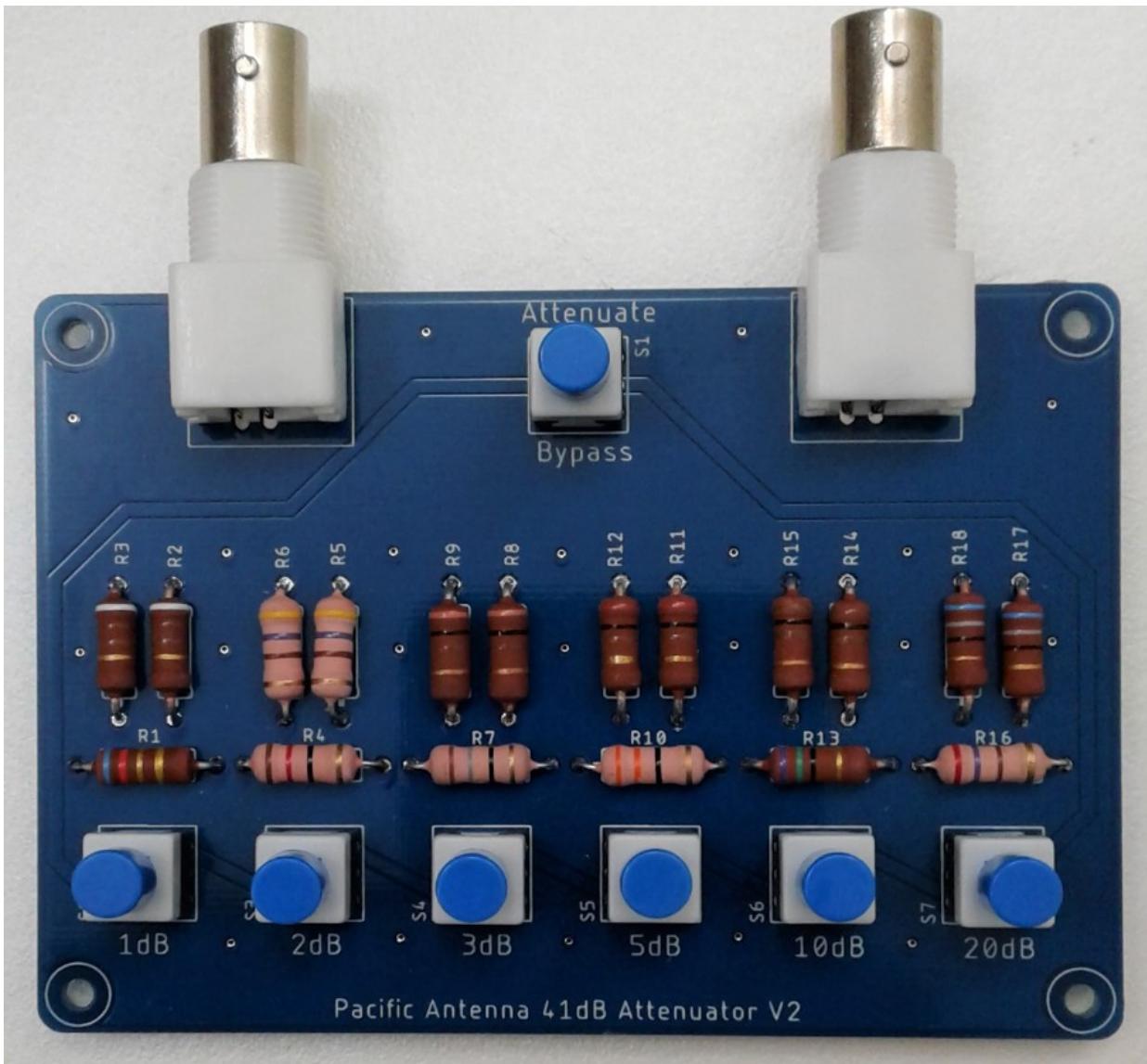


Pacific Antenna 41dB Switched RF Attenuator



Features

Our switched attenuator kit provides variable attenuation of input signals by up to 41dB in steps of 1dB.

