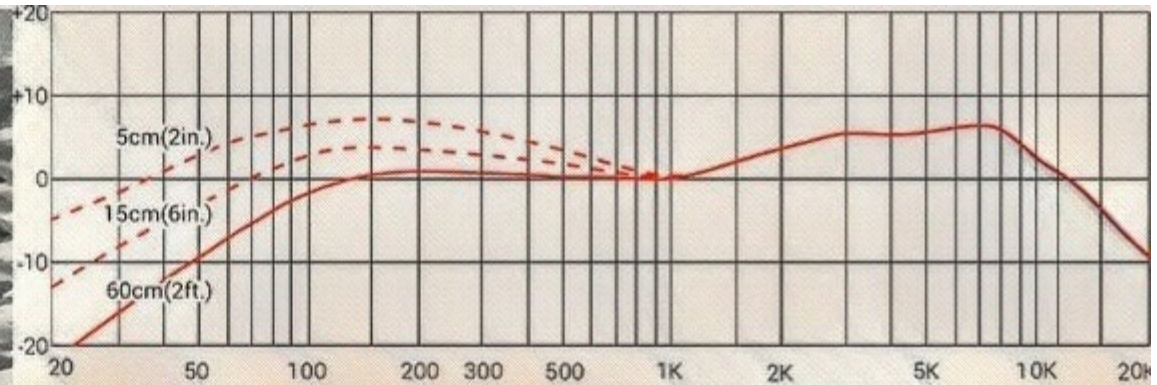
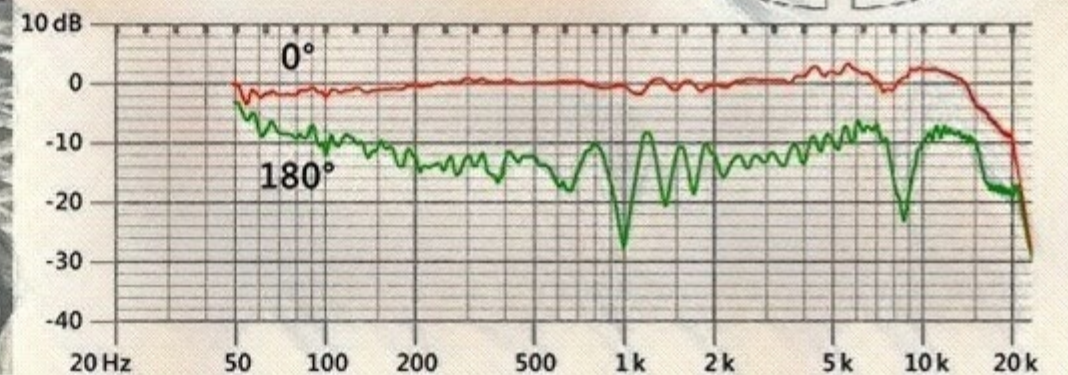


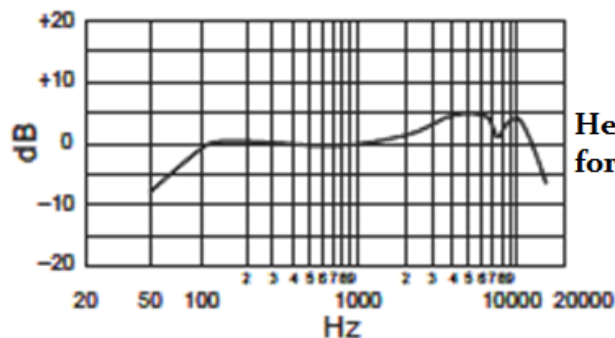


# Mic Frequency Response



## ✚ Church Audio ✚





Here is the Frequency Response Chart for the Shure SM58 dynamic microphone



Manufacturers usually offer us a 'Frequency Response' chart on their microphone specification sheet. This show us what volume we can expect for any given frequency. The chart above shows a good voice microphone curve (in fact it was designed for that). It doesn't hear the deep basses well (rumble and boom) which we definitely don't need. It is not very sensitive in the mid frequency area, which is the muddy nasal area we don't need boosted. It is sensitive in the higher frequencies, so it gives the highs a boost, which gives added freshness to our sound. It provides a notch around 7-8kHz which will ensure the freshness without having too much eSS (Sibilant Sound).



This microphone hears the basses well but doesn't pick up really high frequencies. It would suit a Kick (Bass) drum or Electric Bass. It wouldn't suit a Singer (they would sound muffled and boomy).

