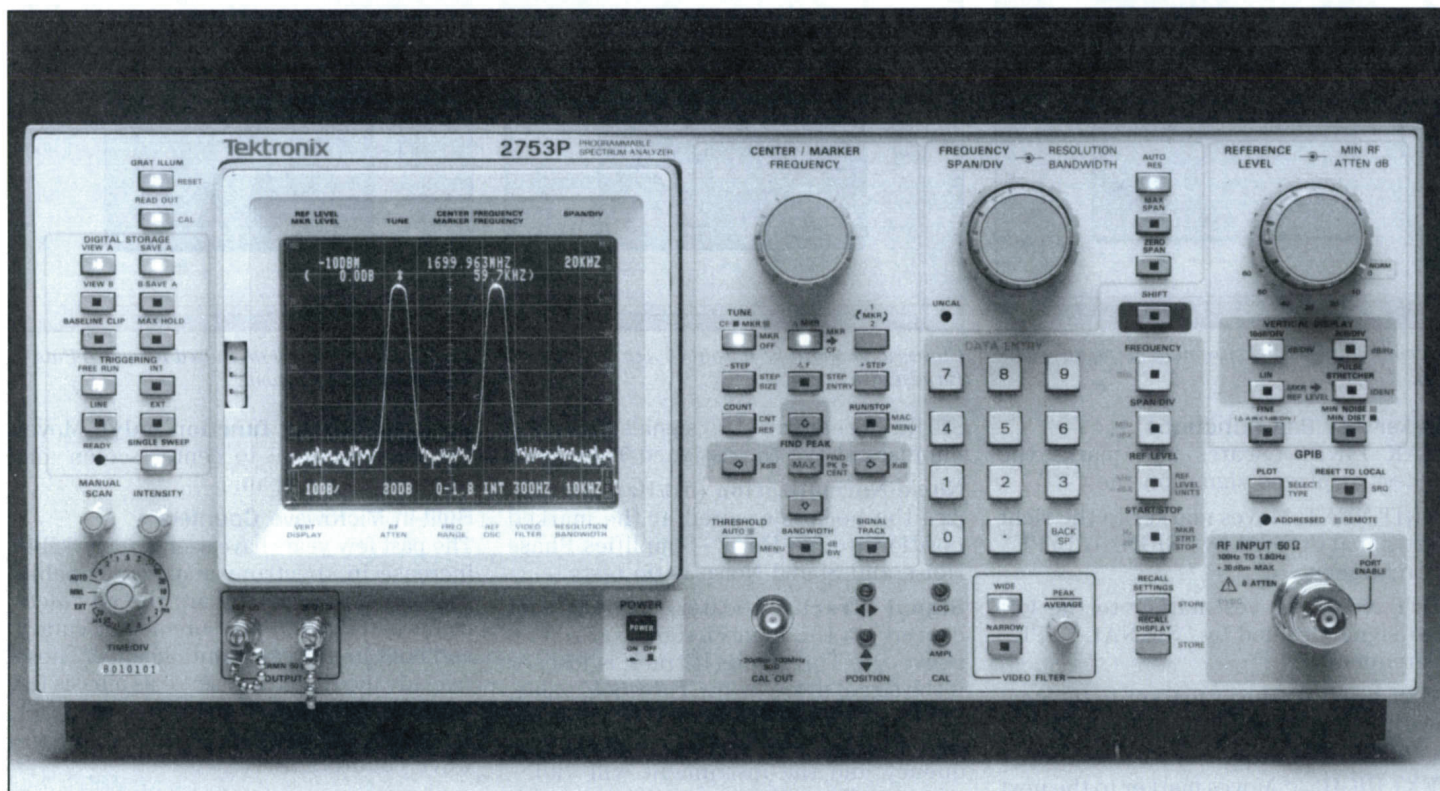


SETTING STANDARDS FOR VHF/UHF PERFORMANCE FOR THE LAB



NEW 2753P

**GPIB
 IEEE-488**

The 2753P complies with IEEE Standard 488-1978 and with Tektronix Standard Codes and Formats.

