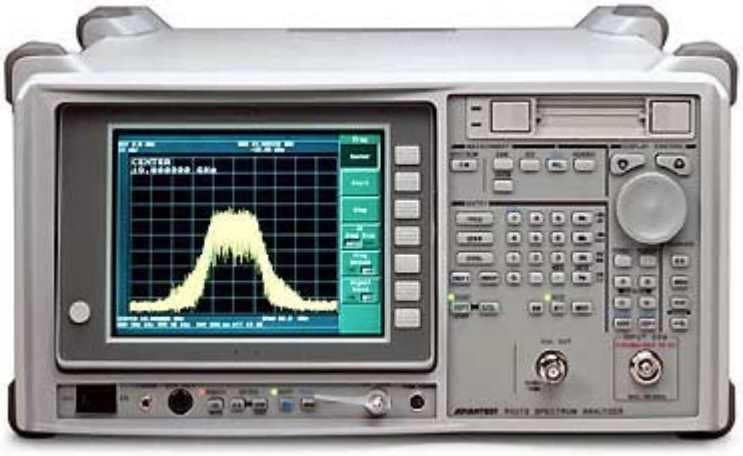
Spectrum Analyzers

16.5 kg, 9 kHz to 26.5 GHz Microwave Spectrum Analyzer

R3272

- **Compact, Lightweight (16.5 kg) Microwave Spectrum Analyzer**
- **Wide Frequency Range: 9 kHz to 26.5 GHz**
- **Independent Function Keys Make Operation Simple**
- **High Stability Narrow Band Sweep Made Possible By DDS (Direct Digital Synthesizer) Technology**
- **Newly–Developed High–Speed Settling Synthesizer Greatly Improves Measurement Throughput**
- **Large, Easy–To–Read TFT Color LCD Display**
- **IC Memory Card, 2 Slots JEIDA Ver. 4.2/PCMCIA 2.1**



R3272
Spectrum Analyzer

In the field of radio communication which supports the increasingly information oriented world, the role played by microwave and quasi–millimetric waveband communication is increasing year by year.
R3272 is a high–function portable spectrum analyzer which can be operated simply to do spectrum analysis of these microwave and quasi–millimetric wavebands. It has a frequency range of 9 kHz to 26.5 GHz (or up to 60 GHz using an external mixer), an input range of +30 dBm to –120 dBm, an amplitude display with a dynamic range of 100 dB and a resolution bandwidth of 300 Hz. A frequency counter with a 1 Hz resolution is also provided.
The R3272 is an ideal spectrum analyzer for wave and spurious measurements in microwave circuits and satellite communication.

■ A Microwave Spectrum Analyzer With More Portability

The R3272 was designed as an active microwave spectrum analyzer. It has a robust, compact design, measuring 178 (H) × 350 (W) × 420 (D) mm and weighing 16.5 kg. Its lightness and compactness make it much less of a burden when transporting it to a relay station or other site.

■ User Friendly Panel Settings

Simple operation is another design concept of the R3272. It employs a TFT color LCD display in order to show a variety of information reliably. The frequently used BW, INPUT ATT and SWEEP TIME setting parameters, as well as the OBW, ACP and HARM measurement functions which are indispensable when doing transmitter characteristics tests have been given independent keys on the front panel. This arrangement allows direct operation of these functions.

R3272

Specifications

Measuring Functions

CW modes: Spectrum measurement, OBW/ACP/HARM measurements

Frequency

Frequency range:
9 kHz to 26.5 GHz
18 to 60 GHz (with external mixers)

Frequency	Frequency band	Harmonic mode (N)
9 kHz to 3.1 GHz	0	1
3.0 to 7.5 GHz	1	1
7.4 to 15.4 GHz	2	2
15.2 to 23.3 GHz	3	3
23 to 26.5 GHz	4	4

Frequency reference accuracy: $\pm 2 \times 10^{-8}$/day, $\pm 1 \times 10^{-7}$/year
Frequency stability:
Residual FM (zero span) <3 Hz × Np–p/0.1 sec
Drift (After 1 Hr. warm–up) <20 Hz × (sweep time (min.) × N), span ≤ 5 MHz

Spectral purity:

