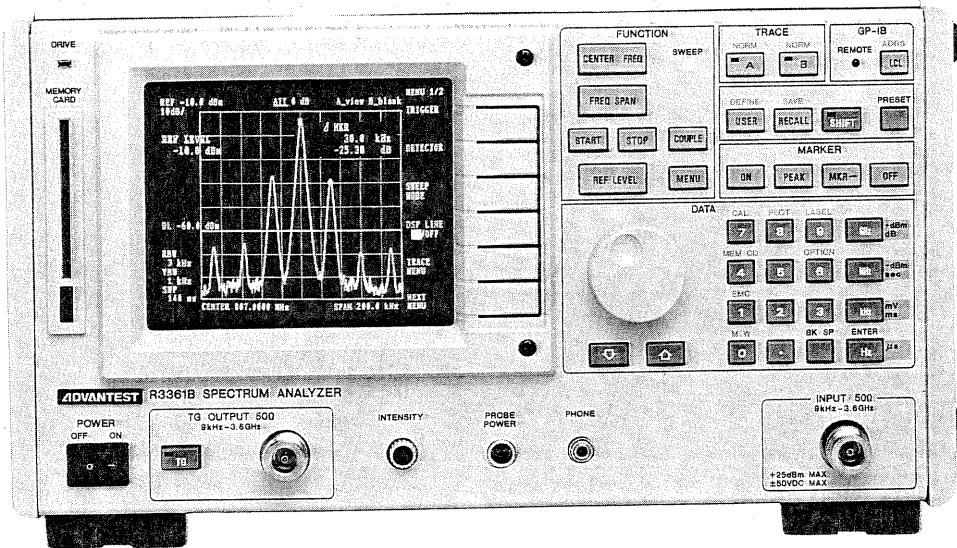


Spectrum Analyzers

9 kHz to 2.6 GHz/3.6 GHz

R3261/3361 Series

- Total Level Accuracy of 1 dB (Typ.)
- User-Defined Functions
- Measuring Window Function
- 120 dB Display Range



R3261/3361 Series Spectrum Analyzers

The R3261/3361 Series spectrum analyzers use a synthesized technique to cover wide frequency bands: 9 kHz to 2.6 GHz (R3261A/3361A) or 9 kHz to 3.6 GHz (R3261B/3361B). ADVANTEST's long experience in RF technology and software calibration technology have enabled a total level accuracy of 1 dB. These compact analyzers also offer high-performance functions such as the 1 Hz resolution frequency setting function and 1 Hz resolution frequency counter function.

ADVANTEST's spectrum analyzers are easier to operate than conventional analyzers because they incorporate new ideas such as the user-defined functions and measuring window function. Weighing only 15 kg, the analyzers are small and useful for measurement and analysis of all kinds, from maintenance to research and development. The EMC measuring function, field strength measuring function, and audiovisual equipment analysis function for VCRs and 8-mm video equipment are also available.

The analyzers have an internal controller function, parallel I/O, and GPIB interface for line connection and automatic measurement, so the user can create the ideal system configuration.

■ 1 Hz Resolution Synthesizer

The R3261/3361 Series portable spectrum analyzers are based on the synthesized system, so the central and start/stop frequencies can be set with a resolution of 1 Hz. Accurate and quick setting of the measuring frequencies is extremely useful when the frequency of a radio system already known is measured or the start/stop frequency must be set correctly. The synthesizer, featuring 1 Hz resolution, is a powerful tool ideal for waiting receiving or spot measurement in the zero span mode.

■ 1 Hz Resolution Frequency Counter

The frequency counter built into the R3261/3361 Series features 1 Hz resolution. One of the advantages of analyzers is that they can measure the modulated frequency or spurious frequency of a radio system that cannot be measured with an ordinary frequency counter, simply by setting a marker. The R3261/3361 Series model can measure a frequency very accurately in the counter mode even when the marker point is slightly off the peak point. In addition, the ability to measure weaker signals than a frequency counter can extend the application range from broadband panoramic measurement to weak signal measurement.

■ Choose From 6 Models, Depending Upon Your Application

The R3261/3361 consists of 6 models, enabling selection for various application requirements. All models feature high performance and set of features and functions for various applications.

