4051 uses the technology of modular frequency conversion channel and all digital IF to form a high open testing platform. We can choose the different options to improve the testing performance of AV4051, and built test system or secondary development by a variety of digital and analog signal output interface of AV4051.

AV4051 has a wide range of applications as follows: aviation, aerospace, communication, radar and navigation.

Main Features:

- Broad frequency bandwidth range
- 200MHz analysis bandwidth
- Excellent testing performance
- Full spectrum analysis
- Multi-domain analysis and signal playback
- Plentiful function option

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- Flexible analog and digital output interface
- Convenient operating characteristics

Broad frequency bandwidth range

- 3Hz—50GHz frequency bandwidth range
- 8 kinds of Optional configuration of frequency bands
- low frequency (<4GHz) or full-band preamplifier
- Frequency extension up to 325GHz (options)

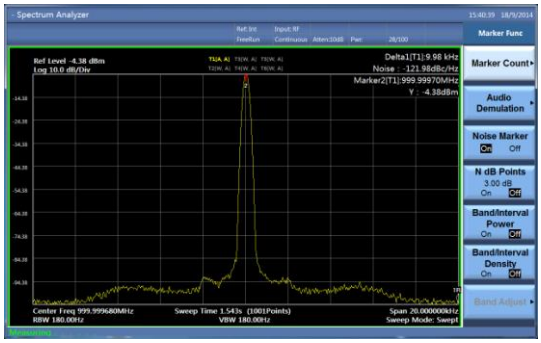
200MHz analysis bandwidth

- Flexible Bandwidth to choose from 10Hz to 200MHz
- 10MHz standard analysis bandwidth (40MHz/200MHz, options)
- 64M sample memory depth (256M, options)
- Seamless capture time can be up to a few hours from 1.28 seconds

Excellent testing performance

- The best measurement sensitivity: -152dBm/Hz
- Measurement sensitivity at 50GHz: -127dBm/Hz
- Phase noise: -115dBc/Hz carrier 1GHz @ 10kHz offset
- All digital IF design

The best measurement



Excellent phase noise

- The minimum non-zero span sweep time: 1ms
- Local measurement update rate: 90times/sec
- The low-frequency transducer frequency time: 50ms (frequency <4GHz)
- Trace can choose detection mode independently
- Network programmable

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Full spectrum analysis

- Continuous scanning and FFT step scan
- Fastest sweep time of zero scan: 1μs
- Counting Resolution: 1mHz
- Sweep Points: 101～30001
- Up to six tracks
- 6 kinds of detectors type, three kinds of average type
- Support time gate measurement
- Occupied bandwidth, channel power, adjacent channel power testing
- Statistical power, burst power, harmonic distortion, third-order inter modulation, spurious emission testing

Full spectrum analysis

Multi-domain analysis and signal playback

- Display multi-domain parameter of spectrum, instantaneous frequency / amplitude / phase, chromatograms
- Chromatogram display for the analysis of signal change with time
- Instantaneous parameter display for the analysis of pulse modulation signal parameters.
- Seamless capture data storage up to 2GB
- Support CSV, DAT storage file format
- Support file playback signal analysis at different time.
- Support communication signal modulation recognition (Option）

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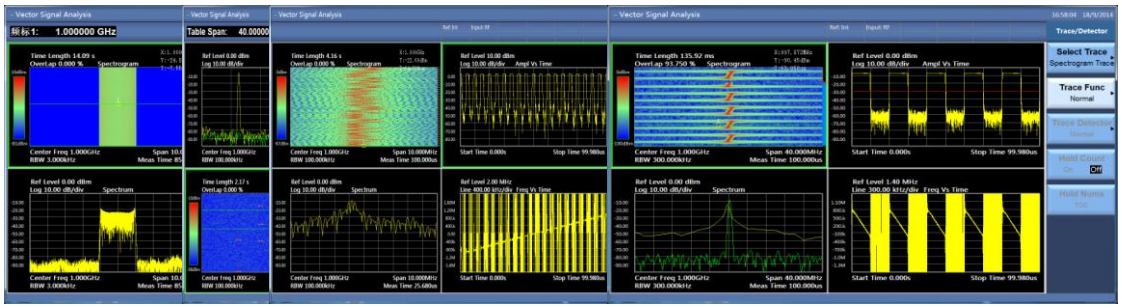

Signal playback List sweep of frequency LFM signal playback

Plentiful function option

- Phase noise analysis
- Analog demodulation analysis
- Pulse parameter analysis
- Audio analysis
- Frequency extension
- Modulation Recognition

Flexible analog and digital output interface

- 375 MHz IF output
- 10MHz～140MHz variable IF output
- Demodulated output, support AM / FM demodulation and IQ demodulation
- Detection output, the output video signal scanning synchronization
- Digital signal output，1X or 4X fiber output channel, provides broadband IQ data of real-time recording from the interface
- External 1.5TB～12TB data logger, SSD and HDD two media types

