
ADVANTEST®
ADVANTEST CORPORATION

**INSTRUCTION
MANUAL**
R32501
FET AMPLIFIER

MANUAL NUMBER OEB00 9311

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1. OUTLINE

The R32501 FET amplifier is a plug-in unit suitable for the R3265/3271 spectrum analyzer. The R32501 FET amp has the 1M-ohm input impedance, 20-pF capacity, and 50-ohm output impedance. It can internally have the R32501 frequency characteristics data, and the amp data is calibrated automatically on the R3265/3271.

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2. ACCESSORIES

Item	Model Name	Stock No.	Quantity	Remarks
Signal cable	---	DCB-FF0981X03	1	BNC-BNC
Instruction manual		JR32501	1	Japanese
		ER32501		English

3. HOW TO USE

(1) Cabling

Turn the R3265/3271 power switch off, and remove the blank panel from the R3265/3271 panel. Then, insert the R32501 into the plug-in amp mounting slot until the amp is fully locked, and tighten the setscrews to fix the amp. Connect the signal cable of the accessory kit between the R32501 output terminal and the RF input terminal of the R3265/3271. When using the oscilloscope probe, see Section 5 "Probe Calibration."

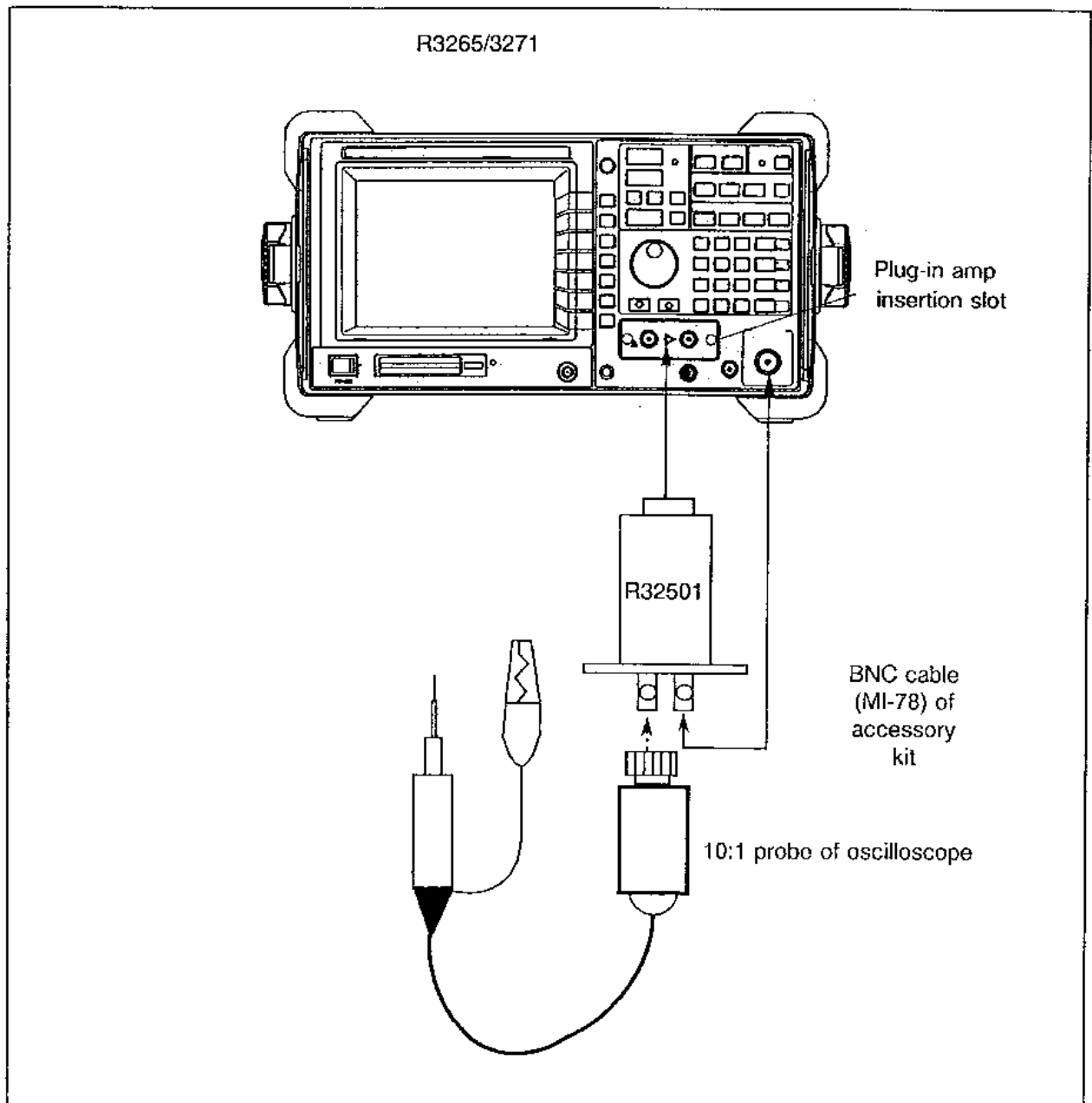
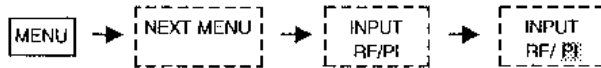