Ideal for generating low level signals from sources including signal generators, oscillators and transmitters.

Can be used with a signal generator to check and calibrate S meters and for testing receivers.

Handles 5W continuous and up to 10W for intermittent signals

Bidirectional, either end can be an input or output.

Usable from DC to over 200MHz

Parts Inventory

Check	Quantity	Part	Value and Description
	1	R1	6.2 ohm, 2W, resistor (blue-red-gold-gold)
	1	R4	12 ohm, 2W, resistor (brn-red-blk-gold)
	1	R7	18 ohm, 2W, resistor (brn-gry-blk-gold)
	1	R10	33 ohm, 2W, resistor (org-org-blk-gold)
	1	R13	75 ohm, 2W, resistor (vio-grn-blk-gold)
	1	R16	270 ohm, 2W, resistor (red-vio-brn-gold)
2	R17 & R18		68 ohm, 2W, resistor (blu-gry-blk-gold)
2	R14 & R15		100 ohm, 2W, resistor (brn-blk-brn-gold)
2	R11 & R12		200 ohm, 2W, resistor (red-blk-brn-gold)
2	R8 & R9		300 ohm, 2W, resistor (org-blk-brn-gold)
2	R5 & R6		470 ohm, 2W, resistor (yel-vio-brn-gold)
2	R2 & R3		910 ohm, 2W, resistor (wht-brn-brn-gold)
7	Switches		DPDT push button switches
7	Button Tops		Press on push button covers
2	BNC		BNC female board mount connectors
4	Feet		Rubber Feet
1	PCB		Circuit Board V2 or later

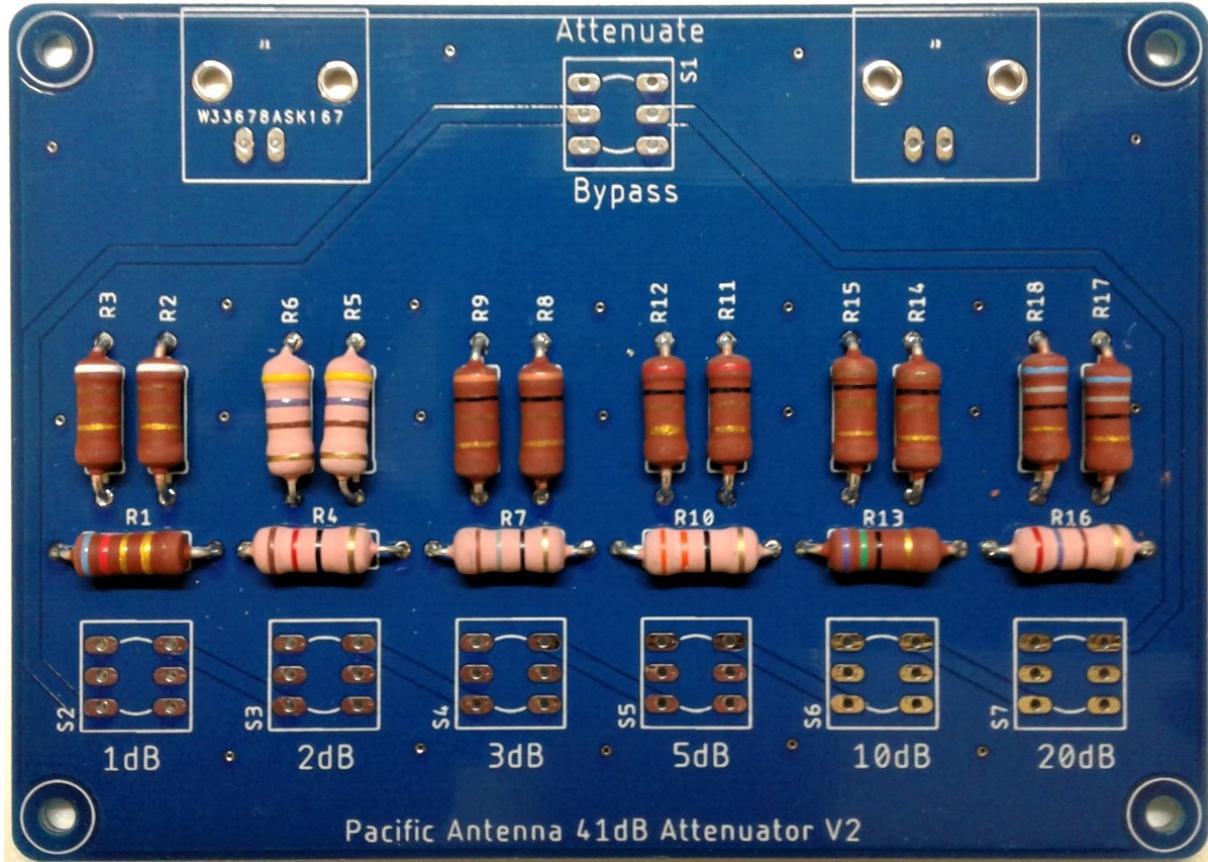
First, familiarize yourself with the parts and check that all components are in the kit.

