Audio Chain

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Here's a run down on some of the audio gear that I use and the order in wish it's all connected. By no means am I a audio guru. I just like having good sounding audio when rag chewing with state side and Dx stations. I hear so many station on the air with such bad sounding audio wish makes it so hard to understand what there saying. And at time you may not want to even have a QSO with. I surely don't want to be of those. And at the same time don't want to go over board with my audio.

My audio setup is built around a YAESU FT-950

Microphone EQ Setting

Menu #	Settings	Function
091	100	EQ1: Lower frequency
092	10	EQ1: Gain of lower frequency
093	1	EQ1: Q factor for low EQ
094	1500	EQ2: Center frequency of middle range
095	10	EQ2: Gain of mid range
096	1	EQ2: Q factor of mid EQ range
097	2800	EQ3: Center frequency of high range eq
098	10	EQ3:Gain of high eq range
099	1	EQ3: Q factor of high range
100	200	PE1: EQ low frequency range
101	0	PE1: Gain of low frequency range
102	2	PE1: Q factor of low range
103	800	PE2: Center frequency middle range
104	0	PE2: Gain for middle range
105	1	PE2: Q factor of middle range
106	3000	PE3: Center frequency high range
107	0	PE3: Gain for high range
108	1	PE3: Q factor of the high range
109	50	Compression level of speech processor - I do not use this

Currently using the Heil PR-781

No longer using Behringer B1 Microphone

I started with the Behringer B1 microphone which works very good. At lease for me at the time. There are better microphones out there if your willing to pay the higher price tag. I've heard others using microphone costing $30.00 and sounding like a $200.00 microphone. I'm not getting that crazy into the audio stuff. The biggest problem I had with the Behringer is that it's a very sensitive microphone. It picks up any sounds it hears. Listing with my headphone I was able to hear cars coming down my street long before they reach my house. Airplanes flying over the house, neighbors in the next block, will you get the picture. This is a good microphone if your in a sound control room. A noise gate is highly recommend with this microphone and helps to limit some of the un-wanted background noise. I would not recommend using this microphone.

I'm now using the Heil PR-781. The PR-781 does not pickup all the background noise like the B1 and works well with my audio gear. James K6JRF shows a comparison between the Heil PR-781 and Electro Voice RE27 which is a $400 microphone. All the Behringer audio gear was purchase off of ebay for $40.00 each back in 2008. The Behringer B1 microphone was purchase new for $99.99 with free shipping from Musician's friend. The Heil PR-718 was purchase from R&L Electronic at $139.95

MIC2200 - PREAMP: The least expensive microphone preamp of quality that you can buy. The preamp has other features such as parametric EQ etc. I started using this because of the Behringer B1 microphone which needs a +48 volts to operate and the signal needs to be amplified to operate. It's now used for audio in and out along with its other features. Am feeding the microphone into the left channel.

Mic-2200 Mic Preamp

EX3200 ULTRAFEX PRO: Multiband processing for simultaneous low- and high-frequency enhancement "Natural Sonic" processor for extremely musical sound enhancement VSP (Variable Sound Processing) circuitry for simultaneous enhancer and exciter processing "Dual Mode" ultra-bass enhancer for awesome soft and tight bass sounds Shift function allows you to control the frequency range of added bass punch Surround processor for spatial enhancement and improved stereo imaging Built-in noise reduction system.

ULTRAFEX PRO EX3200

2-Channel Multiband Sound Enhancement System

There are two ways to mod this unit. The first is internally which can take sometime to do. If your not able to do this mod yourself. You can check with WZ5Q about doing the mod. Also check with WZ5O website for information on how to reform this mod. I have not had mine mod. The second way to perform this mod is very easy. This mod came from W5UDX see details below.

1) You will have a Balanced Cable coming into the Input of Channel 1 using the typical TRS 1/4" connector or XLR connector utilizing the 3ea wires (Signal +, Signal -, and Shield)

2) The Output of Channel 1 going into the Input of Channel 2 will be using an Unbalanced Cable with the Mono 1/4" connector utilizing 2ea wires (Signal +, and Shield).