Figure 3-1 Unit Connection

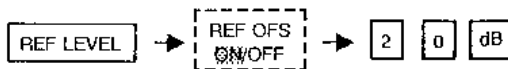
(2) R3265/3271 operation (Refer to the R3265/3271 Instruction Manual for details.)

- ① Turn the R3265/3271 power on, and select the PI input mode as follows.

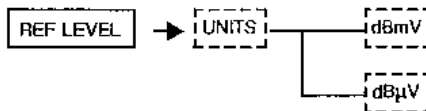


The LED will light on the R32501 panel, and the R32501 will be ready to use.

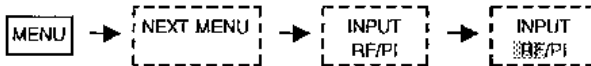
- ② To read the signal level directly using the 10:1 probe, set the REF OFFSET of the R3265/3271 to "+ 20dB".



- ③ Select the voltage unit ("dB μ V", "dBmV" or others) for signal level display.



- ④ Select the RF input mode if you do not use the R32501.



The LED will go out on the R32501 panel, and the ordinary RF input mode will be selected. When the LED of the R32501 goes out, its internal 20dB attenuator is turned on automatically.

4. APPLICATION NOTES

- (1) Before mounting or dismounting the R32501 amp onto/from the R3265/3271, turn the Analyzer power supply off. If you have mounted or dismounted the R32501 with the R3265/3271 power on, turn the power supply off first, then turn it on again.
The R32501 sends or receives data directly to or from the R3265/3271 controller. If you mount or dismount the R32501 while the R3265/3271 power is on, the calibration data of the R3265/3271 is destroyed and a malfunction may result.
- (2) If you do not use the R32501, select the ordinary RF input mode by releasing the "PI Input" of the MENU key section. If the "PI Input" is still selected, the frequency characteristics of the R32501 are corrected and the incorrect signal level may be shown.
- (3) The voltage applied to the input connector must be 100 VDC, 30 VAC rms or less. Also, no voltage must be applied to the output connector.
- (4) The GND lead of the input connector is internally connected to the R3265/3271 GND lead. The connector GND lead is not floating.
- (5) Do not connect signals containing DC element to the RF input of the main unit.

5. PROBE CALIBRATION

Use a 100kHz signal generator for probe calibration.

The cables required for the calibration are listed on Table 5-1.

CAUTION

1. A Probe having the attenuation of 10:1 or more can be used for probe calibration.
2. Do not use the 1:1 probe for a high frequency (exceeding 10MHz frequency) as this probe has the large input capacity.

