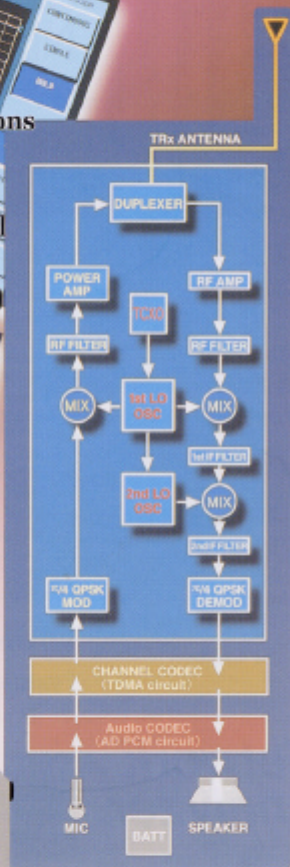


Proposal of Application-Specific and Optimum Quasi-Microwave Band Network Analyzers

- Measurement frequency range
40 MHz to 3.8 GHz R3764H/3765H Series
40 MHz to 8.0 GHz R3766H/3767H Series
- Three models available for all types of applications
Type A: Basic Model
Type B: Built-In SWR Bridge Model
Type C: Built-In S-Parameter Test Set Model
- High sweep speed
0.15 ms/point (with normalized calibration)
0.25 ms/point (with 2-port full calibration)



3.8/8.0GHz

R3764H/3765H
R3766H/3767H Series

NEW Network Analyzer

For Evaluation and Inspection of Digital Communication Devices

The R3764H/3765H/3766H/3767H series is a vector network analyzer which can measure the amplitude, phase, group delay time, and impedance of high-frequency electronic devices with high precision and high speed.

The series comes three different models with two measurement frequency ranges: 40 MHz to 3.8 GHz (R3764H/3765H Series) or 40 MHz to 8.0 GHz (R3766H/3767H Series). In addition, the use of newly developed high-speed signal processing architecture realizes high measurement speed of 0.15 ms/point (at normalized calibration) or 0.25 ms/point (at 2-port full calibration) with 10 kHz resolution bandwidth.

One of the major advantages of the series

is that it helps you choose the model which best suits your application.

The R3764H/3765H realizing low price with simple structure and a fluorescent character display tube is suitable for line use while the R3766H/3767H using a 7.8-inch large TFT color LCD is suitable both for line and engineering use. Each series comes with three different models including type A (basic model), type B (model with a built-in SWR bridge), and type C (model with a built-in S-parameter test set).

"Provides systems which best suit each individual application."

This is Advantest's design concept of the new network analyzer.

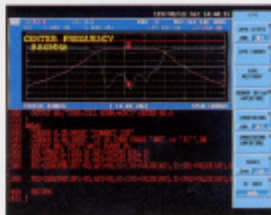
Power UP! R3764H/65H/66H/67H Series

Power UP 1 Further Improved High-speed Throughput The H series has greatly improved measurement throughput compared with the conventional R3764/65/66/67 series. For example, internal processing time is reduced for frequency setup changes and display channel switching, and the enhanced basic programmer function reduces arithmetic processing time up to the measurement result calculation, achieving high throughput for the entire measurement sequence.

Comparison of Conventional Models and H Series H Series

Item	Ratio	Conditions
Frequency setup change	2.4 times faster	201 points, 1 GHz span 10 GHz RBW
Display channel switching	2.1 times faster	201 points, 1 GHz span 10 GHz RBW, Dual OFF
Basic program function (built-in controller)	3.8 times faster	Sweep OFF
	2.8 times faster	Sweep ON

Power UP 2 Enhanced Display Features Display information including marker points and screen background as well as the displayed waveform can be indicated with optional colors. Any of 256 colors can be selected to generate an easily viewable display.



**Network
Analyzer**

Three Models Best Suiting Your Application

The R3764H/3765H/3766H/3767H series can be categorized into two groups: one accommodates system use (R3764H/3766H) and the other stand-alone use (R3765H/3767H). Each of the four series comes with three different models (types A, B, and C), i.e., a total of 12 different models are available.

