W2AEW Videos (By Topic)

Oscilloscopes

#2: Tektronix delayed timebase operation
#6: Infrequent Glitch capture on an Oscilloscope
#9: Basic 1X and 10X Oscilloscope Probe tutorial
#10: AC / DC Coupling on an Oscilloscope
#11: Tektronix Oscilloscope Triggering controls and their usage
#16: How to use the Oscilloscope to accurate capture 2 signals of different frequencies
#17: Using Analog scope to view two signals of wildly different frequencies
#18: Use Oscilloscope with delayed time base to measure a RF Power detector
#19: How to get a stable scope display with two signals very close in frequency
#20: Quick 5 minute Tektronix Mixed Domain Oscilloscope MDO4000 Demo
#25: Analog Oscilloscope bandwidth considerations
#26: Answering viewer questions, and Digital Oscilloscope Considerations
#31: Analog oscilloscope ALT, CHOP, ADD, INVERT vertical controls
#33: Oscilloscope AUTO Triggering explained
#35: Using the ADD/INVERT mode on an analog scope to view differential voltages
#36: Function Generator issues appearing as a triggering problem
#40: Analog Oscilloscope's rear panel auxiliary inputs and outputs
#41: Use Oscilloscope Z-axis input to create "marker" on waveform
#43: Analog Oscilloscope Basics: Making a Frequency Measurement
#44: Frequency measurement using Delaying Timebase on Analog Oscilloscope
#48: Basics of Lissajous Patterns on an Oscilloscope
#65: Basics of using FFT on an oscilloscope
#66: How to make a rise-time measurement on an oscilloscope
#68: Oscilloscope Probe Ground lead length affects on signal quality
#69: Basics of Analog Oscilloscope Bandwidth
#70: Digital Oscilloscope Bandwidth Measurement - direct and using rise time
#72: Simple Station Monitor for Ham Radio using an Oscilloscope
#74: Basics of Differential Probes for Oscilloscopes and their applications: a tutorial
#76: Debug Transient EMI signal with a Mixed Domain Oscilloscope MDO4000 Tektronix
#90: Measure Capacitors and Inductors with an Oscilloscope and some basic parts
#96: Tutorial on Digital Oscilloscope sample rate, record length and data processing
#111: How to make a high performance oscilloscope probe socket
#160: Oscilloscope Basics, and how they can be used in the ham shack | tutorial
#179: How to make a peak-to-peak voltage measurement on a scope
#184: How to calibrate an analog oscilloscope
#202: Basics of using FFT on a Tektronix TDS2000 Oscilloscope

Composite Video on Analog Oscilloscopes

#42: Composite Video on an Analog Oscilloscope using XYZ - Lab tour...
#86: Improved NTSC video to Oscilloscope converter circuit / scope video monitor hack

MD3000/MD4000

W2AEW Videos (By Topic)

#125: Tektronix MDO4000B Enhancements - RF specs, Signal Analysis and WLAN WiFi Example
#145: Unboxing the Tektronix MDO3000 Oscilloscope
#146: 10X Probe Compensation on a Tektronix MDO3000 Oscilloscope
#169: Embedded WLAN module testing with the MDO4000B and SignalVu-PC

Spectrum Analyzers
#12: Use Real-Time Spectrum Analysis to Characterize a transmitter key-up
#14: Tektronix MDO4000 Spectrum Analyzer quick comparison to entry-level analyzer
#15: Ham radio Band-scope pan-adapter using Tek MDO4000 as a spectrum analyzer
#21: Using MDO4000 to capture 802.11 traffic and export for analysis using RSAVu
#22: Spectrum Analyzer Basics / Tutorial, and the Tektronix 1401A
#23: Tektronix 1401A Spectrum Analyzer quick demo
#27: Board level EMI Debug with a Real Time Spectrum Analyzer
#38: Analyze Hot Wheel Radar gun with a Real Time Spectrum Analyzer
#47: Basics of Zero-Span operation of a Spectrum Analyzer
#51: Basic Spectrum Analyzer Do's and Dont's...
#62: Basics of Tracking Generators and 1/4 wavelength coaxial stub filters
#119: Basics of Resolution Bandwidth and Video Bandwidth in a Spectrum Analyzer (RBW/VBW)
#181: Basics of an RF Comb Generator - a tutorial

