6   SPECIFICATIONS

Note: If there is no other description, these specifications are guaranteed in the temperature range of 25°C ± 5°C

(1)   Measurement function

Measurement channel	2 channels (4 trace display)	
Measurement parameter	A/R, B/R, A/B, R, A, B A/R, R, A A	(R3752AH, R3753AH) (R3752BH, R3753BH) (R3752EH, R3753EH)
Measurement format	R3753H series	R3752H series
Rectangular display	Log/Linear magnitude, Phase, Group delay, the real part and the imaginary part of a complex parameter IZI, R, X (When performing the measurement of the Impedance conversion) IYI, G, B (When performing the measurement of the Admittance conversion) Phase extension display	
Smith chart	The marker provides readouts of Log/linear amplitude, Phase, the real part + the imaginary part, R + jX, G + jB	
Pole coordinate display	The marker provides readouts of Log/linear amplitude, Phase, the real part + the imaginary part	

(2)   Source characteristics

Frequency characteristic
    Range
    Resolution
    Stability
    Accuracy
	5Hz to 500MHz
	0.1Hz
	$\pm 5 \times 10^{-6}$/Day (25 $\pm$ 5°C)
	$\pm$20ppm (25 $\pm$ 5°C)

Output power characteristic
    Range
    Resolution
    Accuracy
    Linearity
	+21dBm to -63dBm (Output port 1)
	0.1dB
	$\pm$0.5dB (0dBm, 50MHz, 25 $\pm$ 5°C)
	(50MHz, 25 $\pm$ 5°C)
	
	<table><tr><td>+21dBm to -35dBm</td><td>$\pm$0.5dB</td></tr><tr><td>-35dBm to -63dBm</td><td>$\pm$1.5dB</td></tr></table>

Flatness	(0dBm, 25 $\pm$ 5°C) <table><tr><td>5Hz to 100kHz</td><td>$\pm$4.0dB</td></tr><tr><td>100kHz to 1MHz</td><td>$\pm$2.0dB</td></tr><tr><td>1MHz to 300MHz</td><td>$\pm$1.5dB</td></tr><tr><td>300MHz to 500MHz</td><td>$\pm$2.0dB</td></tr></table>
Impedance	(Output port 1) Nominal 50Ω Return loss 13dB or more (0dBm, typical)

Spectral purity
    Harmonic distortion
    Non-harmonic spurious signal
    Phase noise
	(25 $\pm$ 5°C)
	$\leq$ -20dBc
	$\leq$ the bigger one of -30dBc or -70dBm
	$\leq$ -75dBc/Hz (10kHz offset)

Sweep characteristics
    Sweep parameter
        Range
 	
        Range setting
    Sweep type
 	
    Sweep time
    Measuring point
    Sweep trigger
    Sweep mode
        Dual sweep
 	
        Alternate sweep
	Frequency, Signal level
	Frequency sweep: Same as the Frequency characteristics
	Level sweep: +21dBm to -43dBm
	Start/Stop or Center/Span
	Linear sweep and logarithmic sweep, available for a user-specified segment, level sweep
	0.1ms/point (RBW 10kHz)
	3, 6, 11, 21, 51, 101, 201, 301, 401, 601, 801, 1201 points
	Repeat, Single, External
	
	Sweeps frequency for each channel in the same frequency range.
	Sweeps frequency for each channel in different sweep ways and different frequency ranges.

Output format	
Output	Single, Dual: (R3752AH/BH, R3753AH/BH) Single: (R3752EH, R3753EH)
Connector	Type BNC female, 50Ω
Power splitter (Output port 2)	R3752AH/BH, R3753AH/BH only
Insertion loss	6dB (typical)
Amplitude tracking	<100MHz 0.1dB (typical) ≥100MHz 0.2dB (typical)
Phase tracking	1° (typical)
Equivalent output SWR	<100MHz 1.2 (typical) ≥100MHz 1.4 (typical)

(3)   Receiver characteristics

Input characteristics Input channel	3cH (R3752AH, R3753AH) 2cH (R3752BH, R3753BH) 1cH (R3752EH, R3753EH)
Frequency range	5Hz to 500MHz
Impedance	Nominal: 50Ω, 1MΩ/20pF or less

Return loss (25 ±5°C)

	ATT 0dB	ATT 20dB
< 300MHz	> 20dB	> 23dB
≥ 300MHz	> 15dB	> 20dB

Maximum input level

Input impedance	ATT 0dB	ATT 20dB
50Ω	-20dBm	0dBm
1MΩ	22.4mV	224mV

Input damage level	50Ω +23dBm, 0VDC 1MΩ ±3V

Noise level (ATT AUTO (for 100kHz or less, ATT = 0dB) at 25 ± 5°C)