Series for system use



32-line-by-8-character fluorescent character display

R3764AH/BH/CH
(3.8GHz)
R3766AH/BH/CH
(8.0GHz)

Series for stand-alone use



7.8-inch TFT color LCD

R3765AH/BH/CH
(3.8GHz)
R3767AH/BH/CH
(8.0GHz)

A type

Basic Model
R3764AH/3765AH/3766AH/
3767AH

With a built-in signal separator and two inputs, type A can perform simultaneous measurement for two devices. By connecting the S-parameter test set, it can measure 2-port devices; with the optional duplexer test set, it can measure a duplexer with three ports (ANT, RX, and TX terminals) which is used at the front section of mobile radio equipment. When the optional power amplifier test set is connected and a voltage & current generator (VIC) is used together, it can perform measurement on the power amplifier in portable phones. (In this case, however, extended network analyzer functions must be installed.)

B type

Built-In SWR Bridge Model for |Z| measurement
R3764BH/3765BH/3766BH/
3767BH

Type B incorporates a power splitter and a SWR bridge, allowing transmission and reflection characteristics to be measured efficiently at the same time. In addition, by executing 1-port calibration, measurement with higher accuracy is possible.

C type

Built-In S-Parameter Test Set Model
R3764CH/3765CH/3766CH/
3767CH

Type C incorporates the S-parameter test set mounting two SWR bridges, a power splitter, and a semiconductor switch for forward/reverse switching. It can measure forward characteristics (S11 and S21) and reverse characteristics (S22 and S12) with high accuracy in auto-reversing mode. By connecting the optional duplexer test adapter, it can measure a duplexer with three ports.

High Speed and High Accuracy Measurement

Recommended Point

High throughput with high speed sweep

0.15 ms/point

(with 10 kHz resolution bandwidth and 1-port full calculation)

0.25 ms/point

(with 10 kHz resolution bandwidth and 2-port full calculation)

The waveform update speed has importance in the adjustment process. The R3764H/65H/66H/67H Series achieves a waveform update speed of approximately 20 times per second (with 201 points, 100 MHz frequency span) even during execution of 2-port full calibration, thus realizing real-time tuning.

High Throughput Cuts Test Cost

High data transfer

In highly automated production lines of electronic parts, the time necessary to transmit to/receive from external computers affects the overall system throughput.

Binary Output Time of Trace Data (typical)

Points	64-bit Floating Point	32-bit Floating Point
401	25 msec.	20 msec.
801	45 msec.	30 msec.

In production lines of electronic devices, reduction of test cost is an essential issue. The R3764H/3765H/3766H/3767H series realizes the highest throughput in its class.

High instrument setup

In parts test, a variety of items are tested and therefore the setup time is essential.

Register Recall + Single Sweep Time (typical)

Points	64-bit Floating Point	32-bit Floating Point
201	810 msec.	900 msec.
401	1180 msec.	1280 msec.

(with 2-port full calibration, dual channel)

Recommended Point

Powerful 4-Channel/8-Trace Function with Simultaneous Display

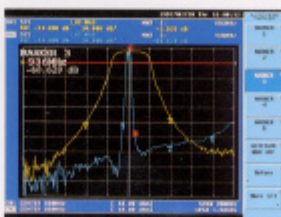
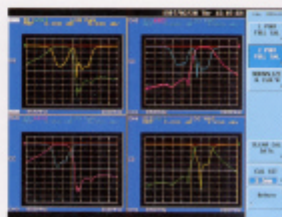
The R3765H/3767H series is provided with the 4-channel/8-trace function and simultaneous display is possible.

For example, when a 3-port test adapter is connected to the R3765CH/3767CH, simultaneous and realtime measurement of Tx/Rx characteristics of the duplexer is possible. Channels 1 and 3 measure four S-parameters of Tx and channels 2 and 4 measure those of Rx at the same time with a throughput of approx. 250 ms (with 201 points and 2-port full calibration). In addition, limit lines and multi marker function can be used for each of the four screens.

Recommended Point

100 dB Dynamic Range for Filter Test

For ripple evaluation in pass band and spurious check in stop band, as is the case with dielectric filters, measurement with a wide dynamic range is crucial. The R3764H/3765H/3766H/3767H series realizes 100 dB dynamic range with 10 Hz resolution bandwidth, making it suitable for testing of high-attenuation devices used in base stations of portable phones.