Other Test Equipment
#5: My ESR Meter project from 2006
#45: Sweep Generator Basics and Receiver Alignment
#49: Simple Component Tester using Oscilloscope - Octopus Curve Tracer
#52: Tutorial / Basics of a Dip Meter
#61: Basics of RF Samplers, Sampling-Tees, RF-taps, etc.
#73: 70's Vintage Function / Sweep Generator review / teardown
#88: Cheap and simple TDR using an oscilloscope and 74AC14 Schmitt Trigger Inverter
#105: More Circuit Fun: Simple 3 transistor saw tooth generator / oscillator
#109: How to: Fluke 87 Multimeter fuse replacement, DMM True RMS
#115: How to replace the meter movement in a Simpson 260 multimeter VOM
#142: Basics of High Voltage Probes and how to use them
#161: Circuit Fun: a simple RF detector / demodulator probe for DMM or scope
#197: Simple V-I curve tracer using an oscilloscope and function generator
#203: Schmitt Trigger Oscillator revisited | TDR | Measure Capacitors and Inductors

Test Procedures
#7: Monitor your Ham Radio transmitter with an oscilloscope
#8: Two-tone test of SSB transmitter output
#24: Transient EMI Debug using Tektronix MDO4000 Mixed Domain Oscilloscope
#37: Use a scope to measure the length and impedance of coax
#46: Basics of amplitude and distortion measurements on a scope and spectrum analyzer

W2AEW Videos (By Topic)

#53: Real Time Spectrum Analysis of low frequency/audio signals
#57: Setting up variable double-pulse using Tek AFG
#58: How to zero-beat WWV to check or adjust a Frequency Counter's accuracy
#64: How to measure speed with a counter/timer
#94: RMS Voltage for Sine and square waves, and why your DMM might not work right!
#101: How to measure FM Frequency Deviation without special equipment using Carrier / Bessel Null
#112: Use an Oscilloscope and Signal Generator help tune an HF Antenna, measure complex impedance
#131: How to test transistors - NPN and PNP bipolar junction transistors, BJTs
#132: How to test MOSFETs with a DMM - a few methods...
#135: Measure Capacitor ESR with an Oscilloscope and Function Generator
#137: Why your Function Generator's output voltage reading can be wrong
#138: How to Measure Output Impedance
#139: How to make a WLAN Channel Power Measurement on a Tektronix MDO4000
#141: What is an Eye Pattern on an Oscilloscope - A Tutorial
#150: How to measure an HF Bandpass filter response with the MDO3000
#159: How to measure FM frequency deviation with a spectrum analyzer
#162: How to measure coax velocity factor VF and impedance Z
#182: VHF Transmitter key-up analysis with a Tektronix RSA306
#194: What is ammeter burden voltage, and why you should care
#199: Measuring coil inductance and IF transformer resonant frequency

Circuit Construction

#98: Surface mount IC soldering demonstration with SO-8 packaged device
#99: Drag Soldering of an SSOP IC Package demonstration
#102: How to de-solder or unsolder components using solder wick and vacuum tools
#120: How to Install Anderson Powerpole connectors
#122: Electronic Circuit Construction Techniques: review of some prototype circuit building methods
#123: Build a crystal oscillator from schematic thru prototype construction and testing – DIY
#124: How to install an RJ45 connector on a CAT5 Ethernet network Patch Cable - DIY Repair
#129: How to cut circuit board PCB material - a couple of favorite methods I use...
#149: How to solder a leadless ceramic surface mount package | LCC | CLCC
#151: How to wind a toroid inductor | A quick tutorial
#165: Why RF circuits need shielding - or how NOT to build a Theremin! (tnx 4 the title Ben!)

