

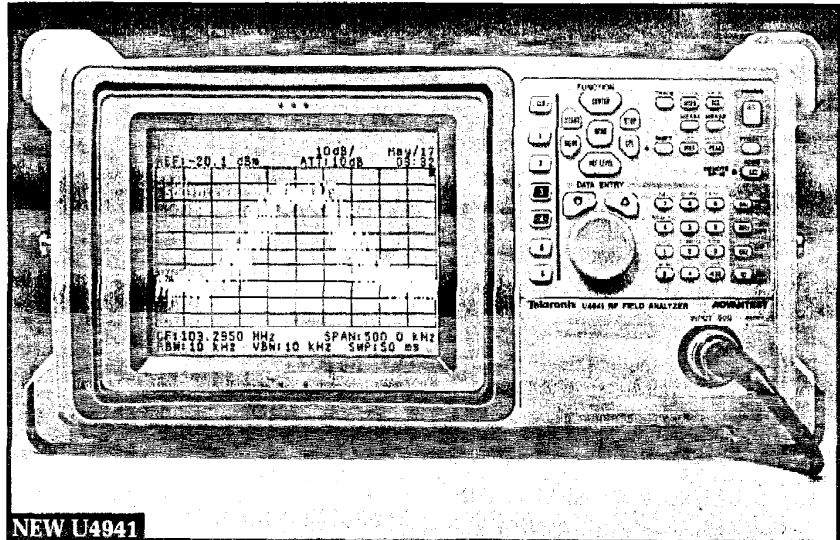
U4941 U4941N

Ultimate portability for RF measurements – convenient battery power, convenient operation, high display dynamic range to measure diverse signals.

NEW U4941/U4941N

- 9 kHz to 2.2 GHz Frequency Range
- High Mobility – Very Light and Compact
- Operate from Attach-on Optional Battery, Standard AC Adapter, or Direct 12-V DC
- Enhanced Spectral Display Comparison using 6-inch Color TFT LCD Display
- Accurate Frequency Measurement with Built-in Counter
- 10 MHz External Frequency Reference Input Providing Added Accuracy
- Diverse Signal Measurement using 90 dB Display Dynamic Range
- EMI Measurement with Built-in Quasi-peak Detector and EMC Filters

Spectrum Analyzers



NEW U4941

U4941/U4941N RF Field Analyzers

These 9 kHz to 2.2 GHz analyzers introduce a new level of portability and convenience to RF measurements. The 5.8 x 11.5 x 13 inch, 14.3 pound package is easily carried to hard-to-reach places. And if your measurement site lacks AC mains, the U4941/U4941N are ready to run directly from an external 12 V DC supply or from their own optional attach-on battery.

These analyzers feature a mechanical package that is designed to MIL-T-28800D environmental standards for shock, vibration, and drop – adding to your confidence to carry the U4941/U4941N into the field.

SEE YOUR RESULTS IN COLOR!

An easy-on-the-eyes, six-inch TFT LCD color display not only reduces instrument weight, size, and power requirements but also lessens user-fatigue when extended display viewing time is required. The display screen may be tilted for optimum viewing angle.

PERFORMANCE FOR TODAY'S APPLICATIONS... AND TOMORROW'S

Wide, 90 dB display dynamic range and high-sensitivity insure that you see weak signals, even in the presence of much stronger signals. Sensitivity is enhanced by a built-in 20 dB preamp. And signals can be readily identified by a built-in frequency counter.

EASY TO USE, EASY TO STORE MEASUREMENT RESULTS

Soft-key menus and three modes of data input adapt operation of the U4941/U4941N to differing user preferences. A full complement of marker functions improve speed and repeatability on a variety of measurements. Included is a window function which delimits a portion of the displayed sweep, resulting in a significantly faster update of the spectrum of interest when sweep time must be increased due to change of resolution bandwidth, video bandwidth, or span.

Measurement set-ups, limit lines, measurement results, and other data can be stored on memory cards that plug into either of two PCMCIA slots conforming to JEIDA-Ver 4.1/PCMCIA Rel 2.0. Or, two cards may be used simultaneously for redundant storage of measurement data.

Tektronix

ADVANTEST.

Product(s) available through your local Tektronix representative (listed in the back of this catalog) or call 1-800-426-2200.

Advantest's quality system complies with the DIN ISO 9002 standard and has been certified by TÜV Product Service GMBH.