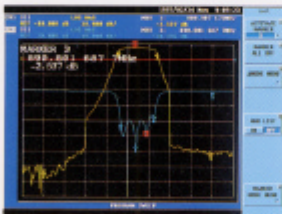


Recommended Point

Programmed Sweep Realizes High-Speed and High-Resolution Measurement

The R3764H/3765H/3766H/3767H series is provided with the programmed sweep function as standard which makes it possible to vary output power and resolution bandwidth (RBW) during sweep.

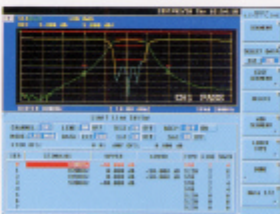
In evaluation of filter characteristics, for instance, measurement with high speed, high accuracy, and high reproducibility can be realized by varying resolution bandwidth and output power in pass or stop band.



Recommended Point

Limit Line Function for Adjustment and Test

The limit line function performs PASS/FAIL test based on the judgment value set by the limit line editor and then displays the test result. In addition, the color of limit lines and waveform data can be specified for each judgment area, allowing the user to make PASS/FAIL judgment at a glance during adjustment on the screen. In POLAR and Smith chart measurement, the ability to make limit judgment both for amplitude and phase realizes amplitude/phase adjustment for specified frequency ranges and automatic test result judgment.



Recommended Point

Trace Noise Level Is Mentioned in Low-Loss Filter Evaluation

With the latest digital mobile communication systems such as PHS and PDC, the demand for developing low-loss filters is increased in order to improve the battery output power. To measure loss level of several 0.1 dBs precisely, it is necessary to decrease trace noise generated in a network analyzer to 0.01 dBp-p or less. The R3764H/3765H/3766H/3767H series reduces trace noise to 0.007 dBp-p or less (typ.), i.e., 1/10 times the conventional level (in in-house comparison, with 1 kHz resolution bandwidth).

BASIC Controller Function Realizes ATE System

Testing with high throughput and high reliability is required for production of electronic components and devices. The controller function built in the R3764H/3765H/3766H/3767H series makes it possible to easily build a high-speed automatic test equipment (ATE) system which covers the adjustment to test processes without using any external computer.

The program for the R3764H/3765H/3766H/3767H series can be developed by using the optional keyboard or downloading programs from external computers. These programs has software compatibility and can be executed on any model of the series.



Program Editor and FDD Format

The built-in program editor of the R3764H/3765H/3766H/3767H series allows development, modification, and execution of programs only with a single unit of the R3764H/3765H/3766H/3767H series. (As for the R3764H/3766H series, an external monitor is required.) The series uses the MS-DOS floppy disk format to accommodate 720K-, 1.2M-, and 1.44M-byte types, allowing programs developed by an external computer to be loaded to the series. In addition, the world's standard SCPI commands are employed to realize program compatibility.



Parallel I/O and Barcode Input for System Use

The standard parallel I/O function is a communication function which is very useful for controlling the R3764H/3765H/3766H/3767H series, automatic machine handler, and tools. The barcode input function exhibits its power in tailoring an automatic production line ranging from modification of equipment setting conditions to process management for each device product, thus avoiding troubles due to human errors.



Built-in Functions Realizes Program Development and High-Speed System Throughput

A total of 69 macro commands are prepared for the built-in BASIC controller function. By developing sequential programs using these built-in functions, automatic data processing and analysis as well as measurement with high throughput can be realized.

Because the built-in functions are dedicated for measurement data analysis, the use of them not only makes program development easier but also remarkably reduces the number of processes.

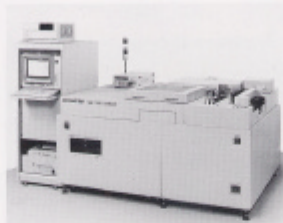


System Design Partnership

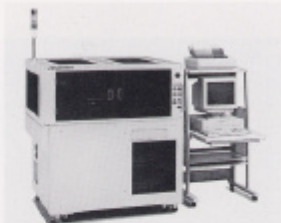
ADVANTEST is not only producing and selling network analyzers but also consults customer's automatic measurement system design including application software development and test handler designing through minute arrangement with the customer. Please contact ADVANTEST's sales office nearby. ADVANTEST is in total partnership with customers, covering both hardware and software.



