



Understanding and Improving Your Station Audio

CAN YOU HEAR ME NOW?

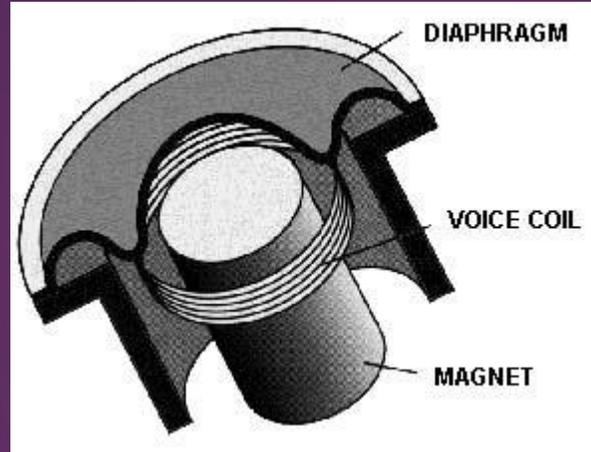
So much to talk about, so little time

- ▶ Microphones
- ▶ Outboard Audio Gear
- ▶ Sharing Audio Resources
- ▶ Matching Audio Impedance/Levels
- ▶ EQ, Reverb, Compression, and Limiting
- ▶ Big Dollar DSP Speakers

