

## TEKTRONIX

# 492

The Tektronix 492 is a high-performance, rugged, microprocessor-controlled portable spectrum analyzer. Designed for laboratory and field applications, it covers a wide frequency range from 50 kHz to 21 GHz (up to 220 GHz with optional waveguide mixers) and features automatic modes with a three-knob operation for simplified frequency span, resolution bandwidth, and reference level adjustments.

## SPECIFICATIONS

### General

|              |                                                             |
|--------------|-------------------------------------------------------------|
| Interfaces   | GPIB (Option 08)                                            |
| Display      | Electrostatic CRT (Digital Storage available via Option 01) |
| Warm-Up Time | 2 hours (for specified frequency stability)                 |

### Physical

|                       |                                                               |
|-----------------------|---------------------------------------------------------------|
| Power Supply          | 90 to 132 VAC / 180 to 250 VAC, 48 to 440 Hz, 125 W (typical) |
| Operating Temperature | -15 to +55 °C °C                                              |
| Dimensions (W×H×D)    | 328 mm × 175 mm × 498 mm mm                                   |
| Weight                | 20 kg (44 lbs) kg                                             |

### Frequency Specifications

|                                  |                                                                                                        |
|----------------------------------|--------------------------------------------------------------------------------------------------------|
| Frequency Range                  | 50 kHz to 21 GHz (up to 220 GHz with optional external waveguide mixers)                               |
| Frequency Span Range             | 50 kHz/div to 500 MHz/div in 1-2-5 sequence plus Zero and Max Span (down to 100 Hz/div with Option 03) |
| Center Frequency Tuning Accuracy | +/- (5 MHz + 1% of center frequency)                                                                   |

### Resolution & Video Bandwidths

|                                         |                                                |
|-----------------------------------------|------------------------------------------------|
| Resolution Bandwidth (RBW) Range        | 1 kHz to 1 MHz in decade steps                 |
| Resolution Bandwidth (RBW) Accuracy     | Within 20% of selected bandwidth               |
| Resolution Bandwidth (RBW) Shape Factor | 15:1 or better (60 dB to 6 dB bandwidth ratio) |
| Video Bandwidth (VBW) Range             | Selectable Wide or Narrow noise filters        |

## Amplitude Specifications

|                                       |                                                    |
|---------------------------------------|----------------------------------------------------|
| Maximum Input Power (Continuous Wave) | +30 dBm (1 Watt) with minimum 10 dB RF attenuation |
| Maximum DC Input Voltage              | 0 V (DC coupled RF input)                          |
| Dynamic Range                         | 80 dB                                              |
| Reference Level Range                 | -100 dBm to +30 dBm                                |
| Reference Level Steps                 | 10 dB and 1 dB steps                               |
| Input Attenuator Range                | 0 to 60 dB                                         |
| Input Attenuator Steps                | 10 dB                                              |
| Display Scale (Log)                   | 10 dB/div and 1 dB/div                             |
| Display Scale (Linear)                | Linear scale selectable                            |

## Sweep & Triggering

|                  |                                            |
|------------------|--------------------------------------------|
| Sweep Time Range | 20 us/div to 5 s/div in 1-2-5 sequence     |
| Trigger Sources  | Free Run, Internal (Video), Line, External |

## Inputs, Outputs & Interfaces

|                                       |                        |
|---------------------------------------|------------------------|
| RF Input Connector Type               | Type N female (50 ohm) |
| RF Input Impedance                    | 50 ohms                |
| RF Input VSWR                         | < 1.3:1 up to 1.8 GHz  |
| Calibrator Output (CAL OUT) Frequency | 100 MHz                |
| Calibrator Output (CAL OUT) Amplitude | -20 dBm                |

## Display & Measurement Features

|                       |                                                      |
|-----------------------|------------------------------------------------------|
| CRT Display Type      | Electrostatic deflection CRT with internal graticule |
| Baseline Clipper      | Yes (removes intense baseline trace)                 |
| Save Reference Memory | Yes (with Option 01 Digital Storage)                 |
| Max Hold Mode         | Yes (with Option 01 Digital Storage)                 |
| B-Minus-Save-A Mode   | Yes (with Option 01 Digital Storage)                 |