<R2122C/S Power Amp. Test System>



<R2131 SMD Crystal Automatic Test System>



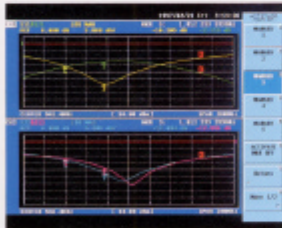
<R2133 SMD Filter Automatic Test System>

Isolator Measurement

■ For Intermediate Process

This process adjusts bi-directional characteristics of isolators used in digital mobile radio communication systems.

In this stage, it is necessary to adjust characteristics in realtime while measuring four S-parameters at the same time. The R3765CH/3767CH model with a built-in S-parameter test set for stand-alone use is recommended.



Measurement of Power Amplifier for Portable Phones

With the R3764H/3765H/3766H/3767H series, a test system which allows high-speed testing of MIC characteristics of power amplifier for digital mobile portable phones (majorly PDC/PHS) with high reproducibility can be configured. This system can perform simultaneous sweep for a network analyzer (R3764H/3765H/3766H/3767H) and a voltage & current generator (VIG), allowing evaluation of dynamic characteristics in short time while varying bias voltage.

Duplexer Measurement

When a 3-port test set or 3-port test adapter is connected, Rx and Tx characteristics of a duplexer used in PDC portable phones can be measured. Four S-parameters of each of Rx and Tx are measured at the same time and 4-channel/8-trace data are displayed on a single screen. In addition, limit lines and multi markers can be set for all the eight traces if necessary. The R3765CH/3767CH model with a built-in S-parameter test set for stand-alone use is recommended.

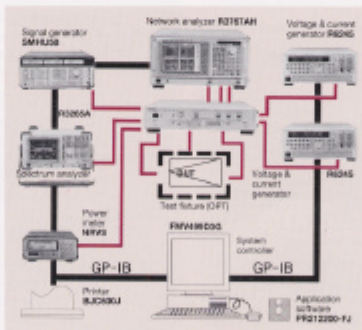
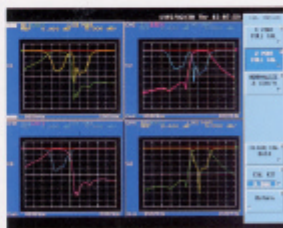


Fig. 1 Connection Diagram



Specifications

Measurement Functions

Sweep channel	2 channels (CH 1 and CH 2)		
Display channel	4 channels (CH 1, CH 2, CH 3, and CH 4)		
Trace	2 traces/channel		
Display parameter	Type A	Type B	Type C
	A/R, B/R	Transmission Reflection Transmission & reflection	S11, S21, S22, S12 S21 & S11, S12 & S22
Format	Log/linear amplitude, phase, and group delay, or real part + imaginary part of complex parameter (Z), R, X (at measurement with impedance conversion) (Y), G, B (at measurement with admittance conversion) Phase extension display function		
Smith chart (R3765H/3767H only)	Maker reading: Log/linear amplitude, phase, real part + imaginary part, R ₁ /X ₁ , G ₁ /B ₁		
Polar coordinates (R3765H/3767H only)	Maker reading: Log/linear amplitude, phase, real part + imaginary part		

Receiver Characteristics

Resolution bandwidth	10 kHz to 10 Hz (in 1 or 3 steps)		
Amplitude characteristics Amplitude resolution Dynamic accuracy	0.001 dB With respect to -20 dB below maximum input level of test port		
	0 to -10 dB	±0.3 dB (40 MHz ≤ f ≤ 3.8 GHz) ±0.8 dB (3.8 GHz ≤ f ≤ 8.0 GHz)	
	-10 to -20 dB	±0.05 dB (40 MHz ≤ f ≤ 3.8 GHz) ±0.2 dB (3.8 GHz ≤ f ≤ 8.0 GHz)	
	-20 to -50 dB	±0.05 dB	
	-50 to -80 dB	±0.10 dB	
	-80 to -70 dB	±0.15 dB	
	-70 to -80 dB	±0.40 dB	
	-80 to 90 dB	±1.00 dB	
Frequency characteristics	±1.0 dB -10 dBm, 25°C ±5°C		
Phase characteristics Measurement range Phase resolution Frequency characteristics Dynamic accuracy	±180° (Display for ±180° or more is possible by means of display extension function)		
	0.01°		
	±5° (-10 dBm, 25°C ±5°C) With respect to -20 dB below maximum input level of test port		
	0 to -10 dB	±5.0°	
	-10 to -20 dB	±0.3° (40 MHz ≤ f ≤ 3.8 GHz) ±0.8° (3.8 GHz ≤ f ≤ 8.0 GHz)	
	-20 to -50 dB	±0.3°	
	-50 to 60 dB	±0.4° (40 MHz ≤ f ≤ 3.8 GHz) ±0.8° (3.8 GHz ≤ f ≤ 8.0 GHz)	
	-60 to -70 dB	±1.5°	
	-70 to -80 dB	±4.0°	
	-80 to -90 dB	±8.0°	
Group delay time characteristics Range Measurement range Group delay time resolution Aperture frequency Accuracy	Calculated by the following expression: $f = \frac{\Delta\phi}{360 \times \Delta t}$ $\Delta\phi: \text{Phase}$ $\Delta t: \text{Aperture frequency (Hz)}$		
	1 ps to 250 ns 1 ps		
	Is equal to Δf and can be set to A × 2% to A × 100% for frequency span, with a resolution of A × 2%.		
	$A = \frac{100}{\text{measurement points} - 1}$		
	Phase accuracy		
	300 × Aperture frequency (Hz)		

