

# DATA COMMUNICATIONS TEST EQUIPMENT

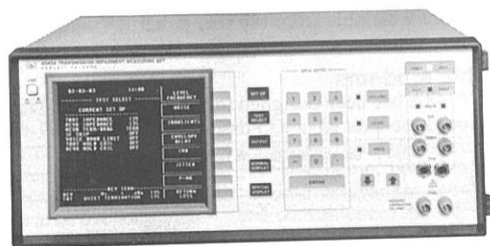
## Transmission Impairment Measuring Sets

497

Model 4945A, 4947A

### HP 4945A

- Complete analog testing to North American standards for: voice grade data circuits, program circuits, metallic digital circuits
- Versatile I/O for systems use
- Master/Slave capability for flexible end-to-end testing



RS 232



HP 4945A

### HP 4945A Product Description

The HP 4945A Transmission Impairment Measuring Set provides the complete set of measurements needed to quickly isolate faults and qualify circuits for voice, data or broadcast transmission up to 110 kHz and local distribution of digital data services up to 56 kbps. All measurements are compatible with Pub 41009 and IEEE 743-1984 and include:

Level/Frequency (20Hz-110kHz)	Phase Jitter
Attenuation Distortion	Amplitude Jitter
Envelope Delay Distortion	Intermodulation Distortion*
Gain Slope	3-Level Impulse Noise
Message Circuit Noise	Gain Hits
Notched Noise	Phase Hits
Signal-to-Noise	Dropouts
Noise-to-Ground	P/AR
Noise Filters: C-Mess, 3kHz, 15kHz, Program, 50 kbit	2/4-Wire Return Loss
	ERL, SRL Hi, SRL Lo, Sine

The HP 4945A contains all the measurements you need for installation, maintenance and troubleshooting in a portable package. The use of softkeys make the HP 4945A extremely flexible while maintaining ease of operation by making all appropriate selections readily available.

#### Versatile I/O Interfaces

The HP 4945A lends itself to a systems environment by providing three interfaces, HP-IB, HP-IL, and RS-232-C as accessory modules.

#### Master/Slave Capability

The HP 4945A has Master/Slave capability for remote control and data collection. Master/Slave saves time and money by allowing you to control the remote (slave) TIMS from the local (master) TIMS. This HP pioneered and patented technique allows the master HP 4945A to completely and flexibly control and collect data from the remote slave HP 4945A over the lines under test.

#### Flexible Hardcopy Output

The HP 4945A can provide you with date and time stamped hard copy results on HP-IB, HP-IL or RS-232-C printers.

#### Ordering Information

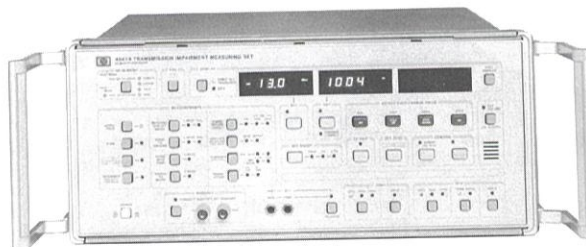
##### HP 4945A Transmission Impairment Measuring Set

- Option 001: 100/200 Volt operation
- Option 101: Adds HP 18162A HP-IB module
- Option 102: Adds HP 18163A RS-232-C module
- Option 103: Adds HP 18165A HP-IL module
- Option 104: Adds HP 18169A 19" rack mount kit
- Option 105: Adds HP 18170A soft vinyl case

\* The Intermodulation Distortion technique is licensed under Hekimian Laboratories, Inc. US Patent No. 3862380

### HP 4947A

- Voice grade data circuit testing to North American Standards
- High performance at an affordable price
- Automatic sequence for end-to-end testing



HP 4947A



### HP 4947A Product Description

The HP 4947A Transmission Impairment Measuring Set (TIMS) is a test set with the high measurement capability required to test a long distance data circuit. With built-in DTMF dialing and many other time and labor saving features it offers high productivity in line testing. Its operation is modeled on the proven HP 4935A TIMS which makes it simple to use. Its measurement methods are in accordance with IEEE 743-1984 and include:

Level/Frequency (50-5004Hz)	Phase Jitter
Attenuation Distortion	Intermodulation Distortion*
Envelope Delay Distortion	3-Level Impulse Noise
Gain Slope	Gain & Phase Hits
Message Circuit Noise	Dropouts
Notched Noise	P/AR
Signal-to-Noise	4-Wire Return Loss
Noise-to-Ground	ERL, SRL Hi, SRL Lo
Noise Filters: C-Mess, 3kHz	

#### Easy End-to-End Testing

The HP 4947A has a simple solution for fast, trouble-free end-to-end testing. You only need to use two HP 4947As and the circuit under test. With a couple of keystrokes you can run a sequence of tests which measure all the key data transmission parameters. And the system is robust enough to support remote start-up and auto restart on power failure or signal loss. Each HP 4947A stores the results of its own measurements in non-volatile memory. Later, results can be dumped to a printer or controller, or read from the display.

The measurements made in the sequence are: P/AR, Gain Slope, Frequency, Noise with Tone, S/N, Idle Channel Noise, Intermodulation Distortion (both uncorrected and corrected for S/N), Level, Frequency, Phase Jitter, Phase and Gain Hits, Dropouts and Impulse Noise.

#### Print/Plot to HP ThinkJet

The HP 4947A can print results on a HP ThinkJet, and can even generate plots using its graphics mode. You can record graphs of EDD, level and attenuation vs frequency.

##### HP 4947A Transmission Impairment Measuring Set

- Option 908: 19" rack mount kit
- Option 910: Extra set of manuals

#### Accessories for HP 4945A and HP 4947A

- HP 18176A: 23" rack mount kit HP 4945A
- HP 18182A: 1.5m cable with Weco 310 to alligator clips
- HP 15513A: 1m cable with Weco 310s on each end
- 9211-2650: Hard transit case for HP 4945A or HP 4947A