APPLICATIONS

- EMC field measurement
- Broadband LAN installation
- Field-strength measurement
- Two-way and wireless communications troubleshooting

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COMPLEMENT YOUR APPLICATION WITH THESE ADDITIONAL CAPABILITIES

- AM/FM detector and built-in speaker/headphone jack for signal demodulation
- Faster measurements using built-in routines for:
 - Occupied bandwidth
 - Adjacent channel leakage
 - Noise power
 - 2nd and 3rd order distortion
 - Percent AM
- 10 MHz external reference input for additional frequency accuracy
- Composite video output to display spectrum on a large screen monitor or hard copy on a video printer
- 75 Ω input for broadband network applications (U4941N)

Characteristics

FREQUENCY RELATED

Frequency Range – 9 kHz to 2.2 GHz.

Frequency Readout Accuracy (Start, Stop, CF, Marker) – \pm (span \times span accuracy + 0.15 \times RBW + 50 kHz).

Count Frequency Marker (S/N \geq 25 dB, 50 kHz \leq 1 GHz span, RBW \geq 100 kHz) – Resolution: 1 Hz to 10 kHz. Count accuracy: \pm (marker freq. \times freq. reference accuracy + 1 LSD \pm 5 Hz).

Frequency Reference Accuracy – $\pm 2 \times 10^{-6}$ /year. $\pm 1 \times 10^{-5}$ (at 0°C to 50°C).

Frequency Span – Range: 50 kHz to 2.4 GHz, ZERO. Accuracy: $\leq \pm 5\%$ (SPAN \geq 100 kHz).

Frequency Stability – Residual FM: ≤ 3 kHz p-p/100 ms. Frequency drift (50 ms to 5 s sweep time): ≤ 10 kHz after 30 minute warm-up.

Noise Sidebands – ≤ 100 dBc/Hz at 20 kHz offset.

Resolution Bandwidth (3 dB) – Range: 1 kHz to 3 MHz, 1, 3 sequence. Bandwidth accuracy: $\leq \pm 20\%$ 1 kHz to 1 MHz; $\leq \pm 25\%$ at 3 MHz. Selectivity: $\leq 15:1$ 60 dB to 3 dB. Bandwidth (6 dB): 9 kHz, 120 kHz (conforming to CISPR standard).

Video Bandwidth – 10 Hz to 3 MHz

AMPLITUDE RELATED

Amplitude Range – +20 dBm to displayed average noise level; +130 dB μ V to displayed average noise level.

Maximum Input Level – Preamplifier OFF: +27 dBm, +134 dB μ V (input atten. ≥ 10 dB), +50 VDC max. Preamplifier ON: +13 dBm, +120 dB μ V, ± 50 VDC max.

Display Range – Log: 10 \times 10 divisions; 10, 5, 2, 1 dB/div. Linear: 10% of reference level/div. QP Log: 40 dB (5 dB/div).

Reference Level Range – Preamplifier OFF: Log, -64 dBm to +40 dBm (0.1 dB step); +46 dB μ V to +150 dB μ V. Linear, 141.1 μ V to 22.36 V. Preamplifier ON: Log, -84 dBm to +10 dBm (0.1 dB step); +26 dB μ V to +120 dB μ V. Linear, 14.11 μ V to 707.1 mV, 19.95 μ V to 1 V.

Input Attenuator Range – 0 to 50 dB (10 dB step).

DYNAMIC RANGE

Displayed Average Noise Level – Preamplifier OFF: -117 dBm + 2.7 f (GHz) dB; -8 dB μ V + 2.7 f (GHz) dB. Preamplifier ON: -132 dBm + 3.3 f (GHz) dB; -23 dB μ V + 3.3 f (GHz) dB. (RBW 1 kHz, VBW 10 Hz, Input atten. 0 dB, f ≥ 1 MHz).

Gain Compression (1 dB) – Preamplifier OFF: > -10 dBm (mixer input level, f ≥ 10 MHz); $> +100$ dB μ V. Preamplifier ON: > -40 dBm (RF input level, f > 10 MHz); $> +70$ dB μ V.

Spurious Response, Preamplifier OFF (-30 dBm input, input atten. 0 dB, f ≥ 10 MHz) – Second harmonic distortion, ≤ -70 dB. Third order intermodulation distortion, ≤ -70 dB.

Residual Responses (input atten. 0 dB, f ≥ 1 MHz) – Preamplifier OFF: ≤ -100 dBm; $\leq +10$ dB μ V. Preamplifier ON: ≤ -115 dBm; ≤ -5 dB μ V.

AMPLITUDE ACCURACY

Frequency Response – Preamplifier OFF (input atten. 10 dB, 20°C to 30°C after calibration): $\leq \pm 1$ dB (100 kHz to 2 GHz); $\leq \pm 2$ dB (9 kHz to 2.2 GHz). Preamplifier ON (input atten. 10 dB): $\leq \pm 1$ dB (100 kHz to 2 GHz); $\leq \pm 2$ dB (9 kHz to 2.2 GHz).