	RWB 10kHz	3kHz	1kHz	300Hz	100Hz
5Hz to 500kHz	min f 200kHz -90dBm	min f 60kHz -95dBm	min f 20kHz -100dBm	min f 6kHz -100dBm	min f 2kHz -100dBm
500kHz to 300MHz	-105dBm	-110dBm	-115dBm	-115dBm	-115dBm
300MHz to 500MHz	-105dBm	-110dBm	-110dBm	-110dBm	-110dBm

Resolution band width (RBW)	10kHz to 3Hz (1, 3 steps)

Input crosstalk (25 ± 5°C)   ATT 0dB, RBW 30Hz (R3752AH/BH, R3753AH/BH)

20kHz to 500kHz	105dB
500kHz to 300MHz	115dB
300MHz to 500MHz	110dB

6 SPECIFICATIONS

Source crosstalk (25 ± 5°C)	(at +15dBm output level, ATT = 0dB)	
	20kHz to 500kHz	105dB
	500kHz to 300MHz	110dB
	300MHz to 500MHz	105dB
Input connector	Type BNC female, 50Ω	

Automatic offset calibration
  Normalize function
 	
  Electrical length correction
 	
  Range
	Reduces the frequency characteristics of a measurement system
	Equivalent electric length or group delay time can be added to the measured phase and group delay time.
	-3×10^9m to $+3 \times 10^9$m or +10sec to -10sec	

Magnitude characteristic
  Relative characteristic
    Measurement range
    Display resolution
    Accuracy

  Frequency response

(R3752AH/BH, R3753AH/BH)
0 ±115dB (RBW 1kHz, ATT AUTO)
0.001dB/div
±0.5dB (50MHz at 25 ± 5°C, input 50Ω, maximum input level)
(25 ± 5°C)

50Ω	5Hz to 100MHz	1dB P-P
	100MHz to 300MHz	2dB P-P
	300MHz to 500MHz	3dB P-P
1MΩ	5Hz to 1kHz	5dB P-P
	1kHz to 100MHz	1.5dB P-P

Dynamic accuracy

(25 ± 5°C, RBW 3Hz, Frequency ≥ 1kHz, ATT= 20dB)

0 to -10dBm	±0.10dB
-10 to -60dBm	±0.05dB
-60 to -70dBm	±0.10dB
-70 to -80dBm	±0.30dB
-80 to -90dBm	±0.90dB

Absolute characteristic Measurement range	(RBW 1kHz)	

0dBrn to -115dBm	ATT AUTO
0dBm to -95dBm	ATT 20dB
-20dBm to -115dBm	ATT 0dB

Display resolution
Accuracy

0.001dB/div
±0.5dB (50MHz at 25 ± 5°C, input 50Ω, maximum input level)

Frequency response

(25 ± 5°C)

50Ω	5Hz to 10kHz	4dB P-P
	10kHz to 300MHz	2dB P-P
	300MHz to 500MHz	3dB P-P
1MΩ	5Hz to 1kHz	10dB P-P
	1kHz to 100MHz	1.5dB P-P

Dynamic accuracy

(R3752EH, R3753EH)
(25 ± 5°C, RBW 3Hz, Frequency ≥ 1kHz, ATT= 20dB)

0 to -10dBm	±0.4dB
-10 to -60dBm	±0.1dB
-60 to -70dBm	±0.2dB
-70 to -80dBm	±0.6dB

Phase characteristic
Relative characteristic
Measurement range

(R3752AH/BH, R3753AH/BH)
±180° (The phase extending function enables the display to trace data over ±180° continuously.)

Display resolution
Frequency response

0.01°
(25 ± 5°C, when attenuation value is the same)

50Ω	5Hz to 100MHz	5° P-P
	100MHz to 300MHz	15° P-P
	300MHz to 500MHz	20° P-P
1MΩ	5Hz to 1kHz	20° P-P
	1kHz to 100MHz	10° P-P

Dynamic accuracy

(25 ± 5°C, RBW 3Hz, Frequency ≥ 1kHz, ATT= 20dB)

0 to -10dBm	±1.0°
-10 to -50dBm	±0.3°
-50 to -60dBm	±0.5°
-60 to -70dBm	±1.0°
-70 to -80dBm	±3.0°
-80 to -90dBm	±8.0°

Absolute characteristic Measurement range Dynamic accuracy	(R3752EH, R3753EH) ±180° (The phase extending function enables the display to trace data over ±180° continuously.) (25 ± 5°C, RBW 3Hz, Frequency ≥ 1kHz, ATT= 20dB)

