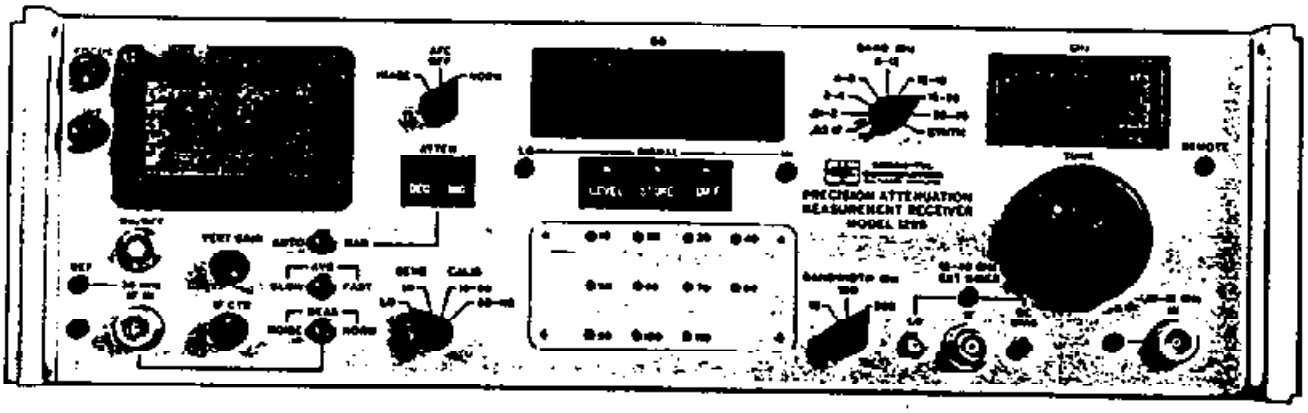

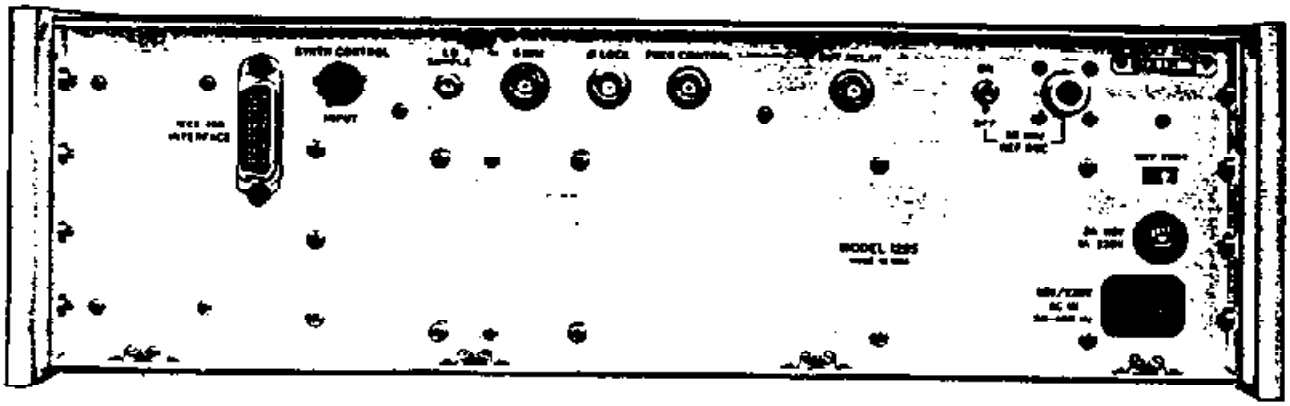

FIGURE 6
1295 RECEIVER
FRONT AND REAR PANELS

1.2.3 DIGITAL AVERAGING

The purpose of digital averaging is to reduce noise jitter in the digital readout. This averaging is equivalent to reducing the effective receiver bandwidth. Figure (5) is the simplified functional block diagram.