Signal Source Characteristics

Measurement frequency	R3764H/3765H series		R3766H/3767H series	
	40 MHz to 3.8 GHz		40 MHz to 8.0 GHz	
Range	1 Hz			
Set resolution	±0.005 ppm			
Measurement resolution	±20 ppm (25°C ±5°C)			
Accuracy				
Output level (40 MHz to 3.8 GHz)	Type A		Type B	Type C
	+17 dBm to -8 dBm		+7 dBm to -18 dBm	+10 dBm to -15 dBm
	0.01 dB			
	±0.5 dB (50 MHz, 0 dBm, 25°C ±5°C)			
	25°C ±5°C			
	Type A	±0.4 dB	+12 dBm to -3 dBm	With respect to +7 dBm
		±0.7 dB	+17 dBm to -8 dBm	
	Type B	±0.4 dB	+2 dBm to -13 dBm	With respect to -3 dBm
		±0.7 dB	+7 dBm to -18 dBm	
	Type C	±0.4 dB	+5 dBm to -10 dBm	With respect to 0 dBm
	±0.7 dB	+10 dBm to -15 dBm		
Flatness	2.0 dB _{p-p} (25°C ±5°C) For type C, at test port			
	Output level fixed *Variable output level option (opt. 11)			
Output level (3.8 GHz to 8 GHz) (R3766H/3767H only)	Type A		Type B	Type C
	-3 dBm or more		-16 dBm or more	-13 dBm or more
Output impedance	50 ohms			
Signal purity Harmonic distortion Non-harmonic spurious Phase noise	≤ -20 dBc (at maximum output, 40 MHz to 3.8 GHz)			
	≤ -25 dBc (at maximum output, 40 MHz to 3.8 GHz)			
	-85 dBc + 20 log (f/40 MHz) 10 kHz offset, 1 Hz bandwidth, at maximum output			
Sweep function Sweep parameter Maximum sweep range Frequency Signal level	Frequency, signal level			
	R3764H/3765H series		R3766H/3767H series	
	40 MHz to 3.8 GHz		40 MHz to 8.0 GHz	
	40 MHz to 3.8 GHz			
	Type A		Type B	Type C
	+17 dBm to -8 dBm		+7 dBm to -18 dBm	+10 dBm to -15 dBm
	3.8 GHz to 8 GHz			
	Type A		Type B	Type C
	-3 dBm or more		-16 dBm or more	-13 dBm or more
	Sweep type	Linear/log frequency sweep, partial and arbitrary frequency sweep, level sweep, and CW (single frequency) sweep		
Sweep time	0.15 ms/point (with normalized calibration)			
	0.25 ms/point (with 2-part full calibration) The minimum sweep time differs according to measurement for mat, type of error correction, sweep width per point, number of measurement points, and IF bandwidth.			
Measurement point	3, 6, 11, 21, 51, 101, 201, 301, 401, 601, 901, or 1201 points			
Sweep trigger	Either "Continuous, hold, single sweep" or "External trigger" can be selected.			
Sweep mode	Dual sweep			
	Sweeps 2 channels (CH 1 and CH 2) with the same frequency range.			
Alternate sweep	Sweeps 2 channels (CH 1 and CH 2) with different sweep types and frequency ranges.			