Assembly

Begin by installing resistors R1 thru R18 on the side of the board with the silk screening.

Double check the values in the table above and on the schematic if necessary to confirm proper location.

Note: These 2 watt resistors have color codes that are sometimes difficult to read, due to the texture and color of the resistor. Always double check the value and location before installing and soldering.

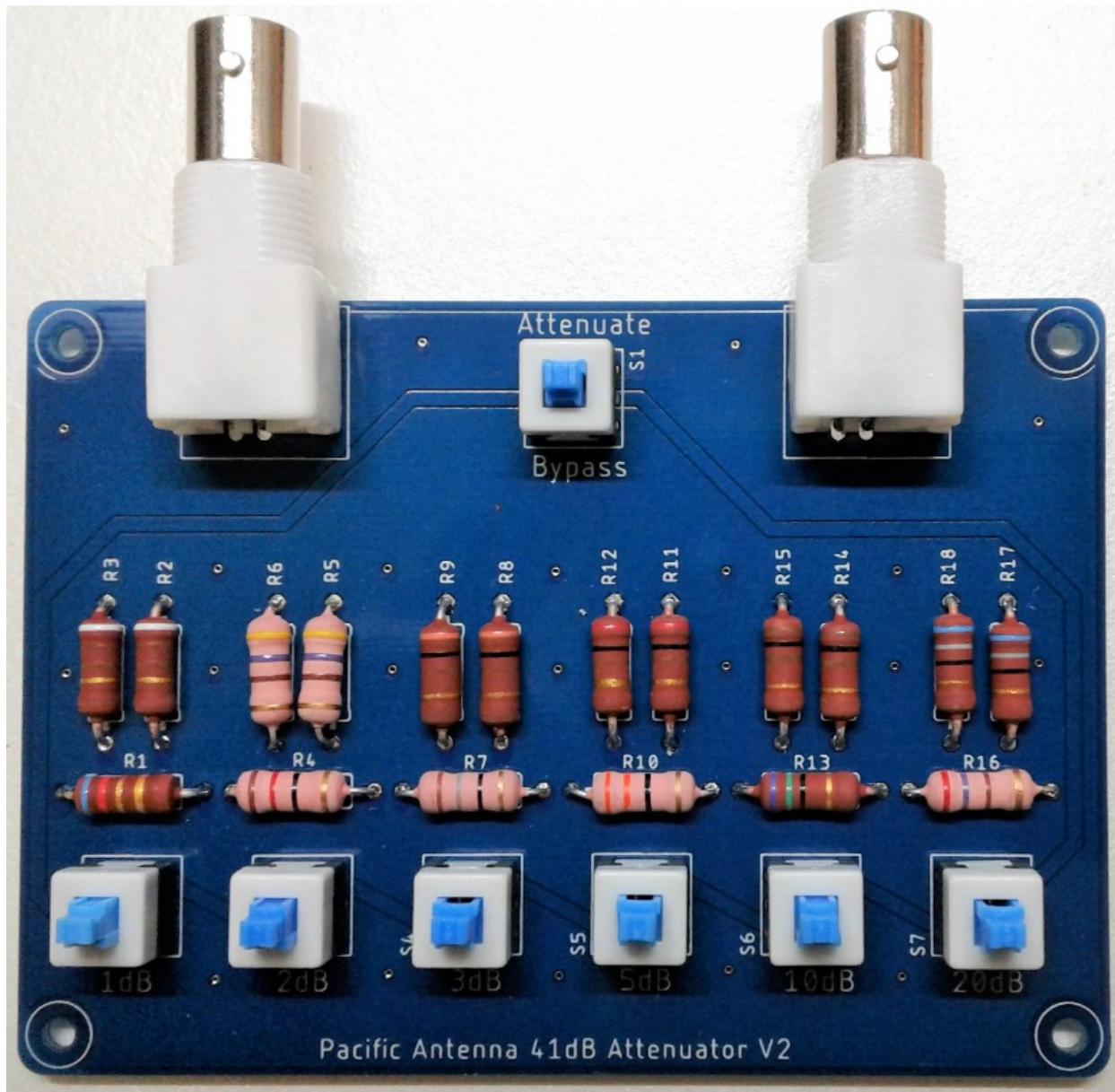