The DC signal from the log amplifier drives the voltage-to-frequency converter. Noise on this DC signal modulates its frequency output about a center frequency which is directly proportional to the average DC level. The total number cycles is counted over a selected period, thereby averaging out deviations caused by noise. The counting rate, averaging period, counter reset, and output latching signals are derived from a clock and associated timing circuits.

1.3 SPECIFICATIONS

Frequency:	.01 to 40 GHz.
Frequency Bands:	.01-2, 2-4, 4-8, 8-12, 12-18, 18-26.5, 26.5-40 GHz.
Inputs: (1)	.01-18, 30 MHz Connections for external 18-40 GHz mixers.
Input SWR: (2)	2:1 maximum
Input Connectors:	30 MHz Type "N" .01-18 GHz Type "N" 18-26.5 GHz UG-595 WR(42) 26.5-40 GHz UG-599 WR(28)
Sensitivity (3):	-103 dBm in 100 kHz bandwidth.
Input Signal:	CW, -3 dBm maximum for measurement. +20 dBm maximum without damage.
Measurement Range:	100 dB minimum

Measurement Accuracy:

	.01-18 GHz	18-40 GHz
10 dB Step	±0.04 dB	± .05 dB
30 dB Step	±0.10 dB	± .15 dB
50 dB Step	±0.20 dB	± .45 dB
80 dB Step	±0.50 dB	±1.0 dB
100 dB Step	±0.80 dB	

Frequency:	.01-2 GHz ± 1% of frequency ± 20 MHz. 2-40 GHz ± 1% of frequency.
Frequency Display:	5-digit LED, 1 MHz resolution.
IF Attenuator:	0-110 dB in 10 dB steps. Automatic or manual operation. Each step adjustable to ± .01 dB of external reference attenuator.
IF Input:	30 MHz
IF Bandwidth:	15, 100, and 500 kHz nominal.
IF Linear Range:	13 dB nominal.
IF Linearity:	± .02 dB
Level Display:	4 1/2 digit - HI Sensitivity. 5 1/2 digit - LO Sensitivity. .00 to 123.00 dB
Digital Averaging:	1 or 4 seconds per reading, selectable.
Reference Signal:	30 MHz, +17 dBm minimum at rear panel.
LO Sample: (4)	-10 dBm minimum, 2 to 18 GHz.
Phase Lock Input:	1.7 MHz per volt nominal.
CRT Display:	Displays 1 kHz swept IF output signal.
AFC:	Electro-mechanical. Operates to minimum measurement level.
FM Tolerance:	Approximates selected IF bandwidth.
IEEE-488 Bus: (5)	Rear panel input. Controls all measurement functions plus tuning and data readout.
Frequency Acquisition:	Automatic. Capture range programmable.
Power Required:	115/230 VAC ±10%, 50-400 Hz, 50 watts maximum.
Temperature: (6)	Operating +15° to +35°C Storage -15° to +85°C

Construction:	Solid state except for CRT.
Size: (7)	5 1/4 x 17 x 18 inches. Rack mount optional.
Weight: (7)	38 pounds.

NOTES:

(1) The 30 MHz input can be switched at a 1000 Hz rate for measurement of noise sources.

(2) A 4 dB pad is internally connected to the 2-18 GHz mixer. This may be removed for increased sensitivity but higher SWR.

(3) Sensitivity is the signal level at which the "low level" light goes off. Sensitivity for S/N = 3 dB is about 5 dB better when driving an SWR meter when connected internally to the bolometer output. Sensitivity in the 15 kHz bandwidth is about 6 dB better. Sensitivity in the 500 kHz bandwidth is about 6 dB worse.

(4) In the .01-2 GHz band, the LO sample is 2330 MHz above the input signal frequency. The 2300 MHz second local oscillator can be phase locked to a 5 MHz reference having 0 dBm level.

(5) Refer to Section 3 for interface functions.

(6) Operable from 0 to +50°C with reduced accuracy.

(7) External mixers for 18 to 26.5 and 26.5 to 40 GHz mounted in housing on the rear of the receiver adds 5 pounds to weight and increases depth from 18 to 22 inches.