THE FREQUENCY SPECTRUM, INSTRUMENT RANGES, AND EQ TIPS

**VOCALS**
- **FULLNESS** - 120 Hz, **BOOMINESS** - 200-240 Hz

**VOCALS, FEMALE**
- PRESENCE 5k, SIBILANCE 7.5-10k

**VOCALS, MALE**
- PRESENCE 5k, SIBILANCE 7.5-10k

**WINDS**
- **KEY NOISE** SET HPF @ 200 Hz
- **HONK** 200 Hz
- **SQUAWK** 2k
- **ALTO SAX** (REED BUZZ 6-7k)
- **HONK** 250-300 Hz
- **SQUAWK** 1k
- **TENOR SAX** (REED BUZZ 5-6k)
- **TROMBONE**
- **TRUMPET**
- **TUBA**

**STRINGS**
- **BOOMINESS** - 120-200 Hz
- **FULLNESS** - 240 Hz
- **4 STRING BASS**
- **5 STRING BASS** (ATTACK 700-1k, STRING NOISE 2.5k)

**DRUMS**
- **CLANK** - 200 Hz
- **FATNESS** - 240 Hz
- **FULLNESS** - 120-240 Hz
- **THUMP** - 60-80 Hz
- **SNARE**
- **TOMS**
- **KICK DRUM**

**SYNTHESIZER**
- **SIZZLE** 7.5k-10k

**KEYS**
- **EXT RANGE**
- **FULL RANGE**
- **NORMAL RANGE**
- **FULL RANGE**
- **EXT RANGE**

**EXT RANGE**
- **FULL RANGE**
- **NORMAL RANGE**
- **FULL RANGE**
- **EXT RANGE**

**PIANO**
- **FULL RANGE**
- **NORMAL RANGE**
- **FULL RANGE**
- **EXT RANGE**

**SYNTHESIZER**
- **FULLNESS** - 240 Hz

**SYNTHESIZER**
- **CRISPNESS** 5k-6k
- **ATTACK** - 5k
- **ATTACK** - 4k

**HORNS/TWEETERS**
- **SUB-BASS FREQUENCIES** 20 - 40
  (More felt than heard, requires an enormous amount of energy, & Hi quality transducers)

**BASS BAND**
- **40 - 160**
  (where fundamentals for kick and bass are, can easily get cluttered and woofy sounding. This is where the thump comes from)

**UPPER BASS BAND**
- **160 - 300**
  (warmth, or a muddy, woody sound. fundamental for snare, toms, guitars, male vox)

**LOW-MID BAND**
- **300 - 800**
  (where clutter happens, our ears are sensitive, too much sounds hard, nasal, obnoxious. Think of AGT feedback)

**MID RANGE**
- **800 - 2.5k**
  (where our ears are most sensitive & where brittle harsh, screechie is)

**UPPER MID-BAND**
- **2.5k - 5k**
  (lots of harmonics, plus vocal sibilance, and cymbals)

**HIG FREQ BRIGHTNESS**
- **5k - 10k**
  (not much energy or musicality)

**SUB-WOOFERS**

**MID-RANGE SPEAKERS**
- **LOW-MID**
  (this range has lots of upper resonance & droning. Think of AGT feedback)

**MID RANGE**
- **800 - 2.5k**
  (where our ears are sensitive, too much sounds hard, nasal, obnoxious)

**UPPER MID-BAND**
- **2.5k - 5k**
  (lots of harmonics, plus vocal sibilance, and cymbals)

**HIG FREQ BRIGHTNESS**
- **5k - 10k**
  (not much energy or musicality)