	R3261A	R3261AN	R3261B	R3361A	R3361AN	R3361B
Frequency range	9 kHz to 2.6 GHz	9 kHz to 2.6 GHz	9 kHz to 3.6 GHz	9 kHz to 2.6 GHz	9 kHz to 2.6 GHz	9 kHz to 3.6 GHz
Input impedance	50 Ω	75 Ω	50 Ω	50 Ω	75 Ω	50 Ω
Built-in tracking generator function	N/A			Standard		
Built-in memory card function				Standard		
Built-in controller function				Optional		
Occupied bandwidth measurement/adjacent-channel leakage power measurement				Optional		

Manual Sweep Function for Spot Measurement

The sweep time in EMC or QP measurement is extremely long to complete measurement. But the sweep time when measuring the peak value is extremely short and measurement can be done in a short time. So the QP value is usually measured first at the peak, then at the necessary position. The manual sweep function of the R3261/3361 Series is a very handy and unique function to measure only a point specified by turning the rotary knob on the front panel. If you use the manual sweep function for QP measurement even once, you will wonder how you ever managed without it.

This is recommended for EMC measurement using ADVANTEST's spectrum analyzer.

Create Your Own Unique Menu

The R3261/3361 Series spectrum analyzers are very functional, yet very easy to use because of the user-defined functions and define functions. The microprocessor built in to many measuring instruments improved the measurement accuracy and functions but they also made the systems very difficult to use. As a solution to this problem, the software menu method was developed. However, this method was most of these problems.

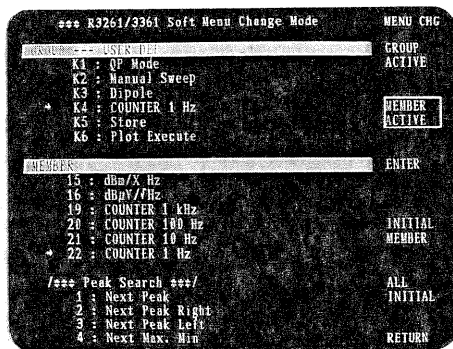
User-defined function

If the user defines a necessary function on the USER key in the same way as on the function keys of a personal computer.

A unique menu can be created.

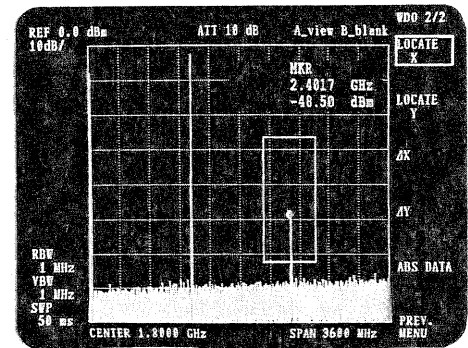
Define function

The define function enables the user to change the software key menu manually. With this function, the user can create a unique system by changing the key functions that were defined before the system was shipped from ADVANTEST.



Fast Measurement with Measuring Window Function

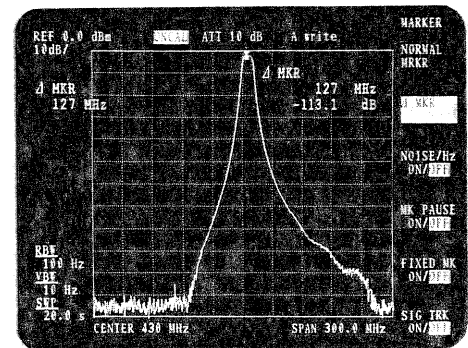
The R3261/3361 Series models have a measuring window function. In conventional analysis, the user picks up only necessary portions from all the display data with a marker. However, you may need to specify a certain range of data for the analysis. This is accomplished by the measuring window function. The window specification may include not only a frequency but a level. The frequency and level are not fixed but can be specified to arbitrary values for flexible analysis. In addition, since marker and sweep operations are possible in a range set by the frequency and level, the measuring time can be reduced greatly.



Internal Tracking Generator and 120 dB Display Range

The R3361A/3361B has an internal tracking generator (TG) to dynamically measure the resonant characteristic of a high Q element or the frequency characteristic of a dielectric filter. In addition, the 120 dB dynamic-range display guarantees a 110 dB dynamic measurement range for frequency characteristic measurement with the tracking generator. Therefore, even when the filter has a great attenuation range, it can be measured one at a time.

The wide frequency range (R3361A: 9 kHz to 2.6 GHz, R3361B: 9 kHz to 3.6 GHz) enables the passing characteristic of sub-microwave filters for the new mobile communication systems and their reflection characteristics using bridges to be measured with high precision. A log sweep is also available.