- Covers 100 Hz to 1.8 GHz, with -130 dBm Sensitivity and ± 1.0 dB Frequency Response
- Up to 10^{-9} Marker and Center Frequency Accuracy, Built-in Signal Counter, External Reference Input
- 10 Hz to 3 MHz Resolution Bandwidth
- Front-Panel Execution of Downloaded Programs
- Intelligent Markers with Signal Processing Functions
- Large Easy-to-Use Controls
- Dedicated Keypad Entry of Control Parameters
- Pushbutton Occupied Bandwidth and Noise Normalization Functions
- Switch Selectable 50 and 75 Ω Impedances (Option 07) for IF, CATV and Local Area Network Applications
- Nonvolatile Memory for up to Nine Waveforms and Ten Front-Panel Settings
- Optional MATE/CIIL Compatibility
- Plot Data Directly Without a Controller
- Superior Rack Profile

A New Benchmark in Laboratory Spectrum Analysis. Standalone or Automated, Baseband through UHF

The Tektronix 2753P offers exclusive signal processing capabilities and outstanding ease of use in a spectrum analyzer package you can tailor to your needs. Offering frequency coverage from 100 Hz to 1.8 GHz with an impressive -131 dBm sensitivity, the 2753P is optimized for VHF/UHF measurements, where ability to identify and process weak signals is critical.

Macro Programming, 10^{-9} Frequency Accuracy, Signal Counting and System Clock Compatibility

Downloadable programming capability lets you execute frequently used measurement routines from the spectrum analyzer's nonvolatile memory. An internal high stability reference provides 10^{-9} marker or center frequency accuracy for added confidence in measurements. In addition, the flexibility of tying in with a system clock by using the instrument's external reference lock capability provides for even greater frequency accuracy. A built-in signal counter with 140 dB dynamic range means you can determine the exact frequency of marked signals

only 10 Hz apart—or count the exact Δ frequency between two marked signals—even with greatly differing amplitudes.

Menu-selected, Intelligent Markers and Signal Processing

Dynamic markers automatically update frequency and amplitude data with every sweep. When used in conjunction with the 2753P's powerful signal processing intelligence, you can use PULSE Mode to mark the peak of a main lobe and peaks of side lobes at the push of a button. CW mode locates signals exhibiting CW characteristics and ignores all other signals. SPUR mode marks all signals that meet user-definable or automatic threshold criteria. Threshold criteria are available for all signal processing modes.

The 2753P also offers hands-off convenience for measuring the bandwidths of filters, amplifiers, and other networks. Simply enter the desired bandwidth point, select BANDWIDTH mode and markers automatically update to display the new value.

Nonvolatile memory lets you store up to ten front panel settings and nine waveforms, simplifying setup and making

measurements faster and easier. A permanent record of CRT displays can be obtained at the push of a button, without a controller, using the direct plot capability.

Dedicated Direct Keypad Data Entry of Major Measurement Parameters

Enables fast, accurate instrument set-up—user is prompted by screen messages for proper keypad inputs—all “valid” keys to push are illuminated to steer users to proper selections. Unique marker keypad allows for Peak Find, Right and Left Next, Next Higher and Lower, Left and Right \times dB, and Peak Find and Center to be executed direct from the front panel. This makes signal searches much easier.

Switch Selectable 50 and 75 Ω Impedances (Option 07) Add Versatility

For applications such as CATV measurements, 75 Ω /dBmV greatly simplifies spectrum analysis. You no longer need to manually convert dBm to dBmV units or make measurement adjustments for external 50 to 75 Ω transformers. Option 07 also provides a 300 kHz resolution bandwidth filter optimized for VHF/UHF measurements.