Calibration Signal Accuracy – -20 dBm ± 0.3 dB; +78 dB μ V ± 0.3 dB.

IF Gain Uncertainty (after automatic calibration) – $< \pm 0.5$ dB.

Scale Fidelity (after automatic calibration) – Log: $\leq \pm 1.5$ dB/90 dB; $\leq \pm 1.0$ dB/10 dB; $\leq \pm 0.2$ dB/1 dB. Linear: $\pm 5\%$ of reference level.

Input Attenuator Switching Accuracy (20 to 70 dB settings referenced to 10 dB) – $< \pm 1.0$ dB (100 kHz to 2 GHz); $< \pm 1.5$ dB (9 kHz to 2.2 GHz).

Resolution Bandwidth Switching Uncertainty (after automatic calibration) – $< \pm 1.0$ dB relative to 3 MHz RBW.

SWEEP RELATED

Sweep Time Accuracy – 50 ms to 1000 s and manual sweep $\leq \pm 5\%$.

Trigger Mode – FREE RUN, SINGLE, VIDEO, EXT. TV.

DEMODULATION

Spectrum Demodulation – Modulation type: AM and FM. Audio output: Speaker and phone jack with volume control.

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INPUTS AND OUTPUTS

RF Input – Connector type: N type. Impedance: U4941, 50 Ω nominal; U4941N, 75 Ω nominal. VSWR, Preamplifier OFF: ≤1.5 (100 kHz to 2.0 GHz, input atten. 10 dB); ≤2.0 (9 kHz to 2.2 GHz). VSWR, Preamplifier ON: ≤2.1 (10 MHz to 2 GHz, input atten. 0 dB).

10 MHz Reference Input – Connector: BNC female, rear panel. Impedance: 50 Ω nominal. Input range: +8 dBm to +16 dBm.

Video Output – Connector: BNC female, rear panel. Impedance: 75 Ω nominal, AC coupled. Amplitude: Approx. 1 V p-p into 75 Ω (composite video signal).

External Trigger Input – Connector: BNC female, rear panel. Impedance: 10 kΩ nominal, DC coupled. Trigger level: TTL level.

Gate Input – Connector: BNC female, rear panel. Impedance: 10 kΩ nominal. Sweep step: During TTL low level. Sweep continue: During TTL high level.

Phone Output – Connector: Subminiature monophonic jack, front panel. Power output: 0.2 W into 8 Ω nominal.

GPIB Interface – IEEE-488 bus connector.

Plotter – R9833, HP7470A, HP7475A, HP7440A, HP7550A, HP2225A.

RS-232C – D-SUB 9-Pin, rear panel.

External Memory Card – Slots: 2. Connector: JEIDA-Ver. 4.1/PCMCIA Rel. 2.0.

POWER REQUIREMENTS

AC input (use AC/DC adaptor A08180) – Line voltage range: Automatically selects between 100 VAC and 200 VAC. 100 VAC operation: 90 to 120 V. 220 VAC operation, 220 to 240 V. Line frequency: 48 to 66 Hz. Power consumption: 100 VAC, 300 VA maximum. 220 VAC, 110 VA maximum. Maximum peak power consumption of AC/DC adaptor: ≥300 VA.

External DC input – Connector: XLR 4-Pin. Voltage range: +10 to +15 V. Power Consumption: 50 W maximum.

GENERAL SPECIFICATIONS

Environmental – Operating temperature: 0°C to 50°C, humidity 85% or less. Nonoperating temperature: -20° C to +60°C.

PHYSICAL CHARACTERISTICS

Dimensions**	mm	in.
Height	148	5.75
Width	291	11.375
Depth	330	13.25
Weight	kg	lb.
Net	6.2	13.6

** Without feet or connector.



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ORDERING INFORMATION

U4941 RF Field Analyzer, 50 Ω Input.....	\$14,500
U4941N RF Field Analyzer, 75 Ω Input.....	\$14,500*
Includes: Front-panel Cover, Carrying Handle, N-to-BNC Adapter, AC/DC Adapter, AC/DC Converter/Mains Cable, Carrying Belt, Instruction Manual, Quick Guide.	
SERVICE ASSURANCE OPTIONS	
Opt. R2 – Adds two years of post-warranty Repair Protection.....	+\$590
Opt. C5 – Adds five years of Calibration Services.....	+\$1,225

RECOMMENDED ACCESSORIES

Battery – Order 146-0111-00.....	\$525
Battery Charger – Order 119-4901-00.....	\$625
Display Hood – Order R16601.....	\$70
External DC Power Cable – Order A01434.....	\$95
Memory Card, 64K IC – Order A09507.....	\$125
Soft Carrying Case – Order R16216.....	\$450
Transit Case – Order R16072.....	\$1,300