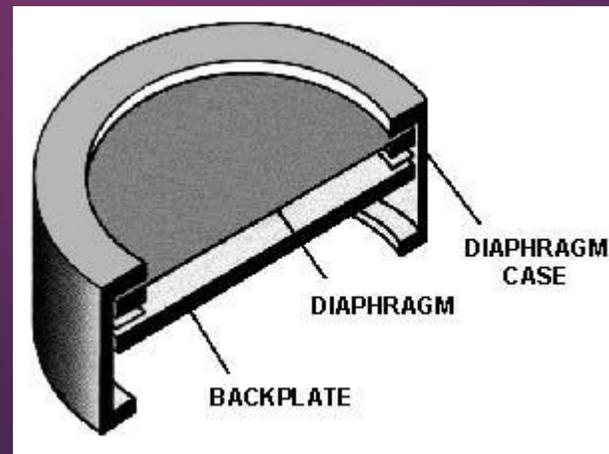
Microphones

- ▶ Types

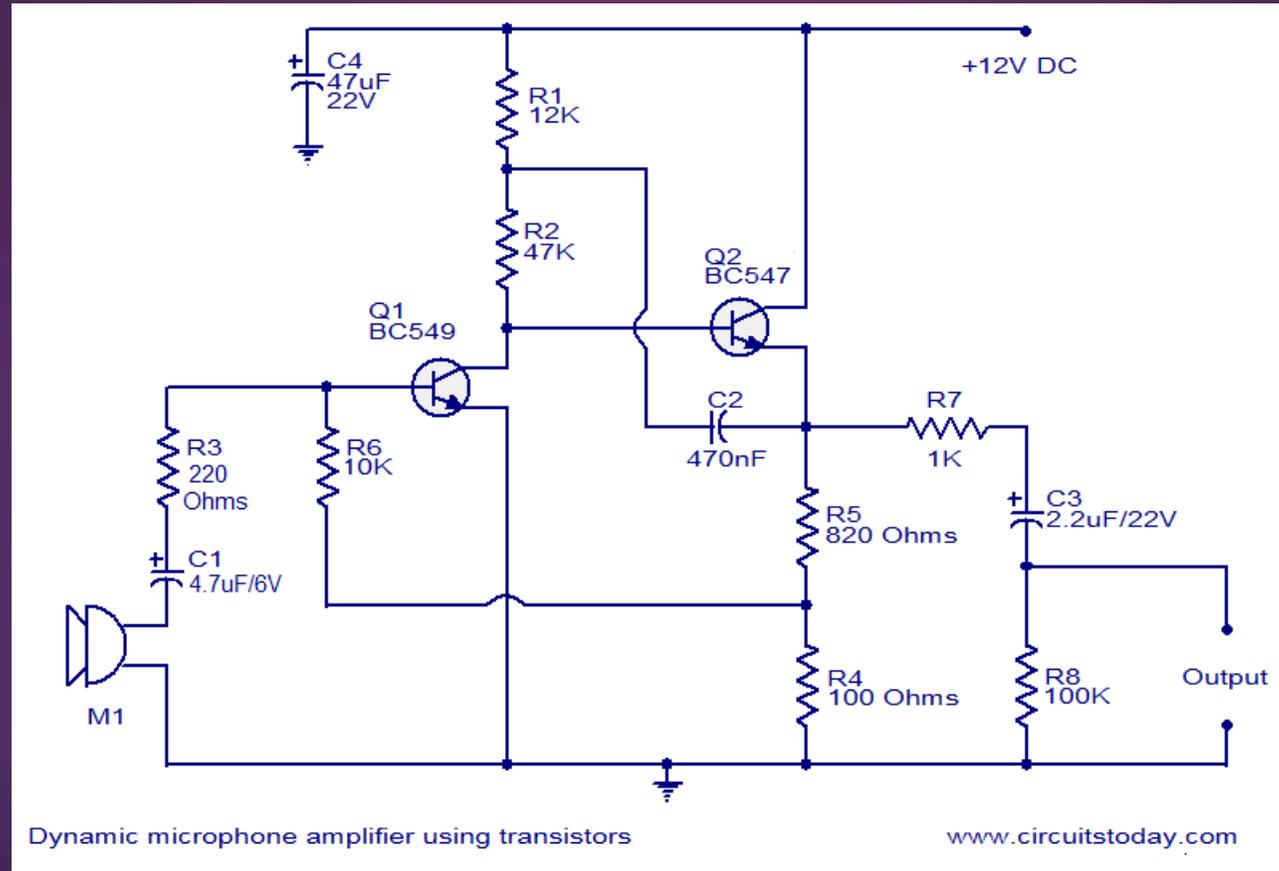
 - ▶ Dynamic



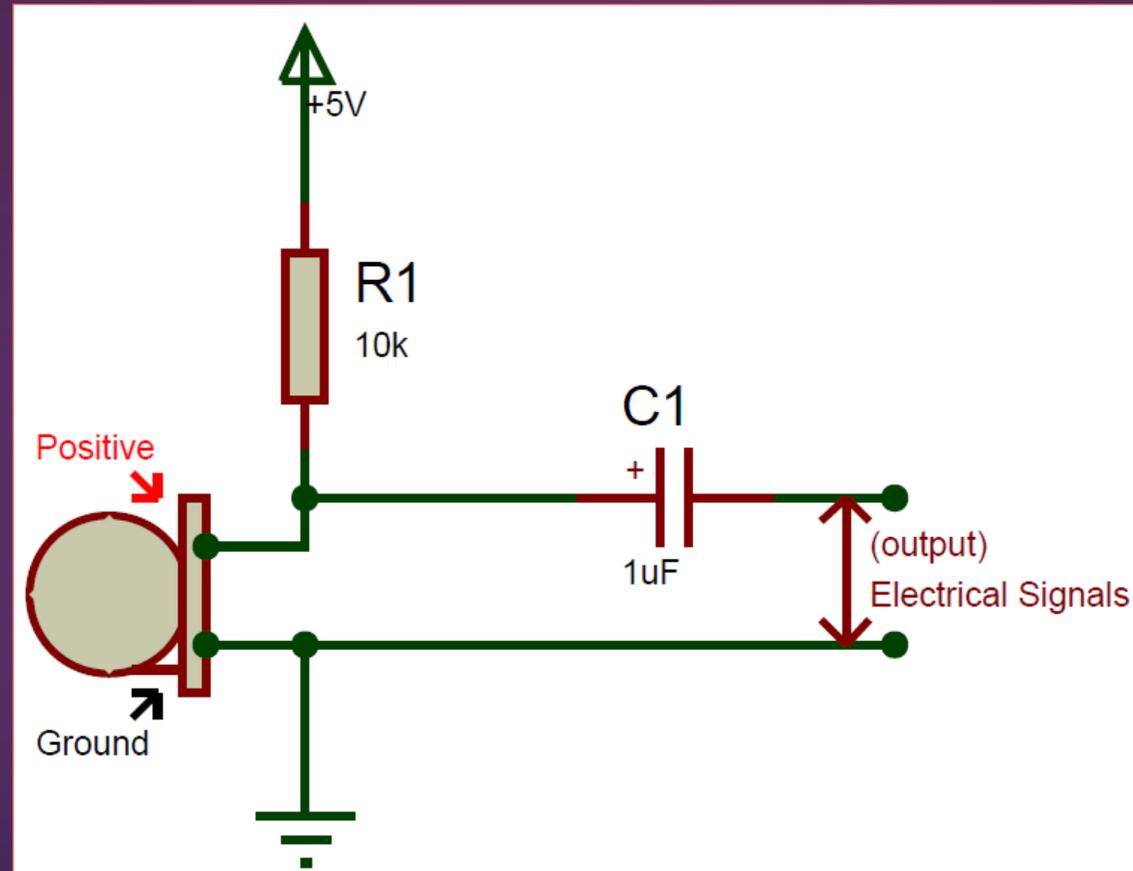
 - ▶ Condenser/Electret



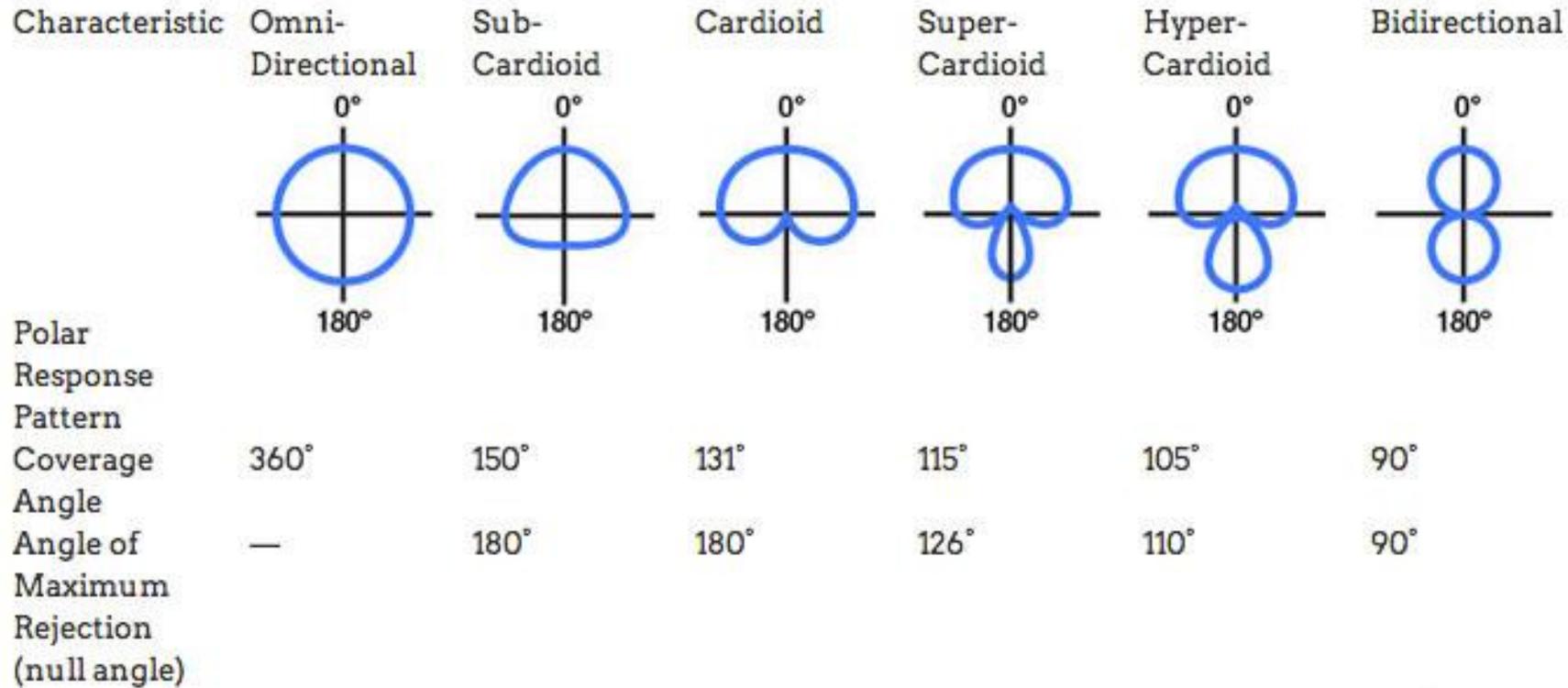
Typical pre-amp for a dynamic mic



Typical circuit for an electret mic



Response patterns for microphones



MORE REJECTION →

What mic do I use?

- ▶ Shure SM-58
- ▶ AKG Perception Wireless Sport Set



Outboard audio gear

- ▶ Yes, some guys have actually done this.

