All Things Yaesu

INITIAL SETTING OF YAESU Parametric EQ and HEIL PR Microphones

First, you need to set the transmit **bandwidth**. Try 200 – 2800 first. This will roll off some of the low-frequency response. You may be able to adjust to 100 as long as it doesn't overload and sound too bassy.
Press the Menu and rotate the SELECT knob so it reads "TX BPF" (Transmit Band Pass Filter). Turn the Clarify/VFO knob to set this bandwidth of 2-28 (200-2800). ALWAYS remember to hold the MENU button for about 3 seconds to save any of these needed items.

Now we move onto the Parametric. A Parametric EQ is just as the term implies. You can adjust the parameters of the microphone audio. You do not need 8, 10 15, or a 31 band EQ when we are only dealing with a 3,000 Hz wide signal. A Parametric EQ usually has only 3 filters. If you have more than three frequencies which need 'attention' you have more problems than an equalizer is going to fix! Wrong microphone, not addressing (speaking into) the microphone correctly, too far away from the microphone, too much room echo and a host of other situations. With parametric EQ you can change the parameters of the EQ system. You can adjust the frequency, the bandwidth and tell those parameters to either notch (-) or boost (+).With normal two or three band equalizers, the frequencies are set and fixed by the design engineer of the radio. You only have control to either cut or boost the filter frequency they build into the transmitter.

The first thing to set is the frequency that you need to affect. There will be three important frequencies to attend to. Low end, Mid Range, and Highs. For most, roll off the low end by setting the first filter at 200 Hz. You then will tell the filter to roll that off or notch that 200 Hz. Do you want some big boomy low end? Boost it with that adjustment but it is best to reduce (notch) that low end a bit for cleaner and clearer audio.

The second adjustment is the Bandwidth which is set in the traditional audio nomenclature of octaves. In the amateur radio field, we aren't dealing with music material but the adjustment affects voice the same way. If you set this first filter frequency to 200Hz. and have the parametric 'Bandwidth' control set to a wider setting (say 10), the filter will encompass the audio frequencies from about 100 Hz to 400 Hz. If you set the Bandwidth control of the Parametric to 1 or 2, the notch or boost you have set will only affect about 150 to 250 Hz. If affects just a small 'slice' of the audio if the bandwidth is set to a narrow number or setting. You would want to start by keeping that bandwidth to the halfway point.

The third control of the filter is either – or +. Notch or Boost. If you want to cut some low end, you notch -20 dB at 100 Hz. You want to boost that frequency, you adjust it to + 10dB. We have explained one filter. There are three and that is all you will need to make your transmitter sound terrific. You simply select the needed frequency, boost or notch that frequency and set the bandwidth as to how wide you need to affect. You can listen through headphones through the monitor but I have always found it better to listen through headphones through a second receiver while transmitting into a dummy load. You then know exactly how you sound to the outside world.

Let's get started!

Press the (PROC) button momentarily so MIC EQ shows up on the display. This HAS to be shown as it turns the parametric EQ on.

There are three audio filters that you can change their PARAMETERS (thus 'Parametric' EQ). You set the frequency of the filter. You then set the Bandwidth of that filter and finally, you tell the filter if is notches (cuts, reduces) or boosts that filter frequency.

Using the Heil Sound wide frequency range microphones such as the PR 781, PR 30 or PR 40 you will want to roll off the low end as the preamp of the 950 does not handle a lot of bass response.

YOU have to make the final decision by listening to your own signal. No one else can make the adjustments. You are the station engineer.

Here are the menu assignments for the FT 950

These assignment Menu numbers are different for the other Yaesu rigs but the level settings are the same. Check with your Owners Manual for the menu numbers for your particular transmitter. These menu assignment numbers change – rig to rig.

Set filter one to 200 Hz.	Menu 091	Frequency
CUT that filter -15 dB	Menu 092	Notch or Boost
Bandwidth of 5	Menu 093	Bandwidth
Second Filter 900 Hz	Menu 094	Frequency
CUT -6 dB	Menu 095	Notch or Boost
Bandwidth Q 5	Menu 096	Bandwidth
Third filter 2400 Hz	Menu 097	Frequency

BOOST + 8 dB	Menu 098	Boost

Bandwidth 5	Menu 099	Bandwidth

NOW – DO NOT FORGET TO SAVE these by holding the menu button for 3 seconds. If you don't do that, all of these settings go back to zero. Save your settings each time.