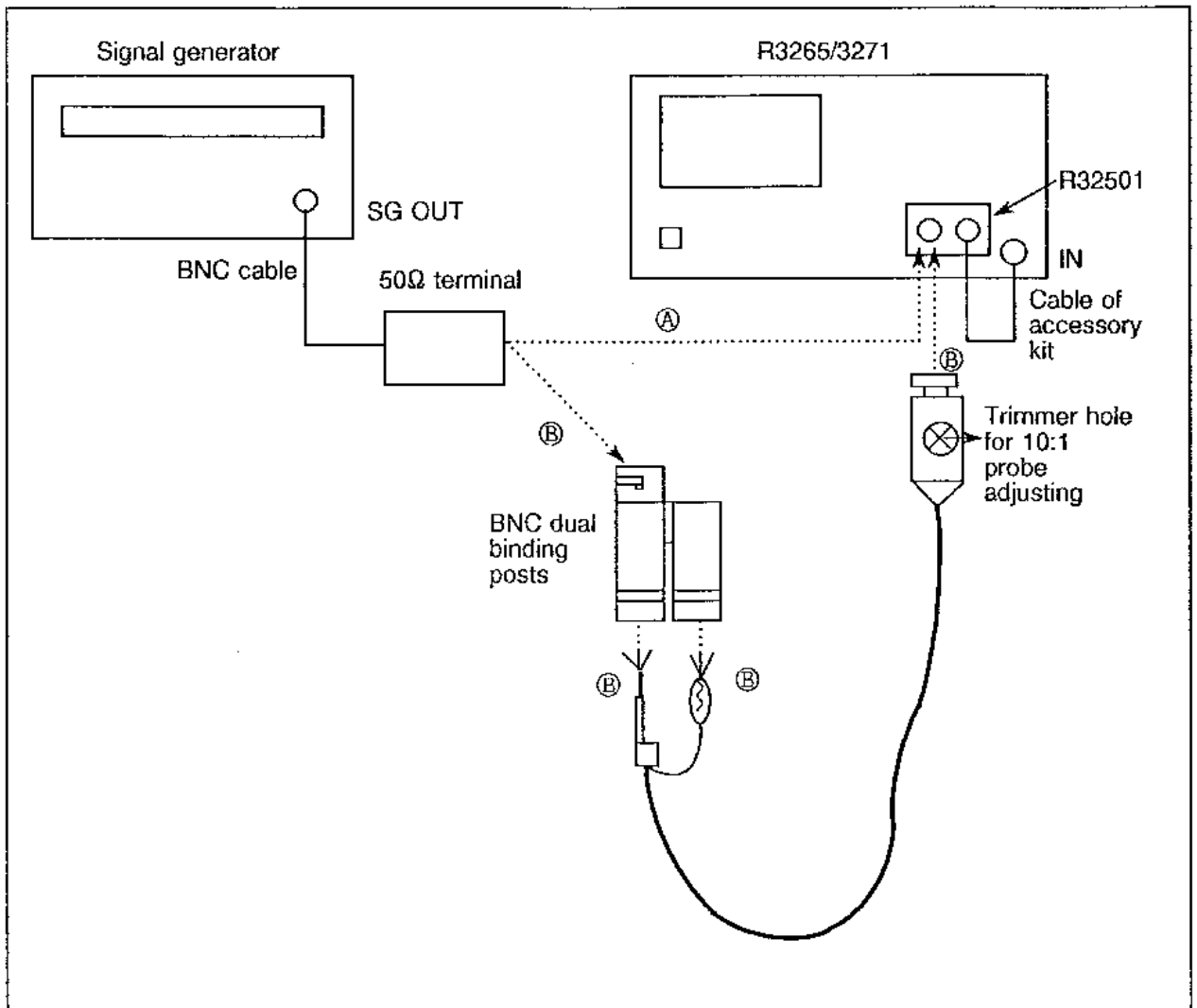
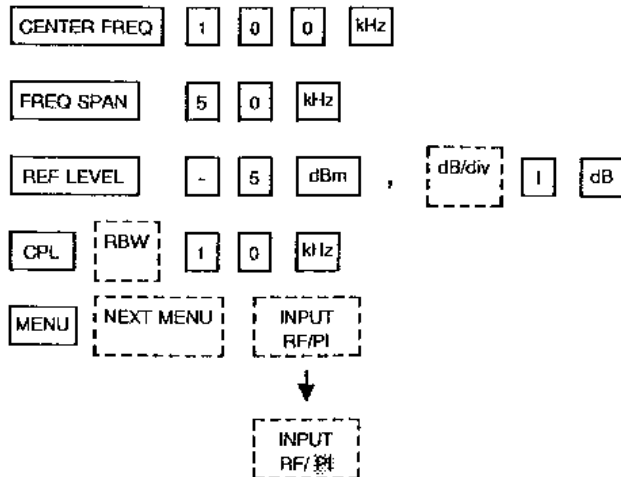