** THE WIRES ARE NOT REVERSED!! **

(You can use TRS 1/4" connectors for this if you short the Signal - and the Shield together on both ends of the cable. Doing this makes it an Unbalanced Connector)

3) You will have a Balanced Cable going out of the Output of Channel 2 using the typical TRS 1/4" connector or XLR connector utilizing the 3ea wires (Signal +, Signal -, and Shield)

Just another note:
If you were using Unbalanced Cables coming into the Input of Channel 1 and going out of the Output of Channel 2, then you would use the opposite Balanced Cable to tie Channels 1 and 2 together.

Try Theses Setting As A Starting Point

Channel 1		Channel 2	
SHIFT	= Set to Ultra Low (Light on)	SHIFT	= Set to Ultra Low (Light on)
BASS PROCESSOR	= Set to "1"	BASS PROCESSOR	= Set to "1"
MODE	= Set to Soft (light off)	MODE	= Set to Soft (light off)
AUTO NR	= Set to IN (Light on)	AUTO NR	= Set to IN (Light on)
NR SENSITIVITY	= Set to where the LED Display just barely goes to full scale on voice peaks	NR SENSITIVITY	= Set to where the LED Display just barely goes to full scale on voice peaks
TUNE	= Set to 3.3	TUNE	= Set to 3.3
PROCESS	= Set to Exciter	PROCESS	= Set to Exciter
HIGH MIX	= Set to "1" (be careful with this as it will introduce "Tearing" into the audio if set to high)	HIGH MIX	= Set to "1" (be careful with this as it will introduce "Tearing" into the audio if set to high)
SOLO	= Set to Off (Light is out)	SOLO	= Set to Off (Light is out)
IN	= Set to IN (Light is on)	IN	= Set to IN (Light is on)
SURROUND	= Set to IN (Light is on)	SURROUND	= Set to IN (Light is on)
SURROUND	= Control set to "1-2"	SURROUND	= Control set to "1-2"

DSP1124P - FEEDBACK DESTROYER PRO : Dual channel feedback suppressor  or 2 x 12-band parametric equalizer. You will need to adjust the parametric equalizer to your voice, microphone and radio every ones voice is different. Below are some setting that I'm using. The low end bass settings I have turn off only because I feel I have enough lows coming from the EX3200. I'm using the lower midrange, midrange and upper midrange settings from the DSP1124P. You may need fine most of the audio guys are now using the new Behringer DEQ2696 which replace most of the audio gear I'm using. Mode (OF) set as off. Mode (PA) is set to on. Items highlighted in red are the setting I'm using. Example 50-80Hz is the best setting range to work with. These are the settings being used with my Yaesu FT-950, all equalizer setting in the radio are turn off and the radio band width is set to 3.0k.