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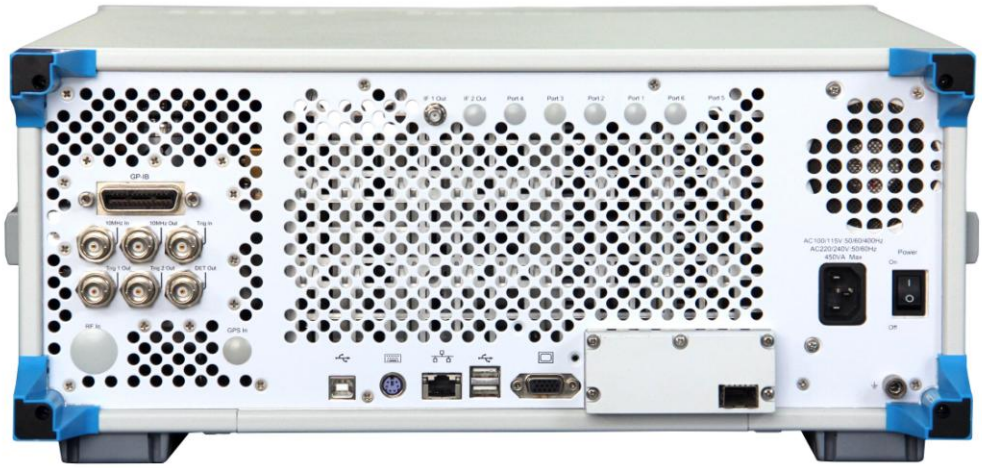

AV4051 Signal output interface

Convenient operating characteristics

- Chinese/English language
- Humane automatic tuning and automatic calibration function
- one-button quick measurement
- USB、LAN、GPIB、K/M output interface
- Resolution: 1024*768，170 degree viewing angle

Typical Applications:

● Comprehensive assessment of the performance of electronic systems：AV4051 has a wide range of applications of comprehensive assessment of the performance of radar and communication. Providing high sensitivity, wide dynamic range, high precision and high efficiency solution for testing broadband signals.

● Transmitter and receiver testing and diagnosis：plentiful functions of Spectrum analysis, power measurement module, multi-domain analysis, phase noise testing for the transmitter and receiver testing and diagnosis.

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Technical Specifications:

Model	AV4051A/AV4051B/AV4051C/AV4051D/AV4051E/AV4051F/AV4051G/AV4051H
Frequency range	3Hz～4GHz/9GHz/13.2GHz/18GHz/26.5GHz/40GHz/45GHz/50GHz
10MHz Precise frequency reference	Frequency accuracy: ±（last calibration data×aging rate＋temperature stability＋calibration accuracy） Aging rate： ± 1×10^{-9}/day ， ± 1×10^{-7}/year Temperature stability： ± 1×10^{-8}（20℃ ～ 30℃） ± 5×10^{-8}（0℃ ～ 55℃） Calibration accuracy： ± 7 $\times10^{-8}$
Frequency readout accuracy (sweep)	±（readout×frequency reference error＋0.25% span＋5% resolution bandwidth＋2Hz＋0.5 horizontal resolution） *：horizontal resolution = span/（sweep points -1）
Frequency counting accuracy（counting）	±（Frequency read out×frequency reference error＋0.1Hz）
Frequency Span	Range：0Hz， 10Hz～4GHz/9GHz/13.2GHz/18GHz/26.5GHz/40GHz/45GHz/50GHz Accuracy：±（0.2%×span＋span/（sweep point number-1））
Sweep time	（Bandwidth ≥10Hz）： 1ms～4000s （Bandwidth =0Hz）： 1us～6000s
Resolution bandwidth	Range: 1Hz～3MHz （10% step），4、5、6、8MHz Conversion Uncertainty: ≤ ± 0.5dB
Video bandwidth	1Hz～3MHz （10% step），4、5、6、8MHz
Signal analysis Bandwidth	10Hz～10MHz (40MHz/200MHz, options)
Memory depth	64MSamples（extend 256MSamples）
Trigger	Free, power, video, external level (front panel), external level (rear panel), burst power
Detectors type	Normal, positive peak, negative peak, sampling, average, root mean square
Average type	Video average, Power average, Voltage average
Phase noise （carrier 1GHz）	< -91dBc/Hz 100Hz < -105dBc/Hz 1kHz < -115dBc/Hz 10kHz < -117dBc/Hz 100kHz