Figure 5-1 Cable Connection for Probe Calibration

Table 5-1 Cables and Others Required for Calibration

Recommended product	Model Name (Manufacturer)
Probe { Attenuation: 10:1 Frequency range: DC to 200 MHz Input capacity: 15 pF }	P613X series (Sony Tektronix)
50 Ω termination	011-0049-01 (Sony Tektronix)
BNC-dual binding post conversion adapter	103-0035-00 (Sony Tektronix)
BNC cable	MI-78 (Advantest)

- (1) Set the signal generator (SG) to the 100kHz frequency and -10 dBm output.
- (2) Press the **PRESET** key on the R3265/3271 where the R32501 has been mounted, and set the following.



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5 Probe Calibration

(3) In the connection shown in (A) of Figure 5-1, measure the SG output level during R32501 input with 50Ω termination. Set the display of SG output level so that the peak of waveforms appear at the center of the screen.

Press the , keys (see Figure 5-2).

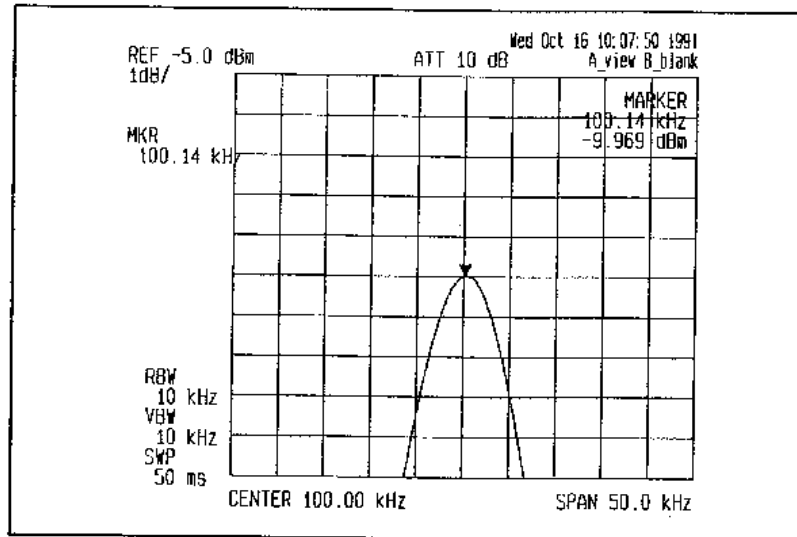


Figure 5-2 SG Output Waveforms

(4) Enter the reference level offset of the R3265/3271 ($20 \log_{10} X$ (dB) for the X:1 probe). As the reference level increases for the input offset amount, return the reference level to the original -5 dBm.

When using a 10:1 probe, for example, set the keys as follows:

- (5) Change the connection as shown in ⑬ of Figure 5-1. An example of waveforms is given in Figure 5-3.