Theory

Basics

#54: Back to Basics Tutorial: Voltage / Current in capacitors and inductors
#55: Back to Basics: Tutorial on LC Resonant Circuits

W2AEW Videos (By Topic)

#56: Basics of Capacitor & Inductor self-resonance, parasitics, etc. – Tutorial
#59: Basics of a Square Wave signal's harmonic content
#60: Basics of Phase Locked Loop Circuits and Frequency Synthesis
#83: Basics of RF Mixers in Radio Receivers / Mixer Tutorial / Frequency Conversion
#84: Basics of Ferrite Beads: Filters, EMI Suppression, Parasitic oscillation suppression / Tutorial
#85: Basics of R2R Resistor Networks Digital Analog Conversion, Tutorial DAC Thevenin Superposition
#87: Schmitt Trigger Oscillator / Tutorial / 74AC14 Inverter / square wave generator
#91: Basic RF Attenuators - Design, Construction, Testing - PI and T style - A Tutorial
#100: Capacitor self-resonance measured with an oscilloscope and signal generator - how to tutorial
#104: Circuit tutorial: sawtooth generator w/ current sources, diode switches,
#110: Circuit Fun: Flexible Ramp Generator to create frequency sweeps using 555 timer and op amps
#121: Basics of SCRs and some circuit fun - device and circuit tutorial
#136: What is a dB, dBm, dBu, dBc, etc. on a Spectrum Analyzer?
#143: Transmission Line Terminations for Digital and RF signals - Intro/Tutorial
#183: Why diodes are used around relay coils: Back to Basics on flyback or snubber diodes
#195: RF Diplexer Basics: Tutorial, construction and tuning

Differential Amplifiers

#192: Preview of next Back to Basics video on the diff-amp, long-tailed pair
#193: Back to Basics: the differential amplifier, aka long-tailed pair, diff-pair

Diodes

#82: How to use a Diode as a Switch / Diodes as Switches / Basics of Diode Switches
#147: Basics of Varactor Diodes | Voltage Controlled Oscillator VCO Example
#166: How to wind a trifilar toroid transformer for a diode ring mixer
#167: How a Diode Ring Mixer works | Mixer operation theory and measurement
#201: Basics of Reverse Recovery Time in a Diode

PIN Diode RF Switching

#118: Basics of PIN diodes and their use in RF switch applications
#130: PIN Diode 3rd order Intermodulation Distortion (IMD) vs. bias current - how to measure
#200: T/R Switch w/ PIN Diodes and Lumped Element Quarter-wavelength transmission line

Directional Couplers

#158: Directional Coupler Basics & how to sweep SWR of an antenna | Return Loss | VSWR
#196: How a Directional Coupler in an SWR meter works

W2AEW Videos (By Topic)

Op-Amps

#75: Basics of Op Amp circuits - a tutorial on how to understand most Op Amp circuits
#77: Op Amp Peak Detector Tutorial, with peak detector basics
#79: Op Amp Power Supply Considerations: split, single, virtual ground, etc. - a tutorial
#140: Basics of an Op Amp Summing Amplifier
#172: Basics of Op Amp Gain Bandwidth Product and Slew Rate Limit

Transistors

#67: Basics of Common Emitter Amplifier Gain and Frequency Response with Measurements
#113: Basics of Transistor bias point and the class of amplifier operation
#114: Tutorial: Common Emitter, Common Collector, and Common Base Transistor amplifiers
#185: Back to Basics: Bipolar Transistor bias circuits and Beta dependence
#190: Back to Basics: Transistor Current Sources and Mirrors
#191: Beware of test equipment loading effects!! Learn from my error!
#198: Basics of a Vbe Multiplier: what it is, how it works & where it is used

Circuit Analysis

#155: Circuit Fun: Auto-ranging Analog Voltmeter for a variable power supply
#157: Circuit fun: Automatic audio leveling circuit | audio compressor | for scanning receiver
#163: Automatic Volume Level Control circuit demonstration | scanner
#186: Circuit Fun: Control an RC Servo with an adjustable DC voltage
#187: Circuit Walkthrough: A single cell LED light supporting Ears to Our World

Equipment Repair

#39: Function Generator debug and repair - Leader LG-1311
#134: Teardown of failed power supply - bad capacitor

Arduino

#78: Use an Arduino to draw pictures on an oscilloscope using XY mode
#92: Cool Product: The Moteino - an Arduino clone + RFM12B wireless interface - low cost
#93: RS232 and SPI bus waveforms, bus decodes and RF activity on the Moteino using Tek MDO4000
#144: Use Arduino Uno to create spinning XY graphic on an Oscilloscope
#164: More XY Oscilloscope graphics, Vintage Tek and how projects evolve

SDR

I&Q Signals

#170: Basics of IQ Signals and IQ modulation & demodulation - A tutorial
#171: IQ Signals Part II: AM and FM phasor diagrams, SSB phasing method