Install the Switches S1 to S7.

Orientation of the switches does not matter but be sure all pins go through the board.

Solder one corner pin and then check to see that switch is seated on the board. If not, reheat and press the switch into the board gently to fully seat it.

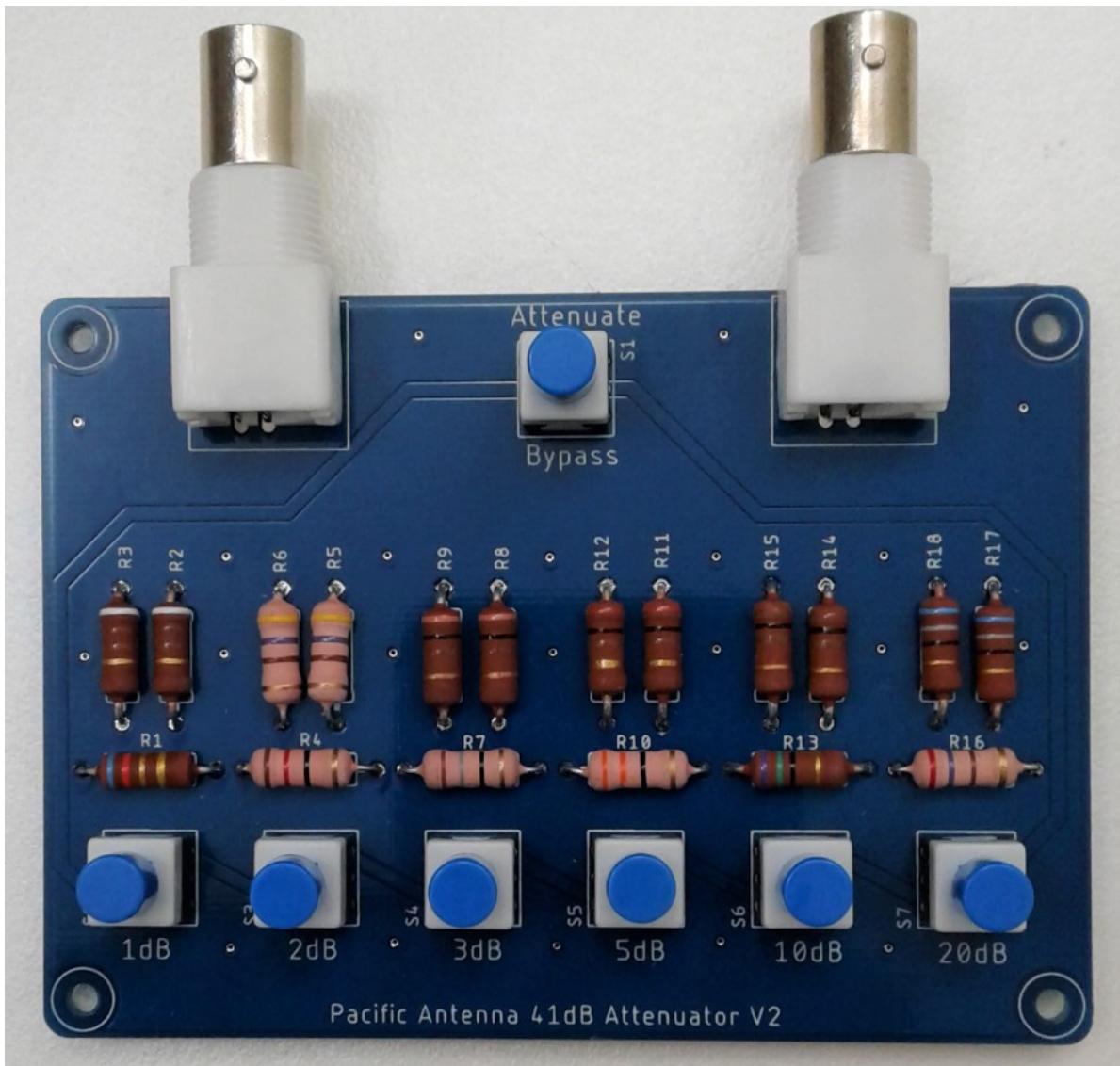
Install the BNC connectors for input and output. Solder one leg first and check to be sure it is seated on the board before soldering the other legs.



