

Free Radio Berkeley Broadcast Kits & Accessories

First, a word from our legal department:

For educational purposes only. These kits are offered for the furtherance of one's knowledge regarding radio frequency design and principles. At all times during operation the assembled unit must be connected to a dummy load. Part 73 of the FCC rules prohibits the unlicensed operation of these transmitters when connected to an antenna. All responsibilities for the ultimate use of these kits are born solely by the builder and/or operator.

All kits are complete and come with professionally manufactured, drilled and tinned PC boards. All coils are pre-wound. Amplifier kits require either 12-14, 28 or 48 volts DC for proper operation. Full instructions and diagrams included. Required tools include a 25-30 watt soldering iron with a fine tip, diagonal cutters, needle nose pliers, assorted screwdrivers and other small hand tools. Full assembly diagrams and instructions are included with each kit. Antenna construction diagrams are provided with each transmitter or amplifier order. Download our Micropower Broadcasting Primer for a complete technical overview. Our "Build A Radio Station" DVD is available for \$15 plus \$5 S&H.

Certain kits are designed to work with each other. The 15, and 40 watt amplifiers are designed to be driven to full power with about .1 watt of input power, hence they work very well with the 1/2 watt PLL transmitter. If you wish to only boost a 1/2 watt signal to 5-7 watts then choose the 6 watt amplifier kit. An amplifier only increases the output power of a given input signal, it can not produce an FM signal whereas a transmitter or an exciter creates the FM signal at a suitable power level for possible further amplification by an RF amplifier.

TRANSMITTERS - EXCITERS

1 to 1.5 Watt No Tune PLL Transmitter/Exciter - \$110

Our newest PLL kit design. Using wideband monolithic components from Minicircuits, this PLL covers the entire broadcast band by setting the 8 position dip switch. This kit comes partially assembled with the surface mount components soldered on. It is available fully assembled for \$195. Please note: this is a mono transmitter and requires an external stereo generator for stereo broadcast applications. Audio input is high impedance, line level. The RF output transistor is a heavy duty type, not the lighter duty type found in most comparable kits.

FM Stereo Cable Modulator - \$250

Professional grade FM stereo cable system modulator from Pico/Macom. Frequency agile, can be programmed for the entire FM broadcast band. 50 milliwatt output, can be amplified with either the 30-40 watt broadband modular amplifier or 1 watt broadband amplifier to drive further stages of amplification.

VHF/UHF Cable TV Modulators - \$150

These form the basis for a low power 25-50 watt TV transmitter when combined with the appropriate broadband VHF TV amplifier. Available in VHF channels 2-13 and UHF channels 14-27. Please specify the channel you wish to broadcast on. Download our Low Power TV Primer

AMPLIFIERS

1 watt No Tune Broadband Amplifier - \$40

1 watt output for an input power of 10 mw or 50 mw. Great for boosting lower power VFOs, and low power Ramsey FM-10 type kits. Very compact size, 3 1/2 X 1 1/2 inches. An optional transistor can be substituted to take the power up to 1 1/2 watts, add \$5 for this option.

6 watt No Tune Broadband FM Broadcast Amplifier - \$40

Uses a rugged 6 watt transistor. It is designed to boost 1/2 to 1 watt transmitters to a bit higher output power, producing up to 8 watts of output power. A very small and compact circuit measuring 3 x 1 1/2 inches. Easy, quick assembly with no tuning needed. Requires 12-14 volts DC at 3/4 to 1 amp for operation.

15 watt No Tune Broadband FM Broadcast Amplifier - \$65

Uses a high gain RF FET transistor to boost a 1/2 to 1 watt input to 15 watts. Measures 2 3/4 by 4 1/2 inches and fits into a 6 inch brick enclosure (available punched and drilled). Easy, point to point surface mount assembly. Requires 12-14 volts at 2 amps for operation.

35-40 Watt No Tune Broadband FM Broadcast Amplifier \$95

Uses a high gain RF FET transistor to boost a 1 watt input to 35-40 watts. Measures 2 3/4 by 4 1/2 inches and fits into an 8 inch brick enclosure (available punched and drilled). Easy, point to point surface mount assembly. Requires 12-14 volts at 4 amps for operation.

70 Watt No Tune Broadband FM Broadcast Amplifier \$125

A two stage FET amplifier that requires 200 milliwatts for 70 watts output. Easy, point to point surface mount assembly. Fits into an 8 inch brick enclosure. Requires 12-14 volts at 9 amps.

No Tune Broadband FET Amplifiers

100 Watt - \$200

150 Watt - \$250

300 Watt - \$400

These are all high power RF FET broadband no tune amplifiers. The 40 watt requires 3/4 watt to drive it to full power, the 80 watt requires 1.5 watts, the 100 watt requires 4-5 watts, the 150 watt requires 1.5 to 2 watts and the 300 needs 3-5 watts of drive. 80 and 100 watt amps require a 6-7 amp 28 volt DC power supply, \$150 - PS28-2. The 40 watt requires a 3-4 amp 28 volt, power supply, \$95 - PS28-1. The 150 watt requires a 6 amp 48 volt power supply, \$250 - PS48-1. The 300 watt requires a 12 amp 48 volt power supply, \$450 - PS48-2.