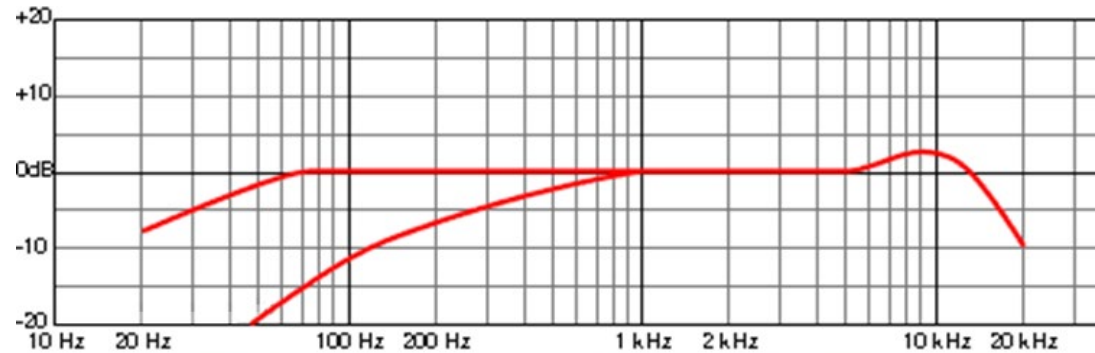


This is a more acceptable frequency response for most applications. The basses are warm but contained, the mids (nasal sound) are kept down, and the high frequencies are all there ensuring freshness.

*If you have no choice but to use a microphone with an unsuitable response, then you need to filter the sound using an Equaliser, but the correct sounding microphone is far more desirable. Strongly filtered sounds always suffer and quickly become unnatural sounding.*

It always depends on what you are micing up. Experiment with your different microphones to find the best match to each Singer and Instrument. No two microphones of the same brand will sound exactly the same either. The difference will be subtle when they are new, but as microphones get older, and are dropped a few times ☹ a unique sound will become more evident. We learn the 'individual characters' of each of our microphones so that we can choose best where to apply them. Even an old microphone that sounds dark and muddy on the voice may surprise you placed on a Kick (Bass) drum or Electric Bass.

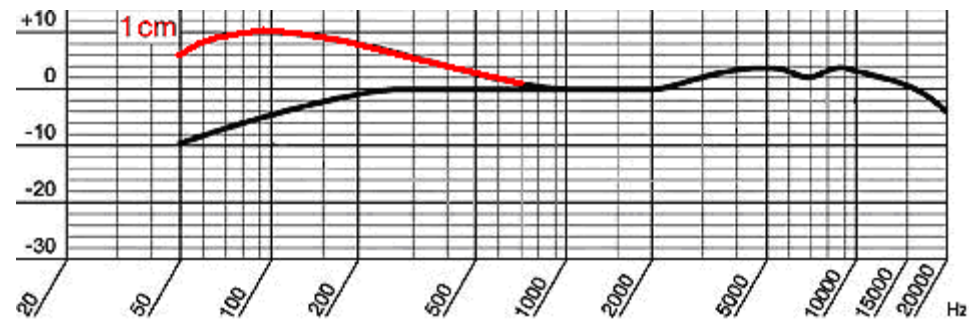
## Bass-Cut Switches



This switch inserts a High-Pass Filter (or Bass-Cut filter). It lowers the ability (sensitivity) of the microphone to pick up bass frequencies. It is used for the same reason that we insert bass-cut filters on the microphone channels (to remove boom and rumble) *eg. a rhythm acoustic guitar that is being strummed hard, or a singer with a strong 'P'.*

# The Proximity Effect

The Proximity Effect is an acoustic phenomenon caused by being extremely close to the diaphragm of a microphone. It noticeably increases the bass frequencies. Some Singers like the deep warm result, most Singers just sound boomy and muddy. *In general, **don't** get closer than a hand's width to a microphone capsule.*



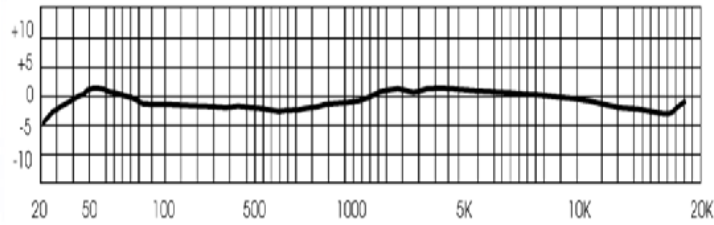
This AKG C1000 Condenser Microphone shows how the bass frequencies will be boosted if you are 1 cm from the diaphragm.

If the Proximity Effect becomes an issue when you are close-micing, then flick the HPF switch on the microphone, or the HPF button on the Input Channel of the Mixer, to reduce the boosted bass frequencies.