## Factory Options & Configurations

|                                        |                                                               |
|----------------------------------------|---------------------------------------------------------------|
| Option 01 (Digital Storage)            | Adds digital storage and trace manipulation                   |
| Option 02 (Internal Preselector)       | Adds internal preselector for 1.7 GHz to 21 GHz bands         |
| Option 03 (Phase Lock)                 | Adds phase lock and frequency stabilization                   |
| Option 08 (GPIB Capability)            | Adds IEEE-488 (GPIB) remote control interface                 |
| External Waveguide Mixer Compatibility | Supports Tektronix WM490 series external mixers up to 220 GHz |

## Power Specifications

|                          |                                                        |
|--------------------------|--------------------------------------------------------|
| AC Input Voltage Range   | 90 to 132 VAC / 180 to 250 VAC (rear panel selectable) |
| AC Input Frequency Range | 48 to 440 Hz                                           |

## Physical Characteristics

|                   |                                                   |
|-------------------|---------------------------------------------------|
| Form Factor       | Portable, ruggedized enclosure                    |
| Carrying Handle   | Side-mounted adjustable carrying handle           |
| Front Panel Cover | Snap-on protective front cover with storage space |

## Environmental & Safety

|                           |                             |
|---------------------------|-----------------------------|
| Storage Temperature Range | -62 °C to +85 °C            |
| Operating Altitude        | Up to 4,570 m (15,000 feet) |

## Frequency

|                          |                                                                                                                                                                      |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency Bands          | Band 1: 50 kHz - 1.8 GHz; Band 2: 1.7 GHz - 5.5 GHz; Band 3: 3.0 GHz - 7.1 GHz; Band 4: 5.4 GHz - 12.0 GHz; Band 5: 12.0 GHz - 18.0 GHz; Band 6: 15.0 GHz - 21.0 GHz |
| First LO Frequency Range | 2.072 GHz to 3.872 GHz                                                                                                                                               |

## Performance

|                    |                                                                                 |
|--------------------|---------------------------------------------------------------------------------|
| Residual FM        | ≤ 7 kHz p-p in 10 ms (without Option 03), ≤ 50 Hz p-p in 10 ms (with Option 03) |
| Residual Responses | ≤ -90 dBm (50 kHz to 1.8 GHz, 0 dB input attenuation)                           |

## Inputs & Outputs

|                                    |                       |
|------------------------------------|-----------------------|
| External Reference Input Frequency | 100 MHz (Option 03)   |
| Sweep Output Level                 | 0.5 V/div (0 to +5 V) |
| Video Output Level                 | 0.5 V/div             |

## Display

|                                       |                                 |
|---------------------------------------|---------------------------------|
| CRT Graticule Size                    | 8 x 10 divisions                |
| Digital Storage Horizontal Resolution | 1000 points (Option 01)         |
| Digital Storage Vertical Resolution   | 8 bits / 256 levels (Option 01) |

## Environmental

|                          |                                         |
|--------------------------|-----------------------------------------|
| Environmental Compliance | MIL-T-28800C Type III, Class 3, Style C |
| EMC Compliance           | MIL-STD-461A Part 4                     |

## Receiver Characteristics

|                                        |                                         |
|----------------------------------------|-----------------------------------------|
| 1st Intermediate Frequency             | 2072 MHz                                |
| 2nd Intermediate Frequency             | 829 MHz                                 |
| 3rd Intermediate Frequency             | 10 MHz                                  |
| Third-Order Intermodulation Distortion | ≤ -70 dBc for two -30 dBm input signals |

## Spurious Responses

|                         |                                                                        |
|-------------------------|------------------------------------------------------------------------|
| LO Emission at RF Input | ≤ -30 dBm (standard) / ≤ -70 dBm (with Option 02 internal preselector) |
|-------------------------|------------------------------------------------------------------------|

**Display Performance**

|                            |                                                                                                                          |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Log Scale Display Accuracy | $\pm 1.0$ dB per 10 dB (maximum $\pm 2.0$ dB over 80 dB range) for 10 dB/div; $\pm 0.4$ dB over 16 dB range for 2 dB/div |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------|

**Options**

|                                    |                                                                                     |
|------------------------------------|-------------------------------------------------------------------------------------|
| Option 07 (75 Ohm Input Impedance) | Replaces standard 50 Ohm RF input with 75 Ohm input for Band 1 (50 kHz to 1000 MHz) |
|------------------------------------|-------------------------------------------------------------------------------------|

**TECHNOLOGY**

Superheterodyne Spectrum Analyzer

**APPLICATIONS**

RF and Microwave Signal Analysis

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