Completing the Attenuator

To finish the assembly, install the press on switch caps provided on each of the 7 DPDT pushbutton switches

Press gently to seat the cap on the shaft of each switch and verify that the switch operates normally.



Congratulations your attenuator kit is complete!

Support Email: qrpkits.com@gmail.com

Testing:

Now that the board is complete check the resistance for each section of the attenuator.

If you put the resistors in the proper position, you should get similar values to the ones listed below.

Connect an ohm meter to either end of the attenuator BNC connector center pin and ground

Then, press the switch for each section and note if the readings are similar to those below

Press each switch again to release after the measurement before moving on to the next one so that you are only testing one section at a time.

Some variation is normal as the resistors are 5% tolerance but the values should be close unless a resistor was accidentally swapped.

1 dB -	456	ohms
2 dB -	236	ohms
3 dB -	154	ohms
5 dB -	108	ohms
10 dB -	67	ohms
20 dB -	58	ohms

Using your 41dB Step Rf Attenuator

The attenuator is bidirectional, either connector can be an input or output.

The buttons are labeled with the attenuation value for that section.

If the button is down, that section will be in attenuation mode.

When up, that section is bypassed for 0dB.

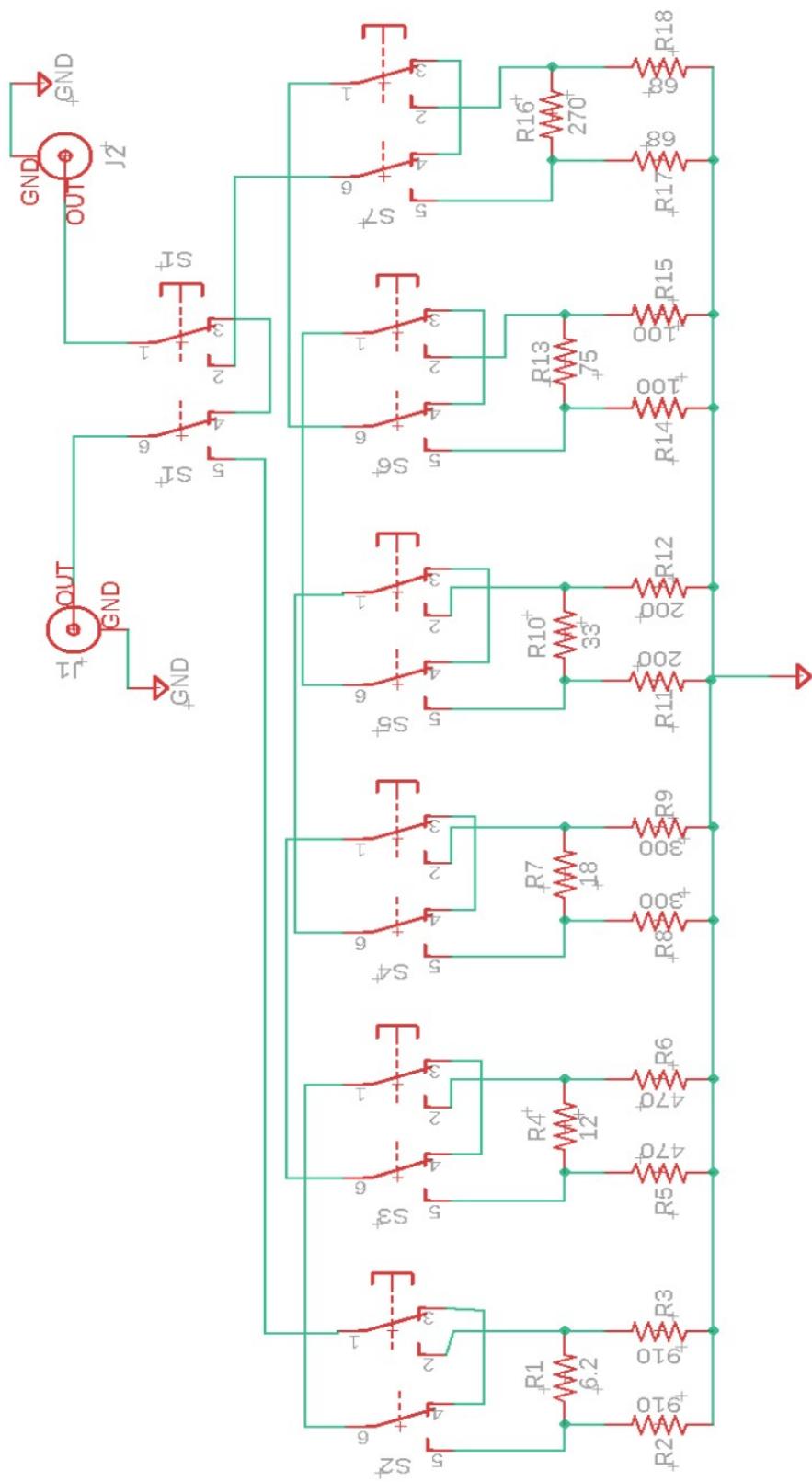
All buttons up or the main bypass button up gives no attenuation.

All buttons down gives 41dB total attenuation.

The resulting effect on output signal is shown here

dB Setting	Percent of Signal	Output W with 5 Watt Input	Output W with 1 Watt Input
-1	79.43	3.9715	.7943
-2	63.10	3.1550	.6310
-3	50.12	2.5060	.5012
-4	39.81	1.9905	.3981
-5	31.62	1.5810	.3162
-6	25.12	1.2560	.2512
-7	19.95	.9975	.1995
-8	15.85	.7925	.1585
-9	12.59	.6295	.1259
-10	10.00	.5000	.1000 (100mW)
-15	3.16	.1580 (158mW)	.0316 (31.6mW)
-20	1.00	.0500 (50mW)	.0100 (10mW)
-25	.32	.0160 (16mW)	.0032 (3.2mW)
-30	.10	.0050 (5mW)	.0010 (1mW)
-35	.03	.0015 (1.5mW)	.0003 (300uW)
-40	.01	.0005 (.5mW)	.0001 (100uW)

Schematic:



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