Controller Function for Automatic Measurement (Optional)

An optional controller function can be installed in the R3261/3361 Series. The function understands the easy-to-use BASIC language and controls not only itself but also other GBIB equipment connected through the GPIB interface. When creating a program, you can use your own terminal or personal computer in the terminal mode. The parallel I/O controls parallel I/O equipment including small jigs for automatic measurement, according to instructions from the controller function. This function works efficiently in a small space at low cost, so it is ideal for small systems. The created program, measuring conditions, and waveform data can be stored in the IC memory so that the program can be run using this unit alone.

R3361B
Hz to 3.6 GHz
50 Ω

Spectrum Analyzers

9 kHz to 2.6 GHz/3.6 GHz

R3261/3361 Series

Specifications

Frequency Specifications

Measuring frequency range:

R3261A/3261B/3361A/3361B	R3261B/3361B
9 kHz to 2.6 GHz	9 kHz to 3.6 GHz

Central frequency setting resolution: 1 Hz

Central frequency display accuracy:

- ±(3% of span + central frequency × reference oscillator accuracy + 20 Hz) ... at span ≤ 2 MHz
- ±(2% of span + central frequency × reference oscillator accuracy + 50 kHz) ... at span > 2 MHz

Reference oscillator:

Switching by internal or external input (10 MHz)

Internal reference oscillator stability: ±2 × 10⁻⁸/day, ±2 × 10⁻⁷/year

Frequency span:

Linear mode 1 kHz to 2.6 GHz and zero (R3261A/AN/3361A/AN)
1 kHz to 3.6 GHz and zero (R3261B/3361B)

Log mode 1, 2, or 3 decades selected between 10 kHz and 1000 MHz

Frequency span accuracy: ≤ ±3% of span Span > 2 MHz
≤ ±5% of span Span ≥ 2 MHz

Frequency stability:

Residual FM 50 kHzp-p or less Span > 10 MHz
2 kHzp-p or less 10 MHz ≥ Span > 2 MHz
20 Hzp-p or less Span ≤ 2 MHz

Frequency drift 300 Hz/min or less Span ≤ 2 MHz

Sideband noise: ≤ -105 dBc/Hz at 20 kHz offset ≤ 3.0 GHz
≤ -101 dBc/Hz at 20 kHz offset ≤ 3.6 GHz

Resolution:

3 dB bandwidth 30 Hz to 1 MHz; switchable in 1 to 3 steps
6 dB bandwidth 200 Hz, 9 kHz, 120 kHz
Selectivity ≤ 15:1 (60 dB:3 dB)
Bandwidth accuracy ≤ 20%

Marker accuracy:

Normal mode
Central frequency display accuracy + span accuracy

Counter mode
Display frequency × reference oscillator accuracy ±1 count

Amplitude Specifications

Amplitude measuring range:

R3261A/3261B/3361A/3361B	R3261AN/3361AN
-130 dBm to +25 dBm	-19 dBμV to +132 dBμV

Screen display range:

Log mode 120 dB (10 dB/div), 80 dB (10 dB/div), 50 dB (5 dB/div),
20 dB (2 dB/div), 10 dB (1 dB/div)

Linear mode 10 div

QP mode 80 dB (10 dB/div) when measuring range is 70 dB

Display linearity:

Log mode ±2.0 dB/110 dB, ±1.5 dB/70 dB, ±1.0 dB/10 dB,
±0.2 dB/1 dB

Linear mode ±5% of full scale

QP mode ±2.0 dB/70 dB, ±1.0 dB/40 dB

Reference level display range:

R3261A/3261B/3361A/3361B	R3261AN/3361AN
-109.9 dBm to +40.0 dBm 0.715 μV to 22.4 V	+0.1 dBμV to +150 dBμV 1.01 μV to 31.6 V

Reference level accuracy: after automatic calibration

	R3261A/3261B/3361A/3361B	R3261AN/3361AN
≤ ±0.3 dB	0 dBm to -50 dBm	+110 dBμV to +60 dBμV
≤ ±0.7 dB	+20 dBm to -70 dBm	+130 dBμV to +40 dBμV

Dynamic range:

Average noise level

R3261A/3261B/3361A/3361B	R3261AN/3361AN
-120 dBm + 1.55 f (GHz) dB	-10 dBμV + 1.55 f (GHz) dB

Resolution bandwidth: 300 Hz, video band width: 1 Hz, input attenuator: 0 dB, and frequency range: 10 MHz or more