Test Port Characteristics

Test port	25°C ±5°C	
Load matching	18 dB	40 MHz to 2.6 GHz
	16 dB	2.6 GHz to 3.8 GHz
	14 dB	3.8 GHz to 8.0 GHz (R3766H/3767H)
Directivity	25°C ±5°C	
	30 dB	40 MHz to 2.6 GHz
	26 dB	2.6 GHz to 3.8 GHz
	22 dB	3.8 GHz to 8.0 GHz (R3766H/3767H)
Crosstalk	R3764H/3765H series 25°C ±5°C	
	Types A and B	Type C
	90 dB	90 dB (40 MHz to 2.6 GHz) 85 dB (2.6 GHz to 3.8 GHz)
	R3766H/3767H series 25°C ±5°C	
	Types A and B	Type C
	90 dB (40 MHz to 3.8 GHz) 80 dB (3.8 GHz to 5.0 GHz) 70 dB (5.0 GHz to 8.0 GHz)	90 dB (40 MHz to 2.6 GHz) 85 dB (2.6 GHz to 3.8 GHz) 70 dB (3.8 GHz to 5.8 GHz) 60 dB (5.0 GHz to 8.0 GHz)
Connector	Type N (F), 50 ohms	
Noise level	With respect to -20 dB below maximum input level of test board	
	-90 dB	3 kHz bandwidth
	-100 dB	10 Hz bandwidth
Maximum input level	Types A and B	Type C
	0 dBm	+15 dBm (40 MHz to 3.8 GHz) +12 dBm (3.8 GHz to 8 GHz)
Input burning level	+21 dBm, ±30 VDC	
Maximum port bias	±30 VDC, 0.5 A (Type C only)	

Error Correction Function

Normalized	Corrects frequency response (amplitude and phase) at transmission and reflection measurement.
1-port calibration	Corrects errors due to directivity, frequency response, and source matching at reflection measurement. (For error correction, short/open/load calibration tools are required.)
2-port calibration	Corrects errors due to directivity, frequency response, source matching, load matching, and isolation at transmission and reflection measurement. (Type C only)
Data averaging	Averages data (vector value) for each sweep. Average factor can be set to 2 to 999.
Data smoothing	Obtains moving average between adjacent measurement points.
Electrical length correction	Adds measured phase and group delay time and equivalent electrical length or delay time.
Phase offset correction	Adds measured phase and a constant phase offset.
Correction by frequency interpolation	In frequency interpolation mode calibration, calculates error coefficient even when frequency and number of horizontal axis points are changed. Changes in frequency range (start/stop) are applied for the frequency range at initial calibration.

Connection of External Equipment

External display signal	15 pin D-SUB connector (VGA)
GBIB data output & remote control	Conforms to IEEE488.
Parallel I/O	TTL level, 8 bit output (2 ports) 4 bit input and output (2 ports)
Serial I/O	Conforms to RS232.
Keyboard I/O	Conforms to IBM PC-AT.
External reference frequency input	Input frequency range: 1, 2, 5, and 10 MHz ±10 ppm 0 dBm (50 ohms) or less
Probe power	±15 V ±0.5 V, 300 mA

Display Unit

R3764H/3766H series	Fluorescent character display tube, green 256 × 64 dots Character display, 32 lines × 8 characters
R3765H/3767H series	7.8 inch TFT color LCD 640 × 480 dots Log/linear Cartesian coordinate, polar coordinate, and Smith chart (impedance/admittance display) Single channel 2 channels (Overlapped display, separated display) 4 channels (Separated display)
Measurement condition display	Start/stop, center/span, scale/DIV reference level, marker value, soft key functions, warning messages
Reference line position	Top (100%) to bottom (0%) of vertical-axis memory
Auto scale	Sets reference value and scale so that measured trace be displayed in the best form.
Brightness	Backlight can be turned ON or OFF.