Offset	f ≤ 3 GHz	f > 3 GHz
10 kHz	< –100 dBc/Hz	<(–98 + 20 log N) dBc/Hz
100 kHz	< –110 dBc/Hz	<(–108 + 20 log N) dBc/Hz

Resolution bandwidth (3 dB):
Range 300 Hz to 3 MHz, 5 MHz (1,3,10 sequence)
Accuracy ± 20% (RBW 1 kHz to 1 MHz)
± 30% (RBW 300Hz, 3 MHz, 5 MHz)
Selectivity <15:1 (300 Hz to 5 MHz)
Video bandwidth range: 1 Hz to 3 MHz, 5 MHz (1, 3, 10 sequence)

Amplitude

Measurement range: +30 dBm to displayed average noise level
Display range: 10 × 10 division graticule
Log 10, 5, 2, 1, 0.5 dB/div.
Linear 10% of reference level/div.

Dynamic Range

Displayed average noise level:
(Resolution bandwidth 1 kHz, input attenuator 0 dB, video bandwidth 1 Hz)

Frequency range	Frequency band	
10 kHz	0	–70 dBm
100 kHz	0	–80 dBm
1 MHz to 3.1 GHz	0	–(115 – 1.55 × f(GHz)) dBm
3.0 to 7.5 GHz	1	–110 dBm
7.4 to 15.4 GHz	2	–103 dBm
15.2 to 23.3 GHz	3	–96 dBm
23.0 to 26.5 GHz	4	–90 dBm

Spurious response:
Second harmonic distortion

Frequency range	Second harmonic distortion	Mixer level
10 MHz to 3 GHz	<–70 dBc	–30 dBm
>3 GHz	<–100 dBc	–10 dBm

Third order intermodulation distortion
(12.5 kHz separation, resolution bandwidth 300 Hz)

Frequency range	Third order intermodulation distortion	Mixer level
10 MHz to 3 GHz	<–75 dBc	–30 dBm
>3 GHz	–75 dBc	–30 dBm

Amplitude Accuracy

Frequency response (10 dB input atten):

Frequency range	In band flatness	Frequency band
9 to 3.1 GHz	± 1.5 dB	0
50 to 3.1 GHz	± 1.0 dB	0
3 to 7.5 GHz	± 1.5 dB	1
7.4 to 15.4 GHz	± 3.5 dB	2
15.4 to 23.3 GHz	± 4.0 dB	3
23 to 26.5 GHz	± 4.0 dB	4

Calibrator accuracy (30 MHz): –10 dBm ± 0.3 dB
IF gain error (after automatic calibration):

	15 to 35°C	0 to 50°C
0 to –50 dBm	± 0.5 dB	± 0.6 dB

Scale fidelity (after automatic calibration):

	15 to 35°C	0 to 50°C
Log	± 0.2 dB/1 dB	± 0.3 dB/1 dB
	± 1.0 dB/10 dB	± 1.2 dB/10 dB
	± 1.5 dB/80 dB	± 1.5 dB/80 dB
Linear	± 15%	± 20%

Sweep

Sweep time: 50 ms to 1000 s
Accuracy: ± 5%
Sweep trigger: Free run, line, single, video, external

Demodulation

Spectrum demod:
Modulation type AM and FM
Audio output Internal speaker, earphone jack (adjustable volume)
Marker pause time 100 ms to 1000 s

Inputs/Outputs

I/O: GPIB IEEE–488 bus connector rear panel
RS232 D–SUB 9 pin rear panel (Option)
Centronics D–SUB 25 pin rear panel

General Specifications

Temperature:
Operating temperature 0 to 50°C
Storage temperature –20 to 60°C
Humidity RH 85% max.
Power supply: 100 to 120 VAC, 220 to 240 VAC, 50/60Hz, Max. 300 VA
Mass: 16.5 kg max.
Dimensions: 178 (H) × 350 (W) × 420 (D) mm
(excluding handle, feet and front cover)
Memory card: 2–slot, front panel
Connector JEIDA– ver 4.2/PCMCIA 2.1

Accessories

Power cable: A01412
Input cable: MC – 61
Converter adapter: JUG – 201 A–U
Power fuse: 21806.3 (6.3 A)

Options

Option 15 : Program Loader
Option 16 : EXT. MIX. 26.5 to 40 GHz
Option 17 : EXT. MIX. 40 to 60 GHz