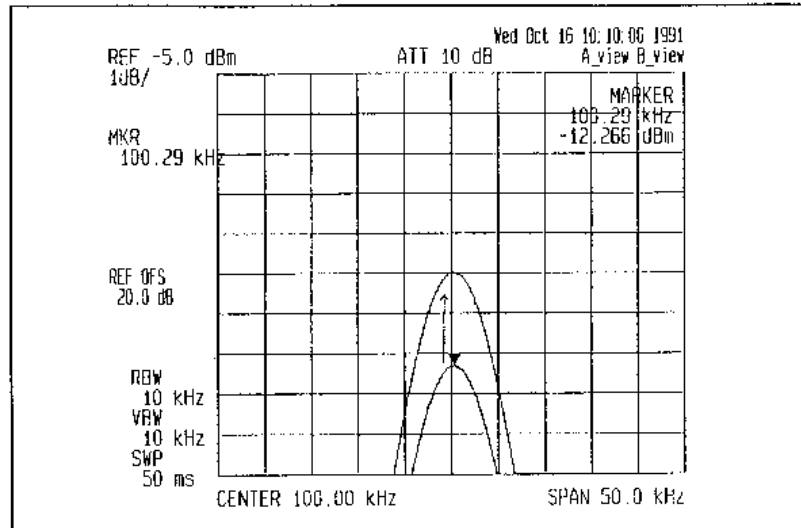


Figure 5-3 Waveforms before Probe Calibration

- (6) Adjust the correction trimmer of the probe to match the waveforms shown in Figure 5-2. The calibration has completed (see Figure 5-4).

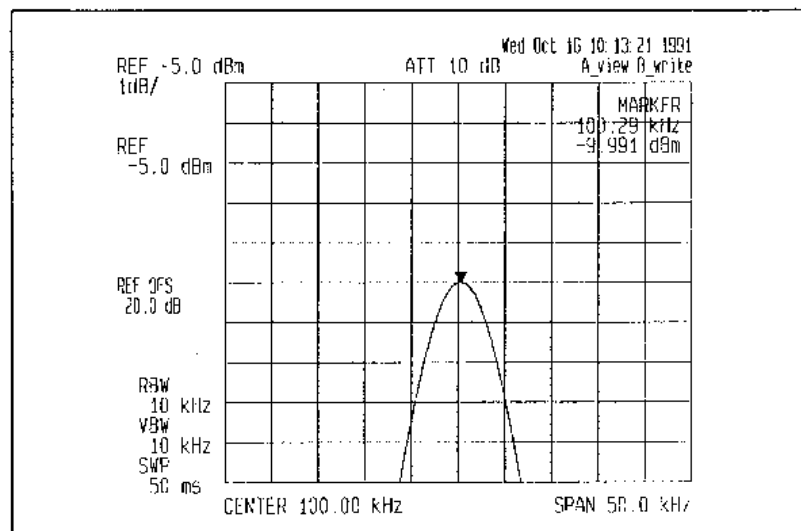
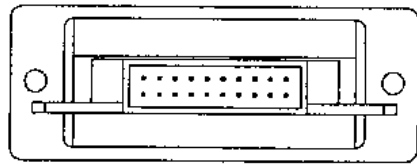