Secondary and tertiary distortion ≤ -70 dB at -30 dBm input,

Input attenuator: 0 dB, frequency: 10 MHz or more

Frequency response

R3261A/3261B/3361A/3361B	R3261AN/3361AN
≤ +0.5 dB 100 kHz to 2 GHz ≤ +1.0 dB 9 kHz to 3.6 GHz	≤ +0.5 dB 100 kHz to 2 GHz ≤ +1.5 dB 9 kHz to 3.6 GHz

Log mode, input attenuator: 10 dB, temperature: 20°C to 30°C

Residual response

R3261A/3261B/3361A/3361B	R3261AN/3361AN
≤ -100 dBm Termination: 50 Ω	≤ 11 dBμV Termination: 75 Ω

Input attenuator: 0 dB, frequency: 500 kHz or more

Resolution bandwidth switching accuracy:

≤ ±0.3 dB after automatic calibration

Video filter:

1 Hz to 1 MHz; switchable in 1 or 10 steps

Sweep Specifications

Sweep time: 50 ms to 1000 s and manual sweep

Sweep time accuracy: ≤ 3%

Trigger modes: FREE RUN, LINE, VIDEO, EXT, TV-V, and SINGLE

Input Specifications

Input impedance:

R3261A/3261B/3361A/3361B	R3261AN/3361AN
50 Ω	75 Ω

VSWR ≤ 1.5 100 kHz to 2 GHz
VSWR ≤ 2.0 9 kHz to 3.6 GHz } at input attenuator ≥ 10 dB

Input connector: N type

Maximum input level:

R3261A/3261B/3361A/3361B	R3261AN/3361AN
+25 dBm (attenuator ≥ 30 dB) ±50 VDC max.	+132 dBμV (attenuator ≥ 30 dB) ±50 VDC max.

Input attenuator: 0 to 50 dB in 10-dB steps

Input attenuator switching accuracy:

≤ 1.0 dB (≤ 2.0 GHz), ≤ 1.5 dB (≤ 3.6 GHz) at input attenuator 10 dB

Detection Modes: NORMAL, POSI, NEGA, and SAMPLE

Tracking Generator Specifications (R3361A/3361AN/3361B)

Frequency range: 9 kHz to 2.6 GHz (R3361A/3361AN)
9 kHz to 3.6 GHz (R3361B)

Output level range:

R3361A/3361B	R3361AN
0 dBm to -50 dBm	+105 dBμV to 55 dBμV

setting in 1-dB steps

Output level accuracy: ≤ ±0.5 dB (30 MHz, -10 dBm, 20°C to 30°C)

Spectrum Analyzers

Portable Size High Performance

R3261/3361 Series

Output level flatness:

R3361A/3361B		R3361AN	
≤ 0.7 dB	100 kHz to 1.0 GHz	≤ 0.7 dB	100 kHz to 1.0 GHz
≤ 1.5 dB	9 kHz to 2.6 GHz	≤ 1.5 dB	100 kHz to 2.0 GHz
≤ 2.0 dB	9 kHz to 3.6 GHz	≤ 2.0 dB	9 kHz to 2.6 GHz
} at -10 dBm output		} at +95 dBμV output	

	R3361A/3361B	R3361AN
Output level switching accuracy (at -10 dBm/+95 dBμV output)	≤ ±1.0 dB 100 kHz to 1.0 GHz ≤ ±2.0 dB 9 kHz to 2.6 GHz ≤ ±3.0 dB 9 kHz to 3.6 GHz	
Output spurious (at 0 dBm/+105 dBμV output)	Harmonic spurious ≤ -20 dB Non-harmonic spurious ≤ -30 dB	
TG leakage	≤ -110 dBm Frequency ≤ 3.0 GHz ≤ -100 dBm Frequency ≤ 3.6 GHz	≤ +1 dBμV
Output impedance	Approx. 50 Ω	
Output VSWR (at ≤ -10 dBm/+95 dBμV output)	≤ 1.5 100 kHz to 2 GHz ≤ 2.0 9 kHz to 3.6 GHz	Approx. 75 Ω
Output connector	N type	

Other Output Specifications

External memory function: IC memory card

GPIB data output/remote control: Data output and remote control through internal GPIB interface

Direct plotting: Hard copy output of all display data to R9833 or HPGL plotter through internal GPIB interface

Voice monitor output: AM ant FM with approx. 8 Ω earphone

Probe power source: ±15 V, 4-pin connector

General Specifications

Operating environment:

