MEMPHIS VIV68DSP DSP Tuning Steps for Tuning User Guide

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Contents

DSP TUNING STEPS FOR TUNING WITH AN RTA

REQUIRED ITEMS:

- Tape measure
- Your phone or tablet
- Test tone files from Memphis Audio
- Real-Time Analyzer (RTA)

Follow this order when tuning and setting up the VIV68DSP

1. Install the Memphis DSP app software from the App Store or Google Play on your phone or tablet.
2. On your radio set all EQs, bass, treble, balance, and fade to zero or flat

3. On your amps: Turn All crossover off and bass boosts off or all the way down. The VIV68DSP will now handle all the crossover and EQ settings. If the sub amplifier's low pass crossover cannot be turned off, turn it to the highest setting available on the amplifier.
4. Turn the DSP remote's MAIN and SUB volume all the way up.
5. Set up your mixer in the DSP software. This will allow you to choose which outputs receive which inputs and will also allow you to combine signals to get a full range signal to each output channel if needed. Verify that you have a flat full range signal coming out of the DSP outputs using line level input on your RTA.
6. Set your radio at its maximum undistorted volume (or ¾ volume if you're not sure). Set your gains on all of your amplifiers. The preferred way is with an oscilloscope. Set to 5 dB of overlap on your full range amps and 10db of overlap on your sub amps. Also can be done with a multi-meter if an oscilloscope is not available.
7. Verify the acoustic phase of each speaker with a polarity pulse checker like a PT-9A or similar
8. Adjust the crossovers in the DSP software for each output channel being used. We suggest using a 24db per octave slope. Safe starting x-over points are as follows:
   Subs 80Hz low-pass
   Full range speakers 80Hz hi-pass
   Tweeters 5000HZ hi-pass
9. Time alignment measures each speaker's distance from approximately the middle of where the driver's head would be. Input those measurements into the chart on the bottom of the DSP tuning cheat sheet. This will give you the correct measurements needed to enter into the software. Do not enter the actual measurements you took into the DSP software.
10. Using the Memphis pink noise file. Play your radio at a moderate level. With the mic in the driver's seat positioned at ear level. Adjust output levels and crossovers to get the smoothest curve before you begin equalizing.
11. Continue smoothing out the curve with the EQ. In the DSP software, mute all the right speakers (passenger side) .
    Begin equalizing the curve of all the speakers on the left side (driver's side) start at the largest peak and work down to the smallest. Do not attempt to fix or EQ out dips unless they are very small under 3dB. Once the driver-side speakers are equalized repeat the steps for the opposite side. Mute the driver's speaker and only play the passenger side speakers. The goal is to have the driver's side and the passenger's side speakers have the exact same RTA curve while being measured from the driver seat position.
12. Unmute all speakers and verify the RTA curve did not change from the individual left and right RTA curves. If the combined curve looks good, your tuning is complete. If the curve developed a few dips double check your time alignment settings as most likely something is off and you're seeing some phase cancellation.

DSP tuning steps for tuning without an RTA

REQUIRED ITEMS:

- Tape measure
- Your phone or tablet
- Test tone files from Memphis Audio

