

Agilent 4352B VCO/PLL Signal Analyzer Specification Summary

Source characteristics

Dc power supply

- Dc voltage level :**
 • 0 to +15.5 V (50 mA max.)
Dc voltage resolution:
 • 1 mV
Dc voltage accuracy:
 • $\pm(0.2\% + 2 \text{ mV})$
Noise density:
 • $< 10 \text{ nV}\sqrt{\text{Hz}}$ (@ 10 kHz, typical)
Connector type:
 • BNC (F)

Dc control source

- Dc voltage level:**
 • 0 to +20 V (20 mA max.)
Option 001:
 • -15 to +35 V (20 mA max.)
Dc voltage resolution:
 • 100 μV
Dc voltage accuracy:
 • $\pm(0.1\% + 2 \text{ mV})$
Noise density:
 • $< 1 \text{ nV}\sqrt{\text{Hz}}$ (@ 10 kHz, typical)
Settling time:
 • $< 20 \text{ msec}$ at 0.1 % error (typical)
Output resistance (dc):
 • $< 10 \Omega$ (typical)
Connector type:
 • BNC (F)

1 kHz signal source

- Frequency:**
 • 1 kHz
Level:
 • 0 to 1 Vrms (@ open load)
Level resolution:
 • 1 mVrms
Level accuracy:
 • 1 mVrms
Output impedance:
 • 50 Ω nominal (typical)
Connector type:
 • BNC (F)

Receiver characteristics

- Frequency range:**
 • 10 MHz to 3 GHz
Input level:
 • -10 to +20 dBm
Input Impedance:
 • 50 Ω
SWR:
 • < 1.2 (@ $< 2 \text{ GHz}$),
 • < 1.3 (@ 2 to 3 GHz)
Connector type:
 • N-type (F)

Measurement parameters

RF power

- Input level:**
 • -10 to +20 dBm
Resolution:
 • 0.01 dB
Accuracy:
 • $\pm 0.6 \text{ dB}$ (@ $\leq 2 \text{ GHz}$, $\leq 15 \text{ dBm}$)
 • $\pm 1 \text{ dB}$ (@ other conditions)
 • $\pm 0.2 \text{ dB}$ (@ 1 GHz, -5 dBm, typical)

- Number of measurement points per sweep (analyzer mode):**
 • 2 to 801 points

Note: cable loss compensation

The 4352B can compensate for the RF power level loss of the cable connecting the DUT output terminal and the 4352B RF IN connector when measuring RF power.

Frequency

- Resolution:**
 • 1 kHz
Accuracy:
 • $\pm(1 \text{ kHz} + \text{Time base accuracy of the external signal generator})$
Number of measurement points per sweep (analyzer mode):
 • 2 to 801 points

Phase noise (carrier-to-noise ratio)

- Offset frequency range:**
 • 100 Hz to 10 MHz
Noise floor:

Offset frequency	Spec	Typical
100 Hz	-85 dBc/Hz	-90 dBc/Hz
1 kHz	-110 dBc/Hz	-117 dBc/Hz
10 kHz	-130 dBc/Hz	-137 dBc/Hz
100 kHz	-140 dBc/Hz	-147 dBc/Hz
1 MHz	-150 dBc/Hz	-157 dBc/Hz

Note: The phase noise of signal generator isn't included in these values.

- Accuracy:**
 • $\pm 4 \text{ dB}$ @ 100 Hz - 1 kHz (typical)
 • $\pm 2 \text{ dB}$ @ 1 kHz - 1 MHz
 • $\pm 4 \text{ dB}$ @ 1 MHz - 10 MHz

Spectrum

- Span:**
 • 10 MHz (Max.)
Resolution band width:
 • 1 Hz to 3 kHz (1, 3 step)
Noise floor:
 • $< -95 \text{ dBm}$ (@ RBW = 30 Hz, typical)
 • $< -75 \text{ dBm}$ (@ RBW = 3 kHz, typical)
Absolute level accuracy:
 • $\pm 2 \text{ dBm}$ (@ -5 dBm, typical)
Relative level accuracy:
 • $\pm 1.5 \text{ dB}$
 • $\pm 0.5 \text{ dB}$ (typical)

Frequency transient

Frequency range:

- 100 MHz to 3 GHz measurement range (frequency span)
- 2 MHz, 20 MHz, MAX (see table 1)

Frequency resolution:

- Measurement range ÷ 40000 [Hz]

Frequency accuracy:

- $\pm(\text{Measurement range} \times 0.1\% + \text{Time base accuracy of the external signal generator})$

Number of measurement

points per sweep:

- 2 to 801 points

Minimum sampling

interval:

- 12.5 μ sec

Maximum sweep time:

- 10 sec

Sampling start delay:

- 0 to 800 msec

Time base accuracy:

- Time base accuracy of the external signal generator

FM deviation

Measurement range:

- 2 kHz, 20 kHz, 200 kHz

Resolution:

- 4 digits

Accuracy:

- $\pm(2\% \text{ of reading} + 0.5\% \text{ of measurement range})$
- $\pm 0.8\%$ (typical after FM deviation cal.)

Detection filter:

- HP filter: 50 Hz, 300 Hz
- LP filter: 3 kHz, 15 kHz, 20 kHz

Residual FM:

- <3 Hzrms (@ 300 Hz - 3 kHz bandwidth)

Dc power current

Current range:

- 0 to 50 mA

Accuracy:

- $\pm(0.2\% \text{ of reading} + 100 \mu\text{A})$

General characteristics

Display:

- 9 inch, color LCD

Data storage:

- Built-in 3.5" flexible disk drive (720 kB or 1.44 MB)
- Volatile RAM disk memory (512 kB)

Disk format:

- LIF, MS-DOS®

File type:

- Instrument state - BINARY
- Data and memory - ASCII, BINARY
- Graphics - TIFF

Interfaces

External input (LO IN)

- Connector: N (f)
- Level: +10 dBm

24-bit parallel digital I/O port

- Connector: D-SUB (36-pin)
- Level: TTL
- I/O: 8-bit I/O, 16-bit output
- PASS/FAIL signal, SWEEP END signal, Trigger sync signal

External trigger input

- Connector: BNC (f)
- Level: TTL

External program RUN/CONT input

- Connector: BNC (f)
- Level: TTL

External monitor output

- Connector: D-SUB (15-pin)
- Output signal: VGA (640 x 480)

Printer interface

- Interface: Centronics
- Control language: HP PCL3

GPIB

Operating conditions

Temperature:

- 10°C to +40°C

Humidity:

- 15% to 80% RH

Power requirements:

- 90 V to 132 V or 198 V to 264 V, 47 Hz to 63 Hz, 300 VA max

Size:

- 425 mm (W) x 235 mm (H) x 553 mm (D)

Weight (typical):

- 21.5kg

Table 1. Measurement range in DIRECT mode

	1	2	3	4	5	6	7	8
Measurement range (MHz)	128	256	384	512	640	768	896	1024
RF MAX (MHz)	192	384	576	768	960	1152	1354	1536
RF MIN (MHz)	64	128	192	256	320	384	448	512
Freq. resolution (kHz)	3.2	6.4	9.6	12.8	16	19.2	22.4	25.6
	9	10	11	12	13	14	15	16
Measurement range (MHz)	1152	1280	1408	1536	1664	1792	1920	2048
RF MAX (MHz)	1728	1920	2112	2304	2496	2688	2880	3000
RF MIN (MHz)	576	640	704	768	832	896	960	1024
Freq. resolution (kHz)	28.8	32	35.2	38.4	41.6	44.8	48	51.2