Marker Function (R3765H/3767H only)

Marker display	Marker reading can be converted into display value corresponding to each measurement format.
Multi marker	10 markers can be set independently for each channel.
Delta marker	Each of 10 delta markers can be specified as reference marker and delta value between markers can be measured.
Marker couple	Markers of each channel can be set in coupled or independent manner.
Analysis of specified section	Marker search for section specified with Δ marker can be performed.
MRK search	MAX search, MIN search, and NEXT search
Marker tracking	Search operation for each sweep.
Target search	Calculates bandwidth, center frequency, and Q for -X dB point. Frequency for phase 0° and frequency width of ±X° can be searched for.
MRK→	MRK→reference value, MRK→START, MRK→STOP, MRK→CENTER
Limit line function	

Programming Function

BASIC controller function	The R3764H/3765H/3766H/3767H series and any other measuring instruments with GPIB interface can be controlled by means of standard controller function.
Built-in functions	High-speed analysis of measurement data is possible using built-in functions.
FDD function	Conforms to MS-DOS format Accommodates 3 modes (DD 720 kb, HD 1.2 MB/1.4 MB)
Program Editor	for Built-in BASIC programming

General Specifications

Operating environment	When FDD is used	Temperature range: +5 to +40°C Humidity range: 80% or less (without condensation)
	When FDD is not used	Temperature range: 0 to +50°C Humidity range: 80% or less (without condensation)
Storage environment	Storage temperature range: -20 to +80°C	
Power voltage	100 to 120 VAC, 220 to 240 VAC, 48 to 66 Hz Automatic switching between 100 VAC and 200 VAC lines	
Power consumption	300 VA or less	
Dimensions	Approx. 424 (width) × 226 (height) × 400 (depth) mm	
Weight	15 kg maximum (R3764H/3766H series) 16 kg maximum (R3765H/3767H series)	

Accessories (2)

Accessory List

Accessory product name	50 ohms	75 ohms	Remarks
Standard termination	26N50	26N75 (Type N, 4 GHz)	Wiltron
Calibration open/short connector	22N	22N75 (Type N, 2 GHz)	Wiltron
Calibration kit	MODEL 9617A3 (Type N DC to 18 GHz) MODEL 9617H3 (3.5 mm DC to 4 GHz) MODEL 9617F3 (3.5 mm DC to 18 GHz)		Meury Meury Meury
SWR bridge	ZRB2VAR.52 (5 to 3000 MHz) ZRB2VAR.53 (5 to 2500 MHz) ZRB2VAR.73 (5 to 2000 MHz)	ZRA (10 kHz to 2.4 GHz)	Rohde & Schwarz Rohde & Schwarz Rohde & Schwarz Rohde & Schwarz
Conversion adapter	JUG-201A/U (N-BNC) HRM-554S (N/P)-SMA (J) HRM-555 (N/P)-SMA (P) N-A-PP (Type NP-NPN through) N-A-JJ (Type N through)	BA-A165 (N-BNC, DC to 1.5 GHz)	Hirose Electric Co., Ltd. Hirose Electric Co., Ltd. Hirose Electric Co., Ltd.
Impedance converter	ZT-1028B ZT-130NC		Tamagawa Electronic Co., Ltd. Tamagawa Electronic Co., Ltd.
Power splitter	MODEL 1870A (DC to 18 GHz) RSDVU4 (0 to 1500 MHz)		2 branches (Wineshell) 3 branches (Rohde & Schwarz)
Cable	A01267 A01261-16 A01252-030 (Jun-fron cable) A01253-030 (Jun-fron cable) DGM010-00500AE (Jun-fron cable) DGM010-00300EE (Coaxial cable)		PC98 to VGA conversion 16cm BNC 30cm N(P)-N(P) 30cm APC3.5mm (J)-APC3.5mm (J) 50cm N(P)-APC3.5mm (J) 30cm N(P)-N(P)
External CRT	MF-8615		Iiyama Electric Co., Ltd.
Full keyboard	N860-8520-T101		Fujitsu Co., Ltd.
Ten keyboard	N860-8517-T102		Fujitsu Co., Ltd.
Foot switch	OFL-TV6-B-S3		
Rail set	A02642		
Rack mount set	A02712(EIA)/A02713(JIS) w/ handles		
Rack mount set	A02722(EIA)/A02723(JIS) w/o handles		
Transit case			
Centronics-serial converter			

ZRB2VAR-52/53/73 Directivity Bridge (Recommended)