VHF and UHF TV Broadband Amplifiers

25 Watt High Band (channels 7-13) VHF - \$150

25-30 Watt Low Band (channels 2-6) VHF \$150

25 Watt UHF (Channels 14-30) - \$150

These amplifiers use broadband power modules and are very easy to assemble. They are driven directly by the cable TV modulators listed above. Even though the power levels are not high, given the proper combination of antennas and amplifier, very respectable effective radiated power can be achieved. For example: two amplifiers can be driven with the same modulator by using a power splitter; the output of each amplifier is fed to its own two element antenna, one stacked above the other; the two element antenna has a gain of 4.5 dB, stacked together the total gain is 9 dB; with a total gain of 9 dB and a total input power of 50 watts, the effective radiated power is about 400 watts.

FILTERS

It is absolutely imperative to use a filter to prevent interference from harmonics generated by the transmitter. Both

these filters are low pass types which start to attenuate the signal at 108-110 MHz or so. Not using a filter will create problems and give the FCC ammunition to use against us.

7 Element Output Filter Kit - \$15.00

A seven element low pass filter, composed of 4 coils and 3 capacitors, to flatten those harmonics. This one works well with the 6 watt and 15 watt amplifiers. Enclosure is \$12.00

9 Element Heavy Duty Filter Kit - \$40.00

A nine element low pass filter which will handle power levels to 500 watts. Use this for 40 watt and above amplifiers. Enclosure is \$15.00

DUMMY LOADS

Always use a dummy load when testing and tuning transmitters and amplifiers. A dummy load is a non-inductive resistive load which simulates an ideal antenna impedance of 50 ohms. Never use an antenna for testing and tuning transmitters.

20 Watt Dummy Load Kit - \$15.00

Essential for tuning up and testing transmitters and amplifiers. Will handle 20 watts without any strain, higher powers for a briefer period of time. Presents a 50 ohm impedance. to the transmitter.

100 Watt Dummy Load Kit- \$50

500 Watt Dummy Load \$75

Fully assembled commercial unit. The 500 watt load is a "can antenna" style with the resistive element suspended in a bath of mineral oil in a one gallon can.

ANTENNAS

An FM broadcast station's signal strength is extremely dependent on having a properly tuned and positioned antenna. Tuning an antenna requires changing the length of one or more elements and/or the cable attachment point. An SWR meter is needed to properly tune the antenna.

Comet Antenna - \$125.00

A commercially made antenna for the FM broadcast band. It is a 5/8 ground plane design that assembles quickly and easily. It tunes by sliding the inner element up and down. Has a gain of 2.

ANTENNA KITS

Dipole - \$40

Easy and quick design. Includes the aluminum antenna elements.

2 Element Yagi for either FM or TV - \$75, low VHF version \$100.

Provides a gain factor of 3-4 with a 120-150 degree pattern of coverage. Specify whether for the FM band, low VHF (2-6), high VHF (7-13) or UHF (13-27). Can be stacked for higher gain

POWER SUPPLIES

Unless you are planning on operating from a 12 volt lead acid battery or from the lighter socket in a vehicle you will need an AC operated DC power supply. Wall adapter units cannot be used. We have the following units available. Small switching type supplies for mounting inside the enclosure are available as well, see the no-tune PLL section. 2

amp 12 volt switcher - \$30, 3 amp 24-28 volt switcher \$40.

PS-3 - 2.5 Amp 13.8 VDC power supply - \$40

PLL with a 6 watt Use this to power either the 1/2 watt PLL transmitter or a 1/2 watt amplifier

PS-7 - 6 Amp 13.8 VDC power - \$50

Use this to power the the 15 watt amplifiers.

PS-14 - 12 Amp 13.8 VDC power supply - \$80

Use this to power the 40 watt amplifier

PS-20 - 20 Amp 13.8 VDC power supply - \$110

The above are Pyramid brand power supplies, We have higher quality Astron 13.8 volt DC power supplies available as well.

Switching power supplies for higher power amplifiers

PS28-1 - 5 Amp 28 VDC power supply - \$95

PS28-2 - 15 Amp 28VDC power supply - \$150

PS48-1 - 6 Amp 48VDC power supply - \$250

PS48-2 - 12 Amp 48VDC power supply - \$450

Switching 13.8 V 12 amp DC power supply - \$125

A very compact lightweight power supply that is 1/4 of the weight of the PS-14. Ideal for overseas shipments.

METERS

Power & SWR Meters

These are essential to the proper tuning and setting up of both transmitters and antennas. An antenna has to be fine tuned so that it accepts the full power of the transmitter and reflects the lowest amount possible back, that ratio of forward power to reflected power is known as the standing wave ratio (SWR). The various stages of both transmitters and amplifiers have adjustable capacitors which are used to tune the unit to the frequency of operation. A power meter allows you to see the effect of these adjustments on the power level and to set everything at an optimum level.