Now, I am not telling you that this is the end all. Since I can't actually HEAR your transmitted signal, these are just starting points. We have notched some low end out by setting the transmit bandwidth in the beginning then with the EQ, we reduced some low end (menu 091) and this is always a major problem. Sometimes, you will have too much low-end audio from the microphone that actually overloads the mic preamp and 'sounds' like RF but it may not be. It is clipping the mic preamp.

The first low-frequency filter removes all of that low-end bass that destroys so many signals. They have lots of bass, no mids, no articulate highs so they end up sounding like mush. The mid frequency is very important. There is usually some craziness that happens around 400 Hz. That is usually notched a bit but there are voices that need some energy around 1000Hz attended to and you just have to make that decision by listening and select the midrange parameters. The all-important issue is the third filter where you achieve speech articulation. SO SO important and this + 8 dB boost at 2400 – 3000 HZ is the good starting point for that. The most important thing is to achieve a nice balance of lows, articulate mids, and crisp highs. So many times I hear stations with so much low end you can't understand what they are saying because they have not achieved good mid-range speech articulation.

BALANCED MICROPHONE INPUTS

All of the new Yaesu series 9000, 5000,2000 3000, 1200 and the FT 950 have a balanced audio input on the audio board but Yaesu does not use it. They unbalance that 8 pin round mic connector input with their typical Pin 8, pin 7 connections. Sad.

The Heil cable CC-1 XLR-BAL (with an ORANGE, not traditional Yellow boot for early models) connects our balanced output microphone into the balanced input and will help reduce any RFI issues.

For best results please consult your manual.

DSP and Carrier Point Settings

Yaesu has, since the 1980s, provided means for adjusting the carrier insertion point (identical to "IF SHIFT" used on receive, only this is on your transmitted signal). This allows the operator to roll off lows, or roll off highs, to change the articulation or bass response of your voice wave-form.

Beginning with the FT-1000MP, DSP settings were added to many rigs, allowing the transmit bandwidth to be varied, and additionally, it was possible to perturb the envelope to do things like peaking both high and low while putting a null in the center of the transmitted passband, etc.

It is impossible for us at Heil Sound to know what settings will sound "best" on your voice, in your station environment, with your microphone, for your interest (DX, Contest work, rag-chewing, or maximum fidelity) The recommendations below are just starting points; listen to yourself in a separate receiver (with its antenna

disconnected) to determine what sounds best in your unique situation

FT-2000/3000/5000/FTdx9000 FT 950, FT 3000, FT 1200

All of the late model Yaesu starting with the FT 9000 all the way through the FT 1200 use the same Parametric EQ and mic preamp boards. The suggested level settings will be the same but the actual menu assignment labels are different.

EQ1: -6 dB at 200 Hz, Bandwidth of 2 (set to -10 dB if using PR 40 and you get Reports of too much bass).

EQ2: -6 dB at 900 Hz, Bandwidth of 2.

EQ3: +6 dB at 2400 Hz, Bandwidth of 2. Set to +10 dB for DX/Contest work.

SSB TX BW: Set to 400-2600 Hz for DX/Contest work, 300-2700 Hz for everyday operation, 100-2900 Hz for more fidelity. Note that power output meter will show "lower" power as bandwidth is increased; this is normal, reflecting lower power density per Hertz of passband.

FT-1000MP Series (including Mk-V and Field)

Menu 5-9: 6.0

Menu 7-7: Set "SSB-T" to 300-3100 Hz for DX/Contest, 100-3100 Hz for more fidelity.

Menu 4-4: Set to "OFF" while setting Menu 7-7 to your liking, then try each selection ("1" through "4") while listening in a separate receiver to see if any of these improve your voice signal's characteristics. Oftentimes "OFF" is best.