W2AEW Videos (By Topic)

RTL-SDR

#173: Introduction to RTL-SDR low cost software defined radio receivers
#174: Using a mixer to listen to HF, shortwave, ham, etc. on RTL-SDR dongle
#175: Filter functions in an HF Up-converter used with RTL-SDR Dongle Receiver
#178: Build, test, use the RF Noise Source on the Ham-It-Up RTL-SDR Up-converter

Softrock SDR

#148: Software Defined Radio kit | Tutorial | Build | Test | Softrock Lite II
#152: Completed Softrock Ensemble II SDR Receiver kit | On-air checkout
#154: Softrock Ensemble II SDR Rx circuit review | description | test

Radios

CountyComm GP-5/SSB

#188: Mini review / demo: GP-5/SSB Shortwave, AM/FM and SSB portable receiver
#189: Programming & using memories in the GP-5/SSB shortwave receiver

Elecraft PX-3

#180: How to assemble of the Elecraft PX3 Panadapter kit

Heathkit HW-9

#81:Heathkit HW-9 QRP CW Transceiver Circuit Walk-Through - Ham Amateur Radio Schematic

HF Packer V4 Amplifier

#106: Measuring low-pass filters in a Ham Radio HF Packer Amp for Amateur HF Bands
#107: Adjusting the MOSFET drain current in the HF Packer V4 Amplifier (ham radio)
#108: Adding a CW-SSB Mode switch to the HF Packer V4 Amplifier (ham radio)

Icom IC-706MkIIG

#126: Repair Log, Part 1: Icom IC-706MkIIG Damage assessment and connector repair – DIY
#127: Repair Log, Part 2: Icom IC-706MkIIG flex circuit replacement - DIY repair
#128: How to install optional filters in an Icom IC706MkIIG and measure them with an FFT

Kenwood TM-D710

#177: Kenwood Dual-Band TM-D710 repair, bad filter, design issue

MFJ9340

#80: MFJ Cub 40m QRP CW Transceiver circuit walk-thru and review, plus bandsweep, ham radio MFJ-9340

TenTec 1254

#3: TenTec 1254 Receiver Signal Path walkthrough

W2AEW Videos (By Topic)

#4: Oscilloscope view of TenTec 1254 IF and detected output on shortwave signal
#29: Adding a S-meter to TenTec 1254 Shortwave Receiver
#30: Part II: Finishing the S-Meter on the Ten Tec 1254 Shortwave Receiver
#34: Installation of upgraded microcontroller in the TenTec 1254 Receiver

Uniden

#176: Uniden / President HR2510 10m transceiver repair - won't transmit

Yaesu FT-7800

#116: Repair Log, Part 1: Yaesu FT-7800 Dual Band FM Transceiver, no VHF output
#117: Repair Log, Part 2: Yaesu FT-7800 Dual Band FM Transceiver fixed 2m TX problem

Miscellaneous

#1: QRP Check-in to NorCars net from RVRC Hamfest June 19,2010
#13: D-104 Microphone amplifier / Equalizer for Ham Radio
#28: My QRP "go kit" backpack with IC-703+ ham radio
#32: Quick test of completed DDS-60 from AMQRP/NJQRP
#50: QRP SSB contact on 40m from Hamfest of RVRC, June 2012
#63: JOTA: Jamboree on the Air at OMARC/InfoAge October 2012
#71: Proper PSK31 Audio Level setup with a scope, RF power meter, and ALC indicator
#89: Video Tour of my Lab and Workbench - Oscilloscopes and meters and power supplies, oh my!
#95: W2AEW Channel Trailer video
#97: Low Power (QRP) Ham Radio contact at the 2013 RVRC Hamfest in NJ
#103: Ham Radio on vacation - Long Beach Island with Icom IC-703+ NJ (NA-111), 10mo after Sandy
#133: Ham Radio call sign history, and my QSL card quest - W2AEW and 2AEW
#153: How to tune up a Kenwood TS-830S hybrid rig / transceiver | TS-520 TS-530 TS-820
#156: Hamfest! Highlights of the 2014 RVRC Hamfest in Piscataway NJ
#168: How to coil coax, wire, rope, etc. to be free of kinks, twists and knots