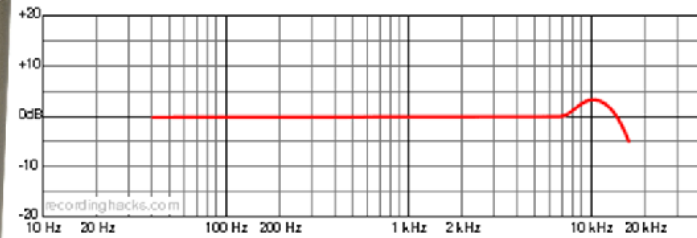
## Some examples:



**Royer R-121  
Ribbon**

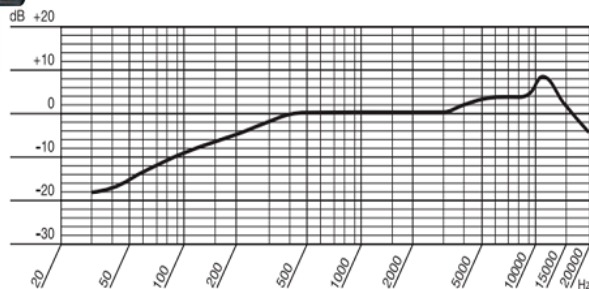


**Neumann U87  
Condenser**

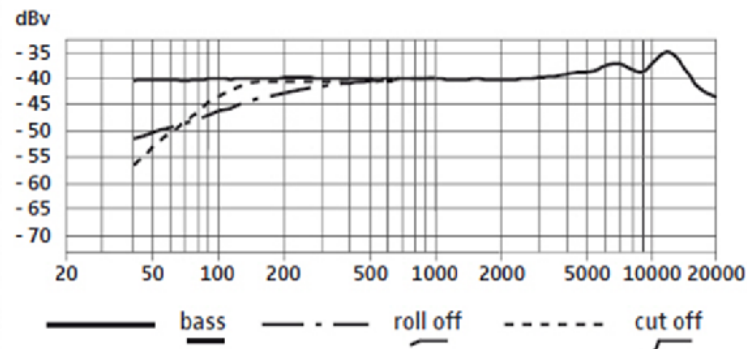




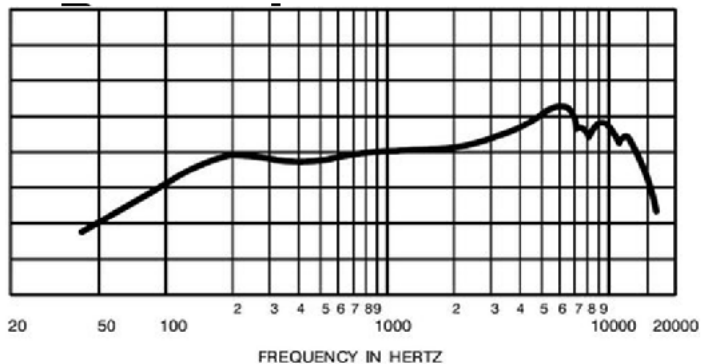
# AKG CK99I Lavaliere



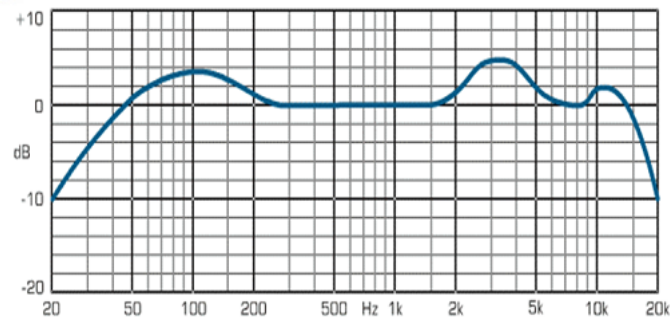
# Sennheiser e614 Condenser



# SHURE SM58



# AKG D112 Dynamic



## CREDITS

*This material is offered freely to the Christian Churches; downloadable at [Pietango.com](http://Pietango.com)*

**Text:** *Original, by the Author, a Christian Recording Engineer.*

**Images:** *Designed by the Author. Some photographs were sourced from the Internet, then re-worked.*

Ever since the creation of the world, God's invisible attributes and divine nature have been evident. They are clearly understood through his workmanship, and all the wonderful things that he has made. Therefore, those who fail to believe and trust in him are without excuse, or defence. **Romans 1:20**

All of us have sinned and fallen short of God's glory, but God treats us much better than we deserve.

Because of Christ Jesus, he freely accepts us and sets us free from our sins. God sent Christ to be our sacrifice. Christ offered his life's blood, so that by faith in him we could come to God. **Romans 3:23**

If you declare with your mouth, "Jesus is lord," and believe in your heart that God raised him from the dead, you will be saved. For it is with your heart that you believe and are justified, and it is with your mouth that you profess your faith and are saved. **Romans 10:9**

For the Scripture (*Isaiah 28:16*) says, "Whoever believes in Him will not be disappointed." **Romans 10:11**

These things have been written so that you may believe that Jesus is the Christ, the son of God; and that by believing, and relying on him, you may have new life in his name. **John 20:31**