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Residual FM	< 1Hz ×N（N is harmonic number）
Displayed Average Noise Level	-140dBm/Hz 10MHz～200MHz -152dBm/Hz 200MHz～1GHz -150dBm/Hz 1GHz～3GHz -147dBm/Hz 3GHz～4GHz -144dBm/Hz 4GHz～9GHz -140dBm/Hz 9GHz～18GHz -138dBm/Hz 18GHz～26.5GHz -130dBm/Hz 26.5GHz～40GHz -127dBm/Hz 40GHz～50GHz
Frequency response and absolute amplitude accuracy（10dB attenuation，20 ℃ ~ 30 ℃）	Frequency response： < ±1.0dB 3Hz～4GHz < ±2.0dB 4～9GHz < ±2.0dB 9～18GHz < ±3.0dB 18～26.5GHz < ±3.5dB 26.5～50GHz absolute amplitude accuracy： ±0.3dB 300MHz ±（0.3dB＋frequency response）
1dB Gain Compression Point（mixer input level）	0dBm 20MHz～4GHz 3dBm 4GHz～9GHz 0dBm 9GHz～50GHz
TOI distortion（mixer level -30dBm）	< -84dBc 10MHz ～ 4GHz < -89dBc 4GHz ～ 9GHz < -84dBc 9GHz ～ 50GHz
Residual response	< -90dBm 1MHz～50GHz
Measurement speed	Local measurement update rate：90 times/sec Center frequency tuning and conversion rates： 50ms 3Hz～4GHz 85ms 4GHz～26.5GHz 120ms 26.5GHz～50GHz
Dimensions	width × height × depth= 498mm ×192mm ×532mm （Including handles, feet, foot） width × height × depth= 426mm ×177mm ×460mm（Not Including handles, feet, foot）
Weight	About 25kg
Input connector	AV4051F/AV4051G/ AV4051H：2.4mm(male)，impedance 50ohm； AV4051A/AV4051B/AV4051C/AV4051D/AV4051E：N:type（female），impedance 50ohm

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Note: AV4051 Series signal analyzers stored at ambient temperature 2h, warm-up 30 min, should meet the performance indicators after automatic calibration.

Ordering Information:

- Main unit: AV4051A Signal analyzer 9kHz～4GHz
  AV4051B Signal analyzer 9kHz～9GHz
  AV4051C Signal analyzer 9kHz～13.2GHz
  AV4051D Signal analyzer 9kHz～18GHz
  AV4051E Signal analyzer 9kHz～26.5GHz
  AV4051F Signal analyzer 9kHz～40GHz
  AV4051G Signal analyzer 9kHz～45GHz
  AV4051H Signal analyzer 9kHz～50GHz

- Standard:

Project	Name	Number
Standard accessories	Three-phase Power Cord	1
	USB Mouse	1
	User's Manual	2
	Program Instructions	2
	CD	1

- Option:

NO.	Model	Name	Function
1	AV4051-H02	375MHz IF output	Output 375MHz IF signal (bandwidth and amplitude control).
2	AV4051-H03A	Any IF output	Output 10MHz～140MHz IF signal
3	AV4051-H04	AM/FM or I/Q Demodulation output	Output AM、FM or IQ demodulation signal
4	AV4051-H06	Audio demodulation output	Output audio signal (headphone demodulation output)
5	AV4051-H10	LO output	Providing monitoring and output of the oscilla tor. Required option when configuring the external spread
6	AV4051-H11	375MHz IF input	Providing 375MHz IF input Required option when configuring the external spread
7	AV4051-H12	High-speed digital interface	High-speed serial real-time recording data of fiber output

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8	AV4051-H21	Capture memory depth extension	Capture memory depth extended to 256Msamp les (2GB), increasing snapshots capture time.
9	AV4051-H22A	Broadband Data Logger (Solid-state storage)	Broadband data Logger (solid-state storage) analyze real-time recording data in the bandwidth. The option must be used with AV4051-H12 option.
10	AV4051-H22B	Broadband Data Logger (Disk storage)	Broadband data Logger (Disk storage) analyze real-time recording data in the bandwidth. The option must be used with AV4051-H12 option.
11	AV4051-H34	Low-noise preamplifier	Signal amplification
12	AV4051-H35	Low noise path	Optimization of high-band average noise level and improve the measurement dynamic range
13	AV4051-H38	Broadband Digital IF	200MHz digital IF bandwidth processing
14	AV4051-H39	Baseband signal processing	Acquisition and processing of the baseband signal and audio signal Audio analysis Required
15	AV4051-H40	Millimeter-wave extension	Up to 325GHz Required LO output and 375MHz IF input options
16	AV4051-S04	Phase noise testing	Sideband testing of logarithmic phase noise And points phase noise testing
17	AV4051-S08	Audio analysis	Audio signal characteristics and related parameters analysis
18	AV4051-S09	Analog modulation analys is	analog modulation signal characteristics and related parameters analysis
19	AV4051-S13	Pulse signal analysis	Pulse signal characteristics and related pulse parameters analysis
20	AV4051-S72	Communication signal modulation recognition	Automatic identification to trapped communica tion signal modulation formats, support a varie ty of commonly used digital communication si gnal modulation formats.
21	AV4051-H99	Aluminum transport box	High strength lightweight aluminum transport box, with a handle and a roller for convenient transportation.

Note: The option of model AV4051-XXX is displayed as SA-XXX in the spectrum analyzer.

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