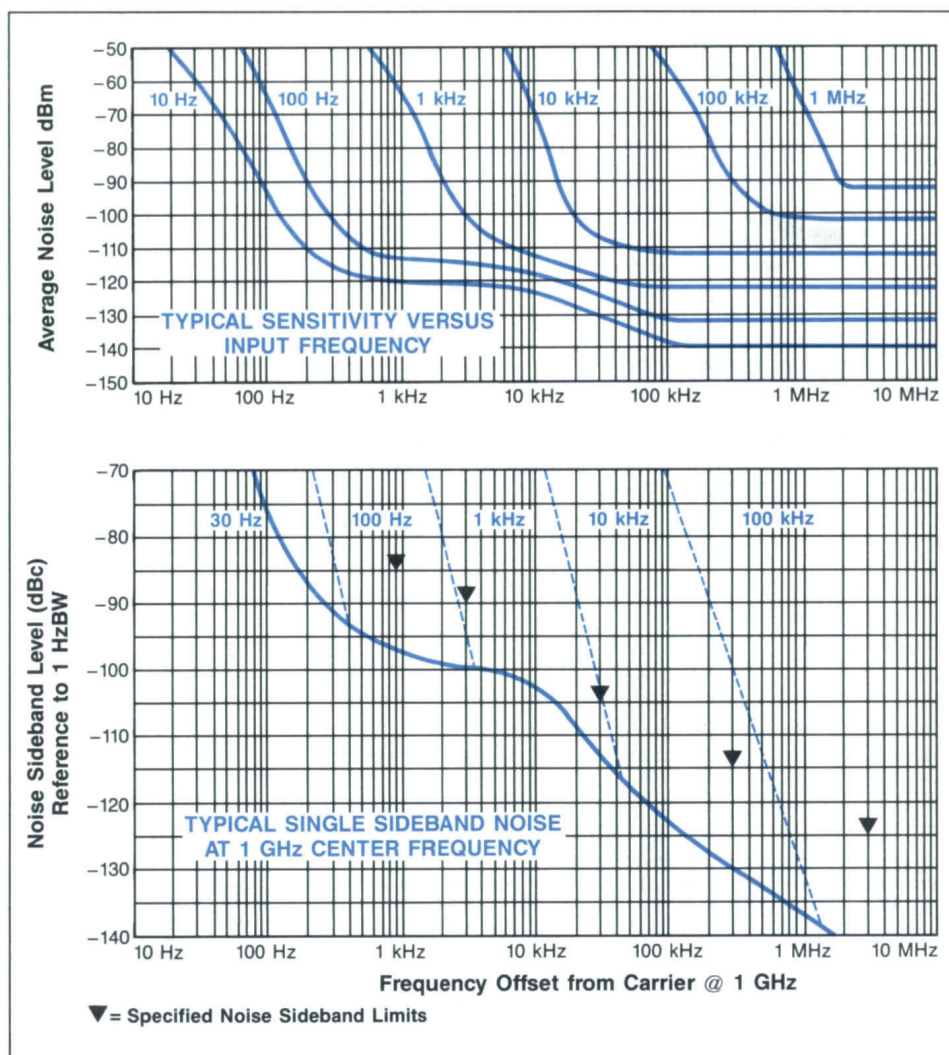
The GPIB-Programmable 2753P is a Valuable Systems Component

It increases speed and ensures measurement repeatability with fully automated spectrum analysis for small ATE or large-system needs. Under program control you can change front-panel settings, read data from the CRT display, and send waveforms from internal digital source memory to other GPIB devices. Tek's Standard Codes and Formats keep commands clear, consistent and universally understood.

Tektronix Automated Spectrum Analyzer Packages

Convenient to order, these packages are configured around Compaq's PC and Tek's programmable 2750P Series Spectrum Analyzers. Coupling the PC to analyzer via the IEEE-488 bus enables the user to take advantage of the PC's capability, as well as the power and versatility of Tek spectrum analyzers. A highly versatile General RF Applications Software Package (GRASP) offers many different applications and utility routines which are selected through easy, menu-driven operation. Also, EMI Software is available for FCC, VDE, CISPR, and MIL-STD testing.

The 2753P offers many other time-saving and accuracy-enhancing capabilities too numerous to cover here. See the summary of signal processing and marker functions on page 167 for additional information on measurement benefits. Complete details are available from your Tektronix Spectrum Analyzer Sales Engineer.



CHARACTERISTICS

The following characteristics apply after a 30-minute warm-up period unless otherwise noted.

FREQUENCY RELATED

Center and Marker Frequency Accuracy— $\pm[20\%D + (F \times \text{Ref Freq Error}) + 15 \text{ Hz}]$ with Span/Div $\leq 200 \text{ kHz}$ (phase locked); $\pm 20\%D + (F \times \text{Ref Freq Error}) + 15 \text{ kHz}]$ with Span/Div $> 200 \text{ kHz}$ (unlocked).

Where: $D = \text{Span/Div or Resolution BW, whichever is greater.}$

$F = \text{Center or Marker Frequency.}$

Reference Frequency Error (Internal)— $\leq 1 \times 10^{-9}$ per day; $\leq 1 \times 10^{-7}$ in the first six months, $\leq 1 \times 10^{-7}$ per year thereafter; accuracy 30 minutes after power on within 5×10^{-8} of the frequency after 24 hours; within 2×10^{-8} over the temperature range of -15 to $+55^\circ\text{C}$.

Signal Counter Accuracy— $\pm [(F \times \text{Ref Freq Error}) + 12 \text{ Hz} + 1 \text{ LSD}]$

Where: $F = \text{Center, Marker or } \Delta \text{ Marker Frequency}$

$\text{LSD} = \text{Least Significant Digit}$

Counter Sensitivity—Signal level must be $\geq 20 \text{ dB}$ above the average noise level and within 60 dB of the reference level.