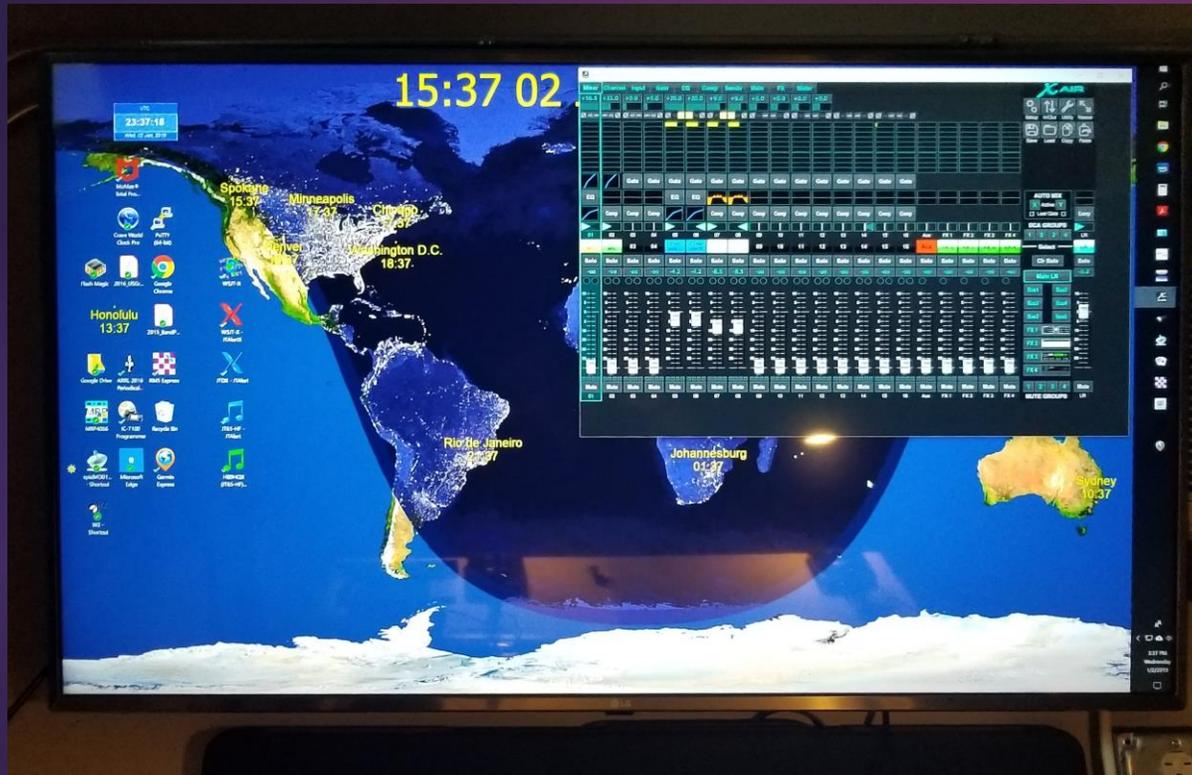


Outboard audio gear that might actually be useful

- ▶ A mixer (with basic audio shaping tools)



What it looks like in my shack



Channel Detail



Sharing audio resources

► W2IHY iPlus



Matching impedance and levels

- ▶ Audio impedance levels are not terribly important
- ▶ Levels just need to be where you can keep every gain setting at a reasonable level without asking any one piece in the string to operate at its extreme

EQ, reverb, compression, and limiting aka audio shaping

- ▶ EQ depends on what you're trying to accomplish
- ▶ No reverb! Never!
- ▶ Compression needs a light hand
- ▶ Typically use compression instead of limiting

EQ example for a rag chewer

The image shows a computer monitor displaying a digital audio workstation (DAW) interface. The desktop background is a world map with city names and times: Spokane 16:46, Minneapolis 17:46, Chicago 17:46, Denver 17:46, Washington D.C. 18:46, Rio de Janeiro 21:46, Johannesburg 01:46, and Sydney 10:46. A large yellow digital clock in the top center of the screen displays "15:46 02".

The DAW interface includes a mixer window with a frequency response curve (EQ) for a "Rag" channel. The EQ window shows a graph of the frequency response curve and various filter settings. The settings are as follows:

Mode	Gain	Freq	Q	Low Cut
Low	+4.00	200.0 Hz	2.0	2.0
LowMid	+4.00	500.0 Hz	2.0	2.0
HighMid	+4.00	1.00 kHz	2.0	2.0
High	+4.00	2.00 kHz	2.0	2.0

The EQ window also shows a "Main LR" section with a "Gain" of -0.2. The DAW interface includes a mixer window with a frequency response curve (EQ) for a "Rag" channel. The EQ window shows a graph of the frequency response curve and various filter settings. The settings are as follows:

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Sample EQ for a contester or DXer



Big dollar DSP speakers

- ▶ If the rest of your circuitry is designed for a flat response, you only need to do audio shaping at one place in the chain.
- ▶ In fact, shaping audio at two or more places can quickly and easily create mush.

Summary

- ▶ Modern transceivers have the ability to shape sound that is adequate for what we typically need as ham radio operators
- ▶ If you add outboard gear, only shape audio one place in the chain
 - ▶ Keep frequency response of every other component as flat as possible
- ▶ Keep every stage in the chain operating well within the range of its design
- ▶ Take a light hand with compression

Summary (cont'd)

- ▶ Feed your radio an audio level for which it is designed
- ▶ Ham specific audio gear is typically pricey and limited in its functionality; pro audio gear is much more versatile and much less expensive
- ▶ Experiment and play with different audio shaping on the air with someone who knows your voice

Questions?