Ambient temperature 0°C to 50°C

Relative humidity 85% or less

Storage environment temperature: -20°C to 60°C

Power requirement: Specify when ordering

Option	Standard	40
Power-supply voltage	90 to 132	198 to 250

48 to 66 Hz

Power consumption: Less than 220 VA

Dimensions: Approx. 330(W) × 177(H) × 450(D) mm

Weight: Approx. 15 kg (R3261A/3261AN/3261B)

Approx. 17 kg (R3361A/3361AN/3361B)

CRT: 5.5-inch

Standard Accessories

Item	Model	Remarks
Power cable	A01402	
Input cable	MI-02	Connector UG-88/U BNC-BNC
Input cable	A01234	Connector BCP-C3 BNC-BNC (for N type only)
Connector adaptor	JUG-201A-U	N-BNC adaptor
Connector adaptor	BA-A165	NC-BNC adaptor (N type only)
Memory card		1-card

Options

Option 02: RS-232C Serial Interface

Option 04: Occupied bandwidth measurement/adjacent-channel leakage power measurement

Option 15: Controller function (including parallel I/O and serial I/O)

Option 12: Intermittent signal measurement

Option 70: Multi-marker option Max 8 points marker display

Recommended Accessories

R16211A Carrying case **A02804** Front cover

R16056A Transit case

A09505 Memory card (set of five 32 K-byte cards)

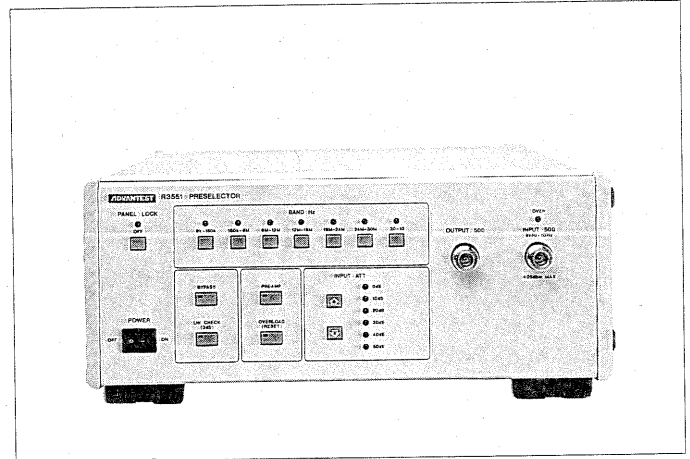
A09506 Memory card (set of five 128 K-byte cards)

A02034 Panel-mounted set

A02255 Rack-mounted set (conforming to JIS)

A02455 Rack-mounted set (conforming EIA standards)

Accessories (Sold separately)



R3551 Preselector (to be ordered with R3261/3361 series)

The R3551 Preselector helps a spectrum analyzer for EMI measurement. A spectrum analyzer can monitor all the frequencies panoramically and features high measurement speed. However, it is easily saturated by large input signals. The R3551 solves this problem and enables the analyzer to measure even 100 Hz, 0.044 μVsec, and 100 V large input signals meeting the CISPR standards.

- Prevention of spectrum analyzer from being saturated by 100 V, 0.044 μVsec, large input signals
- 30 dB higher sensitivity by the built-in preamplifier
- Completely interlocked with the spectrum analyzer
- Frequency correction amplifier for high-precision measurement
- Overload detector built in
- Linearity check function for easy saturation check
- GPIB

Specifications

Measuring range: 9 kHz to 1 GHz

Input connector: Approx. 50 Ω, N type

Output connector: N type

Input attenuator: 0 to 50 dB in 10-dB steps

Preamplifier: 30 dB ± 1.5 dB

Linearity check: 3 dB attenuator

Bypass circuit: 1.5 dB or less insertion loss (at 9 kHz to 1 GHz)

Input protection switch: Activated at +20 dBm ± 2 dB

Peak power: 100 W/10 μs or less

Sweep time:

50 ms or more at start frequency 230 MHz, span ≤ 200 MHz

1 s or more at start frequency ≤ 3 MHz, span ≥ 200 MHz at RBW

120 kHz, VBW 1 MHz

Frequency characteristic: ±2 dB

Bandwidth: 30 MHz (3 dB, typ.)

Off resonance: 40 dB (typ.)

Operating environment:

Temperature 0°C to +50°C

Relative humidity 85% or less

Power requirements: Specify when ordering

Option No.	Standard	32	42	44
Power-supply voltage	90 to 110	103 to 132	198 to 242	207 to 250

48 to 66 Hz, 50 VA or less

Dimensions: Approx. 330(W) × 132(H) × 450(D) mm

Weight: 11 kg or less