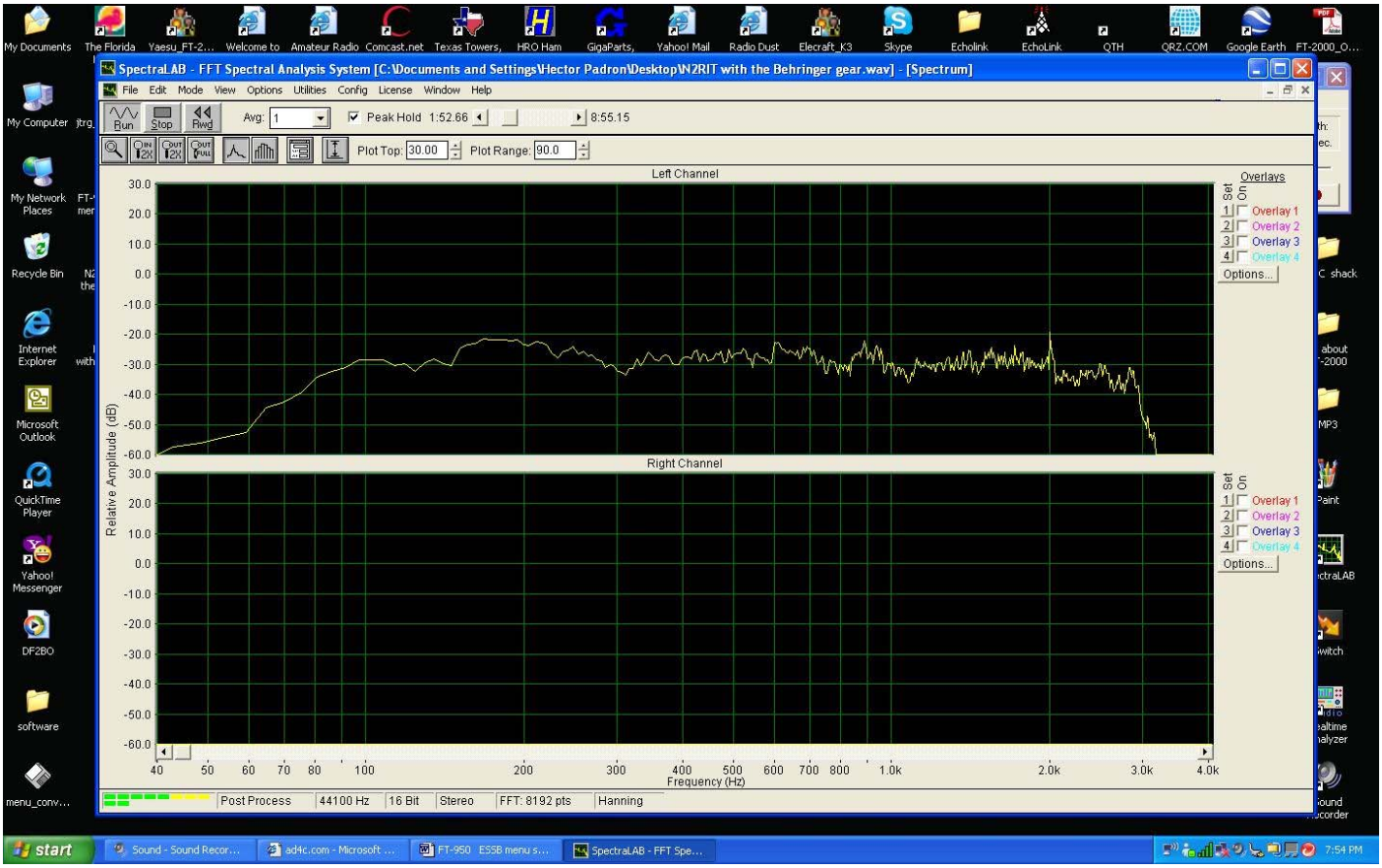
Filter #	Mode	Frequency	Bandwidth	Fine	Gain
1) Bass Setting	OF	50 -80Hz	30 - 60 63	-3	+3
2) Lower Midrange	PA	100 - 160	120 - 60	0	-1
3)Midrange	PA	600 640 630Hz	120 - 60 63	0	-5
4)Hi Mid -Treble	PA	3.2 - 4.5 kHz	30 - 60	+2	+4
5)Treble Polish	PA	4 - 5 3.2 kHz	20 - 60 36	-2	+4
6)Upper Midrange	PA	1.5 - 2 KHz 2.0	51	-1	-3

MDX2200 COMPOSER PRO: This unit is used to remove background noise and also service as a compressor limiter.

