

Let's explore a classic MODULATOR vs. CARRIER scenario using the VCF in self-oscillation to sync/modulate the VCO's core. We will start with some simple waveforms like a Sine, add some harmonics to

taste and experiment with modulation depth ratios while adjusting the MODULATION frequency either manually or tracking unisono with the VCO's core. Best to approach this one purely by ear. No math.

Suggested settings: start with pizzicato accents, open up release for a more pronounced body.

The modulation depth control will affect the MODULATOR vs. CARRIER ratio. Listen and set by ear :)

VCO range switch in the MID-5th position, ideally your CARRIER is in a higher register than the MODULATOR.

Toggle through the Envelope Generator's Curvature characteristics* by pressing **mode + time** toggles simultaneously.

Set the VCA's modulation depth. Analog saturation will occur beyond certain values.

Patch the VCF's Sinusoidal output (MODULATOR) to the VCO's modulation input jack**.

*Red LED = sync mode.
**Consult VCO technical specifications on modulation modes and switch positions as well as input ranges.

As usual, the VCA modulation input is **normalized** to the cutoff modulation input on the Expander module. For this patch, we want to avoid the Envelope CV affecting our VCF's cutoff frequency, we can either set the cutoff control to 0 or use a dummy cable to break normalization.

Set the modulation mode switch to the UP position for sync mode. The modulation status LED* will give us an indication on the type of modulation we're applying.

Suggested patching: Start with a Sine, add Triangle for more "top" and Saw for more harmonics.

Set the VCF mode switch to the MID position for self-oscillation + 1v/oct tracking. **Optionally** set the switch to the DOWN position for self-oscillation without tracking to manually modulate the Sinusoidal output's frequency.

Add noise to taste!

The cutoff frequency control will set the Sinusoidal output's modulation pitch.

Mix to VCA input. The output is our CARRIER signal.