Roblo & Schwarz

For measurement of signal reflected from device under measurement

Specifications

Model	ZRB2VAR-52	ZRB2VAR-53	ZRB2VAR-73
Frequency range	5 to 3000 MHz	5 to 2500 MHz	5 to 2000 MHz
Impedance	50 ohms		
Directivity	≥ 46 dB 5 to 2000 MHz ≥ 40 dB 2000 to 2500 MHz ≥ 34 dB 2500 to 3000 MHz	≥ 40 dB	≥ 40 dB
Test port matching	≥ 28 dB 5 to 2500 MHz ≥ 22 dB 2500 to 3000 MHz	≥ 23 dB	≥ 20 dB 5 to 1500 MHz ≥ 18 dB 1500 to 2000 MHz
Insertion loss	Total	13 dB	14 dB
	Input port	7 dB	8 dB
	Output port	6 dB	6 dB
Accuracy (r. Reflection coefficient measured)	$0.005 + 0.051r/2$ 5 to 2000 MHz $0.01 + 0.051r/2$ 2000 to 2500 MHz $0.02 + 0.081r/2$ 2500 to 3000 MHz	$0.01 + 0.071r/2$ 5 to 2500 MHz	$0.01 + 0.11r/2$ 5 to 1500 MHz $0.01 + 0.13r/2$ 1500 to 2000 MHz
	Maximum input power	0.5 W	
Connector	Type N (f)		
Operating temperature range	0°C to +50°C		

22N Calibration Open/Short Connector (Recommended)



Wiltron

- **Frequency range:**
DC to 18 GHz
- **Impedance:**
50 ohms
- **Connector:**
Type N

26N50 Standard 50 Ohm Terminator (Recommended)



Wiltron

- **Frequency range:**
DC to 18 GHz
- **Impedance:**
50 ohms
- **VSWR:**
1.002 + 0.003f (GHz)
- **Connector:**
Type N

Model 9617A3/F3 Calibration Kit (Recommended)



Model 9617

The Model 9617 series is a calibration kit used to calibrate a network analyzer, which consists of male and female connectors for each of short, open, and termination. This series comes with five different types. Select the most appropriate type depending on the connector type and frequency range required. For other frequencies and connectors, contact Advantest's sales office nearby.

	Model 9617A3	Model 9617F3
Impedance	50 ohms	50 ohms
Frequency	DC to 18 GHz	DC to 18 GHz
VSWR	1.02 (DC to 2 GHz) 1.04 (2 GHz to 4 GHz) 1.06 (4 GHz to 18 GHz)	1.02 (DC to 2 GHz) 1.05 (2 GHz to 4 GHz) 1.10 (4 GHz to 18 GHz)
Configuration	Ni(m) short Ni(f) short Ni(m) open Ni(f) open Ni(m) termination Ni(f) termination Case	3.5 mm (m) short 3.5 mm (f) short 3.5 mm (m) open 3.5 mm (f) open 3.5 mm (m) termination 3.5 mm (f) termination Case

Digital Mobile Communication Devices Proposal of Optimum Models by Application and Process

Test device		Frequency			3.8GHz									8.0GHz								
		Application			Preprocess	Intermediate process	Test process	System use			Stand-alone use			System use			Stand-alone use					
								R3764			R3765			R3766			R3767					
								AH	BH	CH	AH	BH	CH	AH	BH	CH	AH	BH	CH			
For mobile station	Antenna						<input type="checkbox"/>							⊙	○							
	Dielectric material	Duplexer		<input type="checkbox"/>				⊙	○	○												
		Filter		<input type="checkbox"/>				⊙	○	○								⊙				
	Antenna switch			<input type="checkbox"/>										⊙				○				
	Isolator			<input type="checkbox"/>							○	○	⊙									
	Power divider										○	○	⊙									
	SAW filter		<input type="checkbox"/>				⊙									○		⊙				
	Power amplifier			<input type="checkbox"/>										○		⊙						
	Chip inductor			<input type="checkbox"/>					⊙		○											
	Chip LC filter			<input type="checkbox"/>					⊙		○							○				
	For base station	Antenna			<input type="checkbox"/>										⊙	○						
		Cable			<input type="checkbox"/>													○	⊙			
		Filter			<input type="checkbox"/>										○				⊙			
Circulator				<input type="checkbox"/>										○				⊙				
Power amplifier				<input type="checkbox"/>														⊙				

Please be sure to read the product manual thoroughly before use.

Technology Support on the Leading Edge

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