Live On The Air Audio Recordings

3.0 kHz By KD5AW 1/10/2010	2.8 khz By KD5AW 1/10/2010	3.0 Khz By AD4C 6/6/2009

Graph taken by AD4C 6/6/2009



New Audio Setup

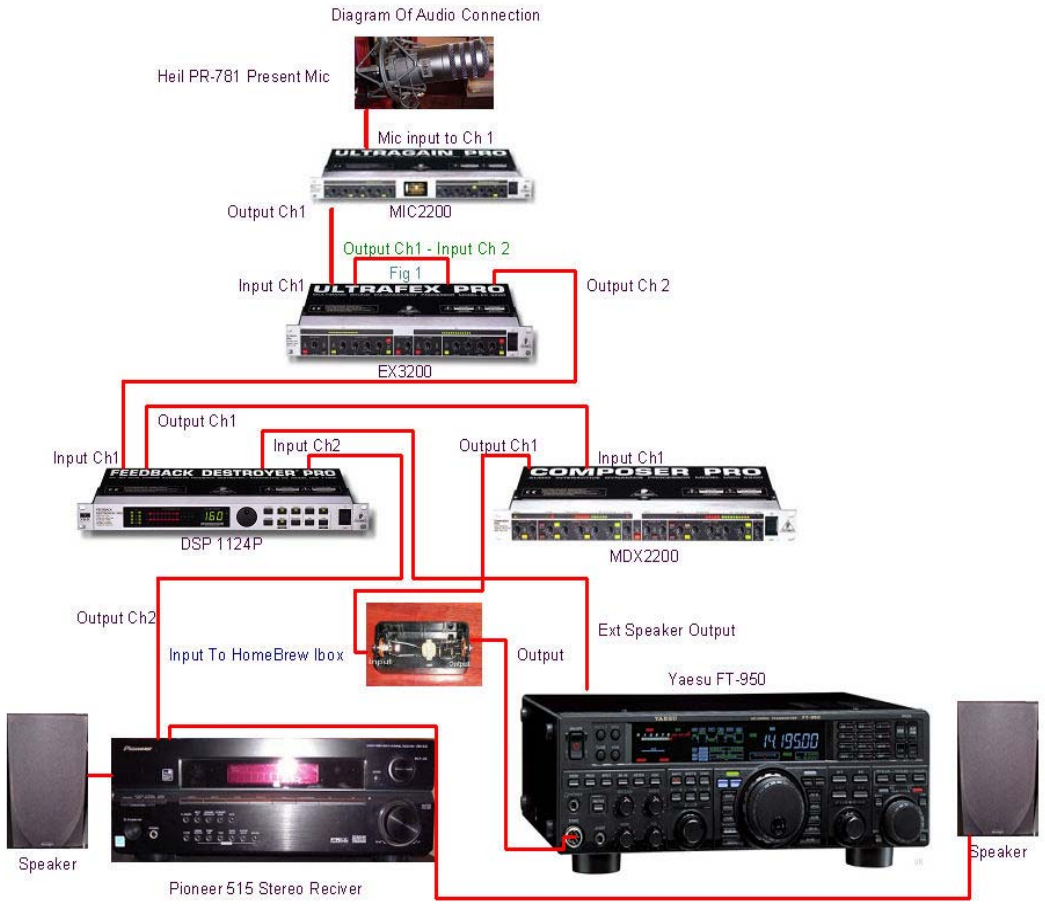
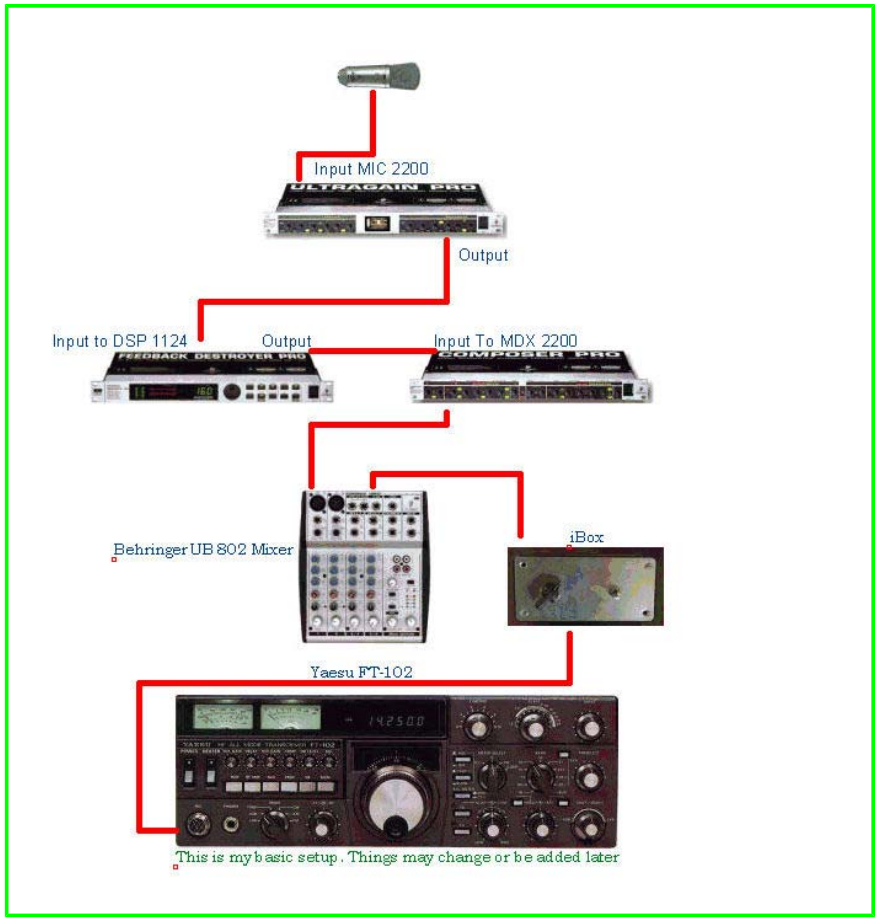