Counter Readout Resolution—Selectable from 1 Hz to 100 MHz in decade steps.

External Reference Input—Frequency: $1, 2, 5, \text{ or } 10 \text{ MHz}$ with $\leq 5 \text{ ppm}$ stability.

Power Range: -15 to $+15 \text{ dBm}$.

Waveshape: Sine wave, ECL, TTL (allowable duty cycle symmetry is 40% to 60%).

Input Impedance: $50 \Omega \text{ ac}$, $500 \Omega \text{ dc}$; rear-panel BNC input.

Delta Marker Frequency Accuracy— $\pm 1\%$ of total span.

Frequency Drift (after 1-hour warm-up)—Span/Div $\leq 200 \text{ kHz}$ (phase locked): Drift rate $\leq 50 \text{ Hz/min}$. Correction will occur at the end of sweep for sweep times $\geq 5 \text{ s/div}$. (Drift rate is typically $< 20 \text{ Hz/min}$ after 1-hour warm-up from 25°C storage.)

Span/Div $> 200 \text{ kHz}$ (unlocked): Drift rate typically $< 25 \text{ kHz/min}$ (typically $< 25 \text{ kHz/min}$ after 30-minute warm-up).

Frequency Readout Resolution— $\leq 10\%$ of Span/Div to 1 Hz minimum.

Residual FM— $\leq 5 \text{ Hz}$ peak-to-peak in 20 msec , Span/Div $\leq 200 \text{ kHz}$ (phase locked); $\leq 7 \text{ kHz}$ peak-to-peak in 20 msec , Span/Div $> 200 \text{ kHz}$ (unlocked).

Resolution Filters— 10 Hz to 3 MHz ; 10 Hz to 1 MHz in decade steps; 6 dB bandwidth $\pm 20\%$; Shape factor $\leq 7.5:1$ except 10 Hz where $60 \text{ dB BW} \leq 150 \text{ Hz}$.

Frequency Span/Division—0 Hz (ZERO SPAN pushbutton or keypad data entry); 10 Hz to 100 MHz (in a 1-2-5 sequence) via Span/Div knob; 10 Hz to 170 MHz (to two significant digits) via FREQUENCY or MARKER START/STOP, or Data Entry keypad; 180 MHz via power-up, RESET, or MAX SPAN pushbuttons; accuracy $\pm 5\%$.

Frequency Response— ± 1.0 dB (measured with 10 dB RF attenuation).

Zero Frequency Spur— -24 dBm maximum measured into 50 Ω and open circuit with 0 dB RF attenuation; -35 dBm typical.

AMPLITUDE RELATED

Display Dynamic Range—90 dB LOG mode; 8 divisions LINEAR mode.

Reference Level Range—

LOG Mode: -117 to $+40$ dBm ($+30$ dBm maximum); -130 to $+27$ dBV ($+77$ dBmV maximum); -70 to $+87$ dBmV ($+77$ dBmV maximum); -10 to $+147$ dB μ V ($+137$ dB μ V maximum).

LINEAR Mode: 39.6 nV/Div to 2.8 V/Div (1 watt or 10 V peak maximum).

Noise Sidebands

dBc/Hz	Offset from Carrier
-80	300 Hz
-90	3 kHz
-105	30 kHz
-115	300 kHz
-125	3 MHz

Harmonic Distortion— ≤ 60 dBc for a -30 dBm CW signal with 0 dB RF attenuation in MIN DISTORTION mode.

Sensitivity (Equivalent Input Noise)

Sensitivity dBm	Resolution Bandwidth
-131	10 Hz
-125	100 Hz
-115	1 kHz
-105	10 kHz
-95	100 kHz
-85	1 MHz
-80	3 MHz

INPUT CHARACTERISTICS

RF Input—Type "N" female, 50 Ω nominal impedance.

VSWR—1.3:1 maximum, 1.2:1 typical, with 10 dB or more RF attenuation; 2.0:1 maximum, 1.9:1 typical, with 0 dB RF attenuation.

Maximum Safe Input (0 dB RF attenuation)— $+30$ dBm (1 W) continuous, 75 W peak, 1 μ sec pulsewidth, 0.001 duty; 0 V dc.

1 dB Gain Compression— -10 dBm with 0 dB RF attenuation in MIN NOISE; -20 dBm with 0 dB RF attenuation in MIN DISTORTION; (No gain compression can be observed on screen).