Daiwa Meters - Model CN-101 - \$100 / 100 Model CN801H - \$140

Dual cross needle meters that shows both forward and reflected power on the same meter face. Makes tuning up very easy, no need to switch back and forth between these two functions. The model CN801H has a large meter face that is very easy to read.

FREQUENCY COUNTER - \$80

To accurately maintain your operating frequency a digital frequency counter is highly recommended. This unit is a 6 digit unit usable to 350 MHz.

COAXIAL CABLES

A coaxial cable is a special type of wiring that has an inner conductor surrounded by an insulating plastic sheath which is covered by a braid of copper wire that is then covered by a plastic jacket. The 75 ohm video cable used in home TV applications is one type of coaxial cable. For most RF purposes, 50 ohm cable is used. Quite a number of 50 ohm

coaxial cables are available ranging from the rather small to cables over 1" in diameter. Regardless of the type, all such cables exhibit a loss that increases with frequency of operation and the length of the cable. For most purposes we will concern ourselves with RG213 and RG8x (mini version of RG8). In very short runs RG58 can be used, but we prefer RG8x due to its lower loss and ability to stand a bit more abuse. RG213 has the lowest loss of the group. Under no circumstances should the cables be twisted, kinked or crushed, this will cause major problems. We supply both RG8X and RG213 in the following lengths. Each end is terminated with a PL259 plug.

RG8X: 25 feet - \$15, 50 feet - \$25, 75 feet- \$35, 100 feet - \$40

RG213: \$1 ft in 25, 50, 75 and 100 ft lengths

ENCLOSURES

BOX7

7 x 7 aluminum chassis punched and drilled for 1watt PLL transmitter with or without the 6 watt amp - \$25

The Brick Enclosure

15 watt size -\$45, 20-40 watt size -\$70. 75-100 watt size - \$80, 150 watt size - \$110. Combined heat sink and enclosure made from extruded aluminum. Will support a 1 watt PLL on a slide-in plate in combination with the 15, 40, 80, 100 or 150 watt amplifiers.

Rack Enclosure - \$75

Will work for a 1 watt with or without stereo generator, 1 watt PLL & 6 watt amp with or without stereo generator, 1 watt PLL and 15 watt amp with or without stereo generator. Please specify which combination. Compact switching power supply for internal mounting - \$50.

LIMITERS

A limiter is required to prevent over modulation of the FM signal. Over modulation will cause spurious emissions and interference with other signals plus sound very distorted. It is extremely important to prevent this.

Berhringer Autocom Limiter/Compressor - \$125.00.

Professional audio limiter/compressor with lots of features.

MIXERS & MICROPHONES

We offer the entire Behringer and & Samson audio line including mixers. Please inquire for catalog and pricing.

Samson Mixpad 4 - \$175

A good choice for portable and field operations. It features two XLR low impedance inputs with one stereo input for a CD player or tape unit. Power source is either AC or 9 volt batteries.

Behringer DJ1000 Mixer- \$325

3 XLR microphone channels, 3 turntable channels and 6 line level stereo inputs.

Samson S-12 hypercardoid microphone - \$60.

An excellent low impedance unit for the broadcast studio. 25 foot XLR cable is \$18.00

VARIOUS & SUNDRY ITEMS

Tweak stick - \$2.50

Essential to tuning transmitters and amplifiers. Non-conductive body with tiny metal blade at end. In tuning these

transmitters and amplifiers a metal screwdriver will cause false tuning to happen due to the interactive effects of the metal and the holder of the screwdriver with the circuit. A plastic TV tuning tool kit can be found at Radio Shack as well

Seizing the Airwaves - \$13.00

A Free Radio Handbook by Ron Sakolsky and Stephen Dunifer. Let us conjure up a vision of a Wild Radio Stampede disrupting the territorialized lines of Authority artificially drawn in the air surrounding Mother Earth..... Within this book, the myriad voices of the Free Radio Movement come alive with the same urgency that has challenged both corporate and governmental control of radio-activity. If seizing the airwaves is a crime, then welcome to the millennial police state. Add \$4 for shipping

Build your own Radio Station DVD - \$15

A video guide to setting up a micropower broadcasting station. Add \$4 for shipping

Free Radio, the Documentary by Kevin Kyser DVD - \$15

An excellent documentary on the Free Radio movement. Add \$4 for shipping

ORDERING INFORMATION Proceeds from the sales of these kits go to the furtherance of micropower broadcasting, bringing a voice of empowerment to every community. Please add \$6.00 for handling and shipping for 1-2 kits and \$3.00 for each additional kit. \$6.00 for the 2.5 & 7 amp power supply and for each brick enclosure and \$15.00 for the 14 amp power supply. Normal shipment is either UPS ground or priority mail depending on size and weight. COD orders add \$8.00. Air mail to other countries, \$12.00 per kit. We ship within 2-3 weeks after receipt of order, sometimes sooner depending on the work load. Payment to be made out to Free Radio Berkeley. Foreign orders please pay by money order drawn on US bank

Free Radio Berkeley

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