0 to -10dBm	±3.0°
-10 to -50dBm	±1.5°
-50 to -60dBm	±2.0°
-60 to -70dBm	±2.4°
-70 to -80dBm	±3.6°

Delay characteristic Range Measurement range Group delay resolution Aperture frequency Accuracy	The following formula is used to determine the range. $r = \dfrac{\Delta\phi}{360 \times \Delta f}$ $\Delta\phi$: Phase Δf : Aperture frequency (Hz) 1ps to 250s 1ps 0.01% to 50% of the specified span frequency $\dfrac{\text{Phase accuracy}}{360 \times \text{Aperture frequency (Hz)}}$

(4)   Error calibration function

Normalize	Corrects the Frequency response (of Amplitude, Phase) in the Transmission measurement.
One port calibration	Corrects the errors caused by the bridge directivity, the Frequency response and the Source match in the Reflection measurement. Short, Open and Load standards are required for the error correction.
Data averaging	Averages the data (vector values) at each sweep. The averaging number can be set between 2 to 999.
Transmission full calibration	The transmission normalize enables the high accuracy measurement on transmission measurement. The Short and Load standards are required for the error correction.

(5)   Connection with external instruments

Signal output for an external display	15 pin D-SUB connector (VGA)
GP-IB data output and Remote control	IEEE488 applicable
Parallel I/O output	TTL level, 8-bit output (Two ports) 4-bit input and output (Two ports)
Serial port	RS-232 compatible
Keyboard	IBM PC-AT compatible
External reference frequency input	Applicable input signal is Frequency: 1, 2, 5, 10MHz $\pm$ 10ppm, 0dBm (50Ω) or more

(6)   Display section

R3752H series
    Indicator
    Resolution
    Display mode
	fluorescent display tube, Green
	256 $\times$ 64 dots
	Character display, 32 $\times$ 8 characters

R3753H series
    Indicator
    Resolution
    Display mode
 	
    Display format
 	
    Measurement condition display
    Position of Reference line
    Auto scale
 	
    Brightness
	8.4inch TFT color LCD
	640 $\times$ 480 dots
	Rectangular log/Linear coordinates, Polar coordinate, Smith chart (Impedance/Admittance display)
	Single Channel Display, Dual Channel Display (which shows plural traces together or respectively.)
	Start/Stop, Center/Span, Scale/DIV, Reference level, Marker value, Soft key function, Warning message
	The top (100%) to the bottom (0%) of the vertical axis
	Optimizes the reference value and the scale to show the traced data best in the screen.
	The back-light can be turned on/off.

(7)　Marker function (R3753H series)

Marker display	The readout of the Marker can be converted to the display value conformed to the measurement format.
Multi marker	Ten markers can be set for each channel, respectively.
Delta marker	Any one of the ten markers can be specified as a reference marker and can measure the delta value between a movable marker and the reference marker.
Marker couple	The marker of each channel can be set as a coupling marker or an independent marker.
Analysis of arbitrary specified zone	The marker search function can be performed in a segment specified by the delta marker function.
MKR search	MAX search, MIN search, NEXT search
Marker tracking	Performs the search for each sweep.
Target search	Calculates a XdB-down Band width, a Center frequency, Q value and so on. It is also possible to search the frequency of the phase 0° or the frequency band of $\pm X°$.
MKR $\rightarrow$	MKR $\rightarrow$ the reference value, MKR $\rightarrow$ START, MKR $\rightarrow$ STOP, MKR $\rightarrow$ CENTER
Limit line function	

(8)　Instruments state function

Save register	The setting condition and the CAL data can be saved in the internal memory which is keeping backup.
Data save/recall	Each kind of data can be stored by using a floppy disk which is standard.

(9)　Programming function

BASIC controller function	Controls this R3753H series itself and instruments equipped with GPIB interface functions. This is a built-in standard controller function.
Built-in function	Enables the high speed analysis of the measurement data.
FDD function	MS-DOS format compatible. Recording capacity:　DD 720kB 　　　　　　　　　　HD 1.2MB, 1.44MB

(10) General specification

Operating conditions	
When disk drive is in operation	Temperature: +5°C to +40°C Humidity (without condensation): 80% or less
When disk drive is not in operation	Temperature: 0°C to +50°C Humidity (without condensation): 80% or less
Non-operating conditions	-20°C to +60°C
Power supply	AC100V to 120V, AC220V to 240V at 50Hz/60Hz Automatically switched to the AC100 family or the AC200V family.
Power consumption	300VA or less
Cabinet dimensions R3752H series R3753H series	about 424mm(W) × 132mm(H) × 400mm(D) about 424mm(W) × 200mm(H) × 400mm(D)
Mass R3752H series R3753H series	12kg or less 15kg or less