Figure 5-4 Waveforms after Probe Calibration

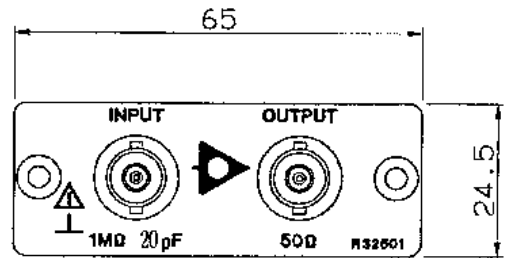
6. SPECIFICATIONS

Frequency range	100 Hz to 150 MHz
Gain	0 dB \pm 1.0 dB
Input attenuator accuracy	20 dB \pm 1.0 dB
Input impedance	Approximately 1M Ω , 20 pF
Output impedance	Approximately 50 Ω
Second RF distortion	-70 dBc or less (at 13dBmV amp input)
Tertiary distortion	-75 dBc or less (at 13dBmV amp input)
Maximum input voltage	100 VDC, 30 VAC rms
Measuring range	Up to 52 dBmV for 0 dB input attenuator Up to 72 dBmV for 20 dB input attenuator
Operating environment	0 to +50°C, 85% relative humidity or less
Storage temperature range	-20 to +70°C
Power supply and consumption	Powered by the R3265/3271; 1.5 W or less for +15VDC power 0.5 W or less for -15VDC power 0.5 W or less for +5VDC power
Dimensions	Approximately 65W x 24H x 114D mm
Weight	0.2 kg

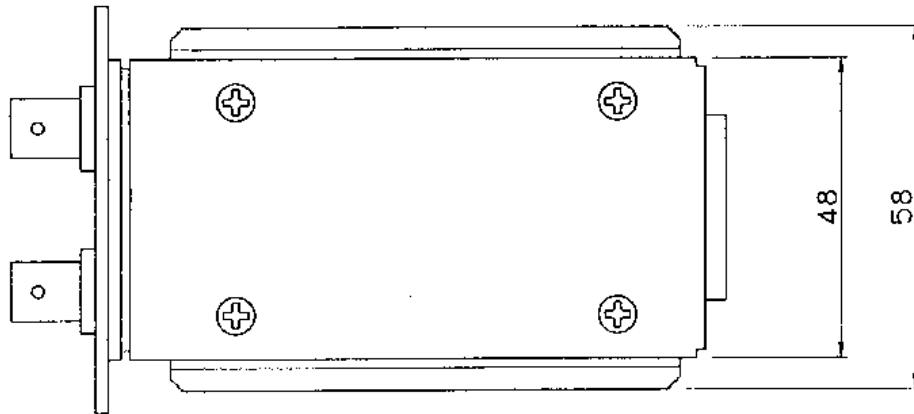
7. R32501 EXTERNAL VIEWS



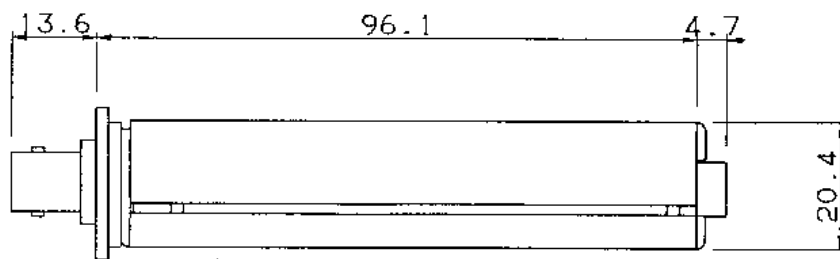
REAR VIEW



FRONT VIEW



UP VIEW



SIDE VIEW

Unit: mm

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Advantest's maintenance agreement provides the Purchaser on-site and off-site maintenance, parts, maintenance machinery, regular inspections, and telephone support and will last a maximum of ten years from the date the delivery of the Product. For specific details of the services provided under the maintenance agreement, please contact the nearest Advantest office listed at the end of this Operation Manual or Advantest's sales representatives.

Some of the components and parts of this Product have a limited operating life (such as, electrical and mechanical parts, fan motors, unit power supply, etc.). Accordingly, these components and parts will have to be replaced on a periodic basis. If the operating life of a component or part has expired and such component or part has not been replaced, there is a possibility that the Product will not perform properly. Additionally, if the operating life of a component or part has expired and continued use of such component or part damages the Product, the Product may not be repairable. Please contact the nearest Advantest office listed at the end of this Operation Manual or Advantest's sales representatives to determine the operating life of a specific component or part, as the operating life may vary depending on various factors such as operating condition and usage environment.

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