Menu 8-9: Generally, you don't need to touch this one. However, the settings are identical, in principle, to those found in the discussion below for the FT- 920. Try them while listening on a separate receiver.

Speech Processor: Don't be afraid to use it; the audio quality is excellent for most applications.

FT-847

Menu 42: On (this engages the "Extended" Menu).

Menu 92: +5 to +10 to start, +15 for DX/Contest work.

Menu 93: -5 to -10 to start, -15 for DX/Contest work.

Note: The ideal setting may differ between USB and LSB, depending on other alignments in the rig. The LSB settings are

"inverted" from USB, so a setting of -10 on LSB and +10 on USB should sound the same.

FT 857 D FT 817
Menu 46 DSP High Pass filter Default at 100. Set that to 200 to 300 on the low end

Menu 48 DSP Mic Equalizer
To set up the DSP Microphone Equalizer feature:

1 Press and hold in the [DSP] key for one second. This instantly activates Menu Mode No-048 [DSP MIC EQ].
2 Rotate the DIAL to select one of the following equalization choices: OFF: Microphone Equalization Off
3 LPF: High Cut (lower frequencies are emphasized)
4 HPF: Low Cut (higher frequencies are emphasized)
5 BOTH: High/Low Cut (mid-range frequencies are emphasized)
6 When you have made your selection, press and hold in the [FUNC] key for one second to save the new setting and exit to normal operation.
Menu 016 Carrier Balance -300 to +300 LSB Transmit
Menu 017 Carrier Balance -300 to +300 USB Transmit Adjusting
These controls will give you a more low response or high response. As always listen to your test signal through headphones connected to a second receiver. You will hear the balance that will please you. As always study the operation guide for further information.

FT-920
Menu U-59 (TLSB): +100 for DX, +150 for Contest work, -100 for rag- chewing.
Menu U-60 (PROC LSB): +100 for DX, +150 for Contest work, -100 for rag- chewing.
Menu U-62 (T USB): +100 for DX, +150 for Contest work, -100 for rag- chewing.
Menu U-63 (PROC USB): +100 for DX, +150 for Contest work, -100 for rag- chewing.
Menu U-51: Set to OFF initially.
1: Mid- and high-frequency emphasis.
2: High-frequency emphasis (DX/Contest setting).

3: Low- and high-frequency emphasis, dip in middle.
4: Wide "broadcast" setting.

FT-450

The FT-450's Microphone Equalizer Menu item ("MIC EQ") is very simple in its adjustment. Basically, there are three ranges (low, Mid, and High) for equalization; you can roll off any one of these, peak any one of these, or peak one and roll off another.

For DX and Contest work, use selection 9 (this rolls off lows and peaks highs). To roll off excessive bass in a microphone like the PR 40, use selection 1 (this rolls off lows while leaving mid-range and highs flat). To increase high-frequency articulation, without rolling off lows or mid-range, use selection 4.

See page 81 of the Operating Manual for details.

FT-100

Menu 16 (MIC EQ): Set to OFF initially. Selection "2" emphasis high frequencies, while "3" cuts both low and high frequencies, emphasizing mid-range.

Menu 25 (MIC GAIN): 85

Menu 27 (Compression) 80

Menu 64 (T LSB CAR): Set to -100 Hz for rag-chewing, _150 Hz for DX/contest work.

Menu 65 (T USB CAR): Set to -100 Hz for rag-chewing, _150 Hz for DX/contest work.

Always consult your manual.

HEIL ICM electret Condenser on the Yaesu

All Yaesu transceivers are set up to use low gain, passive dynamic microphones into their high gain microphone preamplifiers. There are situations where you may want to use one of the Heil ICM microphones or headsets made for iCOM using the Heil iC element. These products require a bias voltage to power their internal F.E.T. Here is what needs to be added to the 8 pin connector to make that electret condenser work. Keep in mind the iC elements were designed specifically for the early iCOM rigs with low mic preamp gain. The iC elements have a lot of output to drive the early iCOM rigs. The Yaesu preamps are high gain so you will use a much low

setting of mic gain with the Heil iC element. Thanks to GM0ONX for this drawing.

Heil iC to Yaesu Adapter

(c) GM0ONX