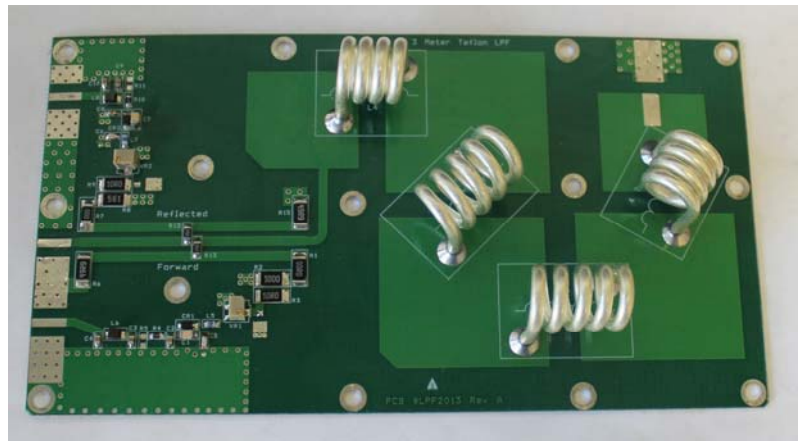


## Model LPF2013-1500

This Low pass filter is designed for use with FM Pallet amplifiers operating up to 1500 watts.

- **88-110MHz Pass Band**
- **Silver Plated #8AWG Coils**
- **Adjustable forward and reflected voltages.**
- **25dB Directivity Minimum**
- **Equalized RF detector for constant voltage across complete FM band.**
- **Surface mount technology**
- **Made in the USA**



Dimension (L x W x H inch) [6.96" x 3.75" x 0.75"]

Specifications:				
Characteristics	min	typical	max	unit
Operating Frequency range (pass band)	86	n/a	110	MHz
Power Input	n/a	n/a	1500	Watts
return loss	-25	-30	n/a	dB
Pass band insertion loss	-0.1	-0.15	-0.2	dB
Insertion loss @176MHz	-45	-50	n/a	dB
Insertion loss @ 216MHz	-60	-70	n/a	dB
Insertion loss 217-1000MHz	-70	-85	n/a	dB
Phase variation (unit to unit)	+/-10	+/-15	+/-20	degrees

### Theory of operation:

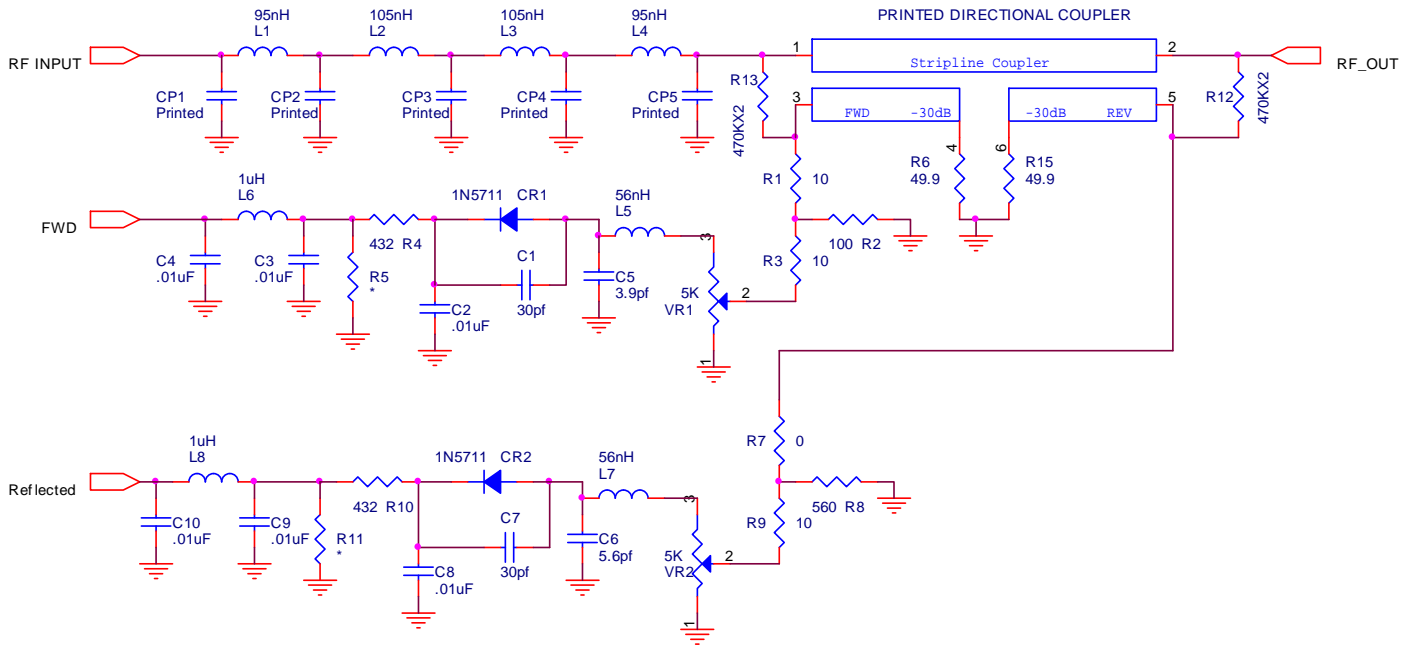
All RF amplifiers generate harmonic signals. Harmonics are at multiples of the fundamental frequency. For example if the amplifier is running at 100MHz there will be a signal at 200MHz, 300MHz and so on. Harmonics are measured using a spectrum analyzer and a high pass filter. Harmonics, aka spurious emissions, are regulated by government agencies in most countries. Low pass filters are installed at the output of the amplifier to prevent harmonics from being transmitted by the antenna system.

Manufacturers of FM broadcast equipment generally design their equipment to comply with FCC standards as follows:

FCC 73.317 (d)

"Any emission >600kHz from the carrier must be attenuated by  $43 + 10\log(\text{Power, in watts})$  below the level of the unmodulated carrier or 80dB, whichever is the lesser attenuation."

Schematic: Figure 1



## Electrical Connections and Installation Tips.

1. RF INPUT is connected to the output of the RF Pallet amplifier with a 50 ohm coax cable. On LDMOS amplifiers with a single device, ie BLF574, BLF578, BLF178P, BLF178XR, BLF174XR, BLF188XR we recommend a 13.5 inch piece of RG400 between the pallet amplifier output and the RF INPUT of the filter. This length of cable is required for matching purposes.
2. The FWD port provides a DC voltage that is proportional to the forward RF power passing through the filter.
3. The Reflected port provides a DC voltage that is proportional to the reflected RF power.
4. The low pass filter should be installed on a heatsink when operated above 800W. At lower power levels an electrically conductive surface such as the floor of an aluminum enclosure is good enough. Do not mount the filter to painted or black anodized surfaces.
5. Do not bend the PCB as this will damage the surface mount components. Do not adjust any coils L1 thru L4.
6. Trimmers VR1 and VR2 may be adjusted to control the forward and reflected voltages.
7. Use all mounting holes.
8. Allow at least ½ inch between filter coils and metal enclosures.