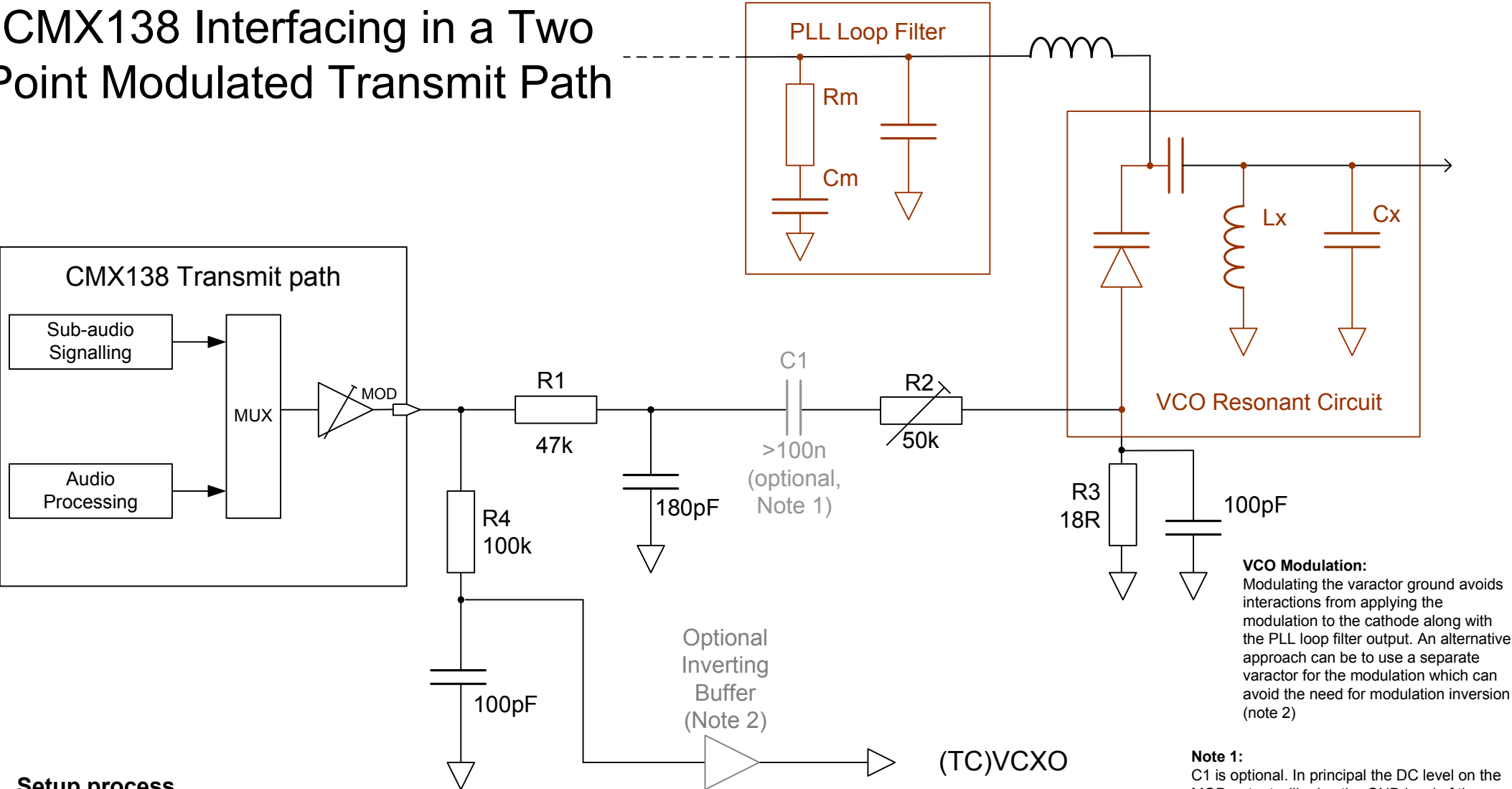


# CMX138 Interfacing in a Two Point Modulated Transmit Path



## Setup process

1. Value of R2 and R3 must be set depending on the VCO design as follows:
  - 1a. Set Mod Output level to a reasonable mid-range value.
  - 1b. With R1 disconnected and a modulation frequency of 100Hz set the deviation to a reasonable value.
  - 1c. With R1 in circuit and R4 disconnected set a modulating frequency of 2.5kHz; with R2 mid range, adjust the value fitted to R3 for approximately the same deviation as step 1b.
2. With R1 and R4 connected apply a square wave (or other suitable test waveform) and adjust R2 to give the correct output waveform.
3. Adjust MOD gain, via CMX138 C-BUS control, to set the desired deviation.

**VCO Modulation:**  
 Modulating the varactor ground avoids interactions from applying the modulation to the cathode along with the PLL loop filter output. An alternative approach can be to use a separate varactor for the modulation which can avoid the need for modulation inversion (note 2)

**Note 1:**  
 C1 is optional. In principle the DC level on the MOD output will raise the GND level of the varactor thereby reducing tuning range, however the resistive division means that in practice this dc level is only a few mV so can often be neglected.

**Note 2:**  
 The polarity of the VCO and (TC)VCXO modulation must be the same. In practice it is likely that this will not be the case if the VCO modulation is applied to the ground of the varactor (as shown). In this case the inverting amplifier must be used.