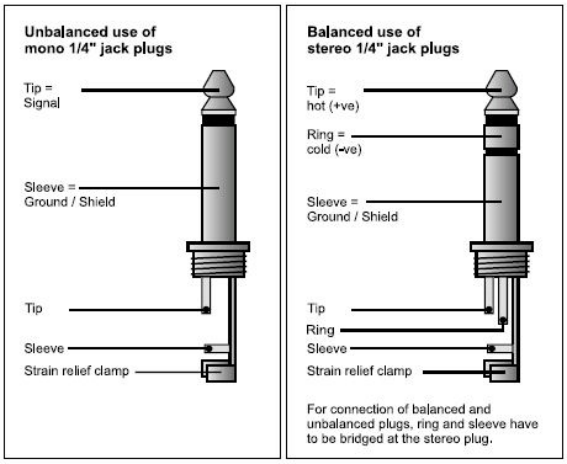
Fig 1 in the new audio chain diagram shows the mod for the EX3200 by W5UDX. By connecting channel 1 output to channel 2 input.

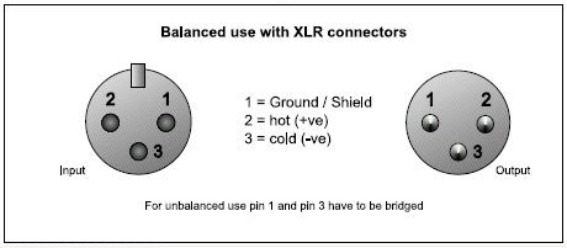
Old Audio Setup



Here's a few pictures of my Behringer audio gear in a home brew rack. II

Place cursor over image for a larger view





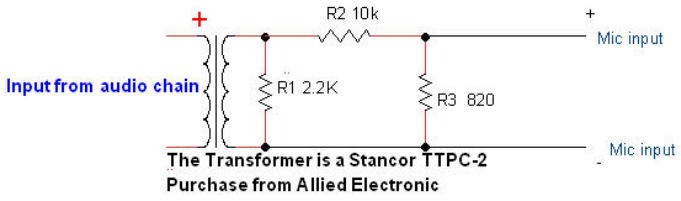
Cables are balance audio cable. The diagram to the left shows you how to do this should you have to make your own cables. When using balance cable be sure it through out all your chain.

I would not subject running any rack gear directly into the front of your radio with out some type of audio pad or ibox. The audio coming out the rack gear is usually much greater then the audio front end of your radio can handle. This pad should bring the audio level down about 23db between the rack and radio.

Below is one of two different types of pads that I've built. This is a very simple one that works. You may have these parts in your junk box. The main part is the isolation transformer which can be purchase from Allied Electronic for about $5.00. I purchase a couple of these to have on hand. All resistor are 1/4 watt. Connector can be what ever works for you. Because you do not need to have a balance input from the last piece of rack gear into the radio. I used 1/4 phone connectors. I key may radio via the PTT connector on the back of the radio with a foot switch or the desk switch. I usually run vox so I don't used either very much.

I would subject using a metal box if you can get one. If using a metal box do not connect any resistors to ground. This is a floating ground. I have not had any problem using a plastic box.

Note that the transformer has a (RED DOT) on it. My schematic is indicated by a red plus sign this is the input for the rack gear. Resistor R2 10K can be a variable one if you want adjust the level. But found that the fix value works just fine.



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To learn more about ESSB audio visit here's a few website of people that know much more about it then I. NU9N WZ5Q K6JRF W3OZ

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