CHARACTERISTICS

50/75 Ω OPTION 07

75 Ω INPUT RELATED

Provides 75 Ω input and dBmV calibration in addition to the normal 50 Ω input and dBm calibration. The 100 kHz resolution filter is replaced by 300 kHz to optimize the instrument for broadcast and CATV uses.

Center Frequency Range—1 to 1000 MHz.

Frequency Response— ± 2.0 dB from 5 to 1000 MHz; typical response for the 1 to 5 MHz frequency range is < 3 dB down from the 5 MHz response.

Reference Level Range— -68 to $+79$ dBmV ($+89$ dBmV is achievable in MIN NOISE mode).

Sensitivity (Equivalent Input Noise):

5 to 1000 MHz—75 Ω Input

Sensitivity dBmV	Resolution Bandwidth
-81	10 Hz
-76	100 Hz
-66	1 kHz
-56	10 kHz
-41	300 kHz
-36	1 MHz
-31	3 MHz

50 Ω RF Input

-90 (dBm)	300 kHz
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Input Impedance—75 Ω ; VSWR 1.35:1 (17 dB RL) maximum, 5 to 800 MHz; VSWR 1.6:1 (13 dB RL) maximum, 800 to 1000 MHz; BNC female.

Maximum Input Level—With 0 dB attenuation: $+78$ dBmV. With attenuation > 20 dB: $+78$ dBmV, 100 V maximum (dc + ac peak).
Calibrator (Cal Out)— $+20$ dBmV ± 0.5 dB; 75 Ω impedance nominal.

ORDERING INFORMATION

2753P Programmable Spectrum Analyzer

\$27,250

Includes: 6 ft, N to N connector, 50 Ω coax cable (012-0114-00); 18-in., BNC-to-BNC connector, 50- Ω coax cable (012-0076-00); N male-to-BNC female adaptor (103-0045-00); 4-A fast-blow fuses (159-0017-00); power cord (161-0104-00); power cord clamp (343-0170-00); amber CRT light filter (378-0115-01); gray CRT light filter (343-0115-02); CRT mesh filter (378-0227-01); rear connector shield (337-3274-00); operator's manual (070-6305-00); programmer's manual (070-6308-00).

OPTIONS

Option 07—75 Ω input. **+ \$750**

Includes: BNC male to female adaptor connector (013-0126-00); 42-in. BNC to BNC connector 75 Ω coax cable (012-0074-00).

Options 23, 24, 25, 26, 28, 29—Bundled software and computer packages available in U.S. only. Contact your local sales representative.

Option 30—Rackmount. **+ \$250**

Option 31—Rackmount with rear-panel input/output connectors. **+ \$450**

Option 39—Replaces Lithium with Silver batteries for instrument memory. **+ \$50**

Option 42—110 MHz, > 5 MHz bandwidth, IF Output suitable for broadband receiver measurements. **+ \$1,500**

Option 43—Alternate CRT. **+ \$250**

Option 45—MATE/CIIL language interface. **+ \$4,975**

Option 52*—North American 220 V configuration with standard power cord.

Option B1—Service manuals **+ \$50**

(Vol. 1) 070-6306-00.

(Vol. 2) 070-6307-00.

INTERNATIONAL POWER PLUG OPTIONS

Option A1—Universal Euro 220 V, 50 Hz.

Option A2—UK 240 V, 50 Hz.

Option A3—Australian 240 V, 50 Hz.

Option A4—North American 240 V, 60 Hz.

Option A5—Switzerland 220 V, 50 Hz.

WARRANTY-PLUS SERVICE PLANS

See Service section.

Option M1—2 Calibrations. **+ \$1,810**

Option M2—2 Years Service. **+ \$3,015**

Option M3—2 Years Service and 4 Calibrations. **+ \$3,620**

*1 To order contact your local Tektronix Sales Office.

OPTIONAL ACCESSORIES

TR 503 Tracking Generator—For more information see page 201. **\$7,080**

75 to 50 Ω Power Splitter—Order 067-1232-00. **\$250**

75 to 50 Ω Minimum Loss Attenuator—Order 011-0112-00. **\$60**

DC Block N to N—Order 015-0509-00. **\$250**

P6201 FET Probe to 900 MHz. **\$1,250**

1405 TV Sideband adaptor—525/60 Markers. See page 201. **\$5,780**

Camera—C-5C. **\$495**

Note: 2750-Series spectrum analyzers are compatible with all Tektronix C-50-Series cameras. Battery pack 016-0270-02 is required for C-50, C-51, C-52, and C-53 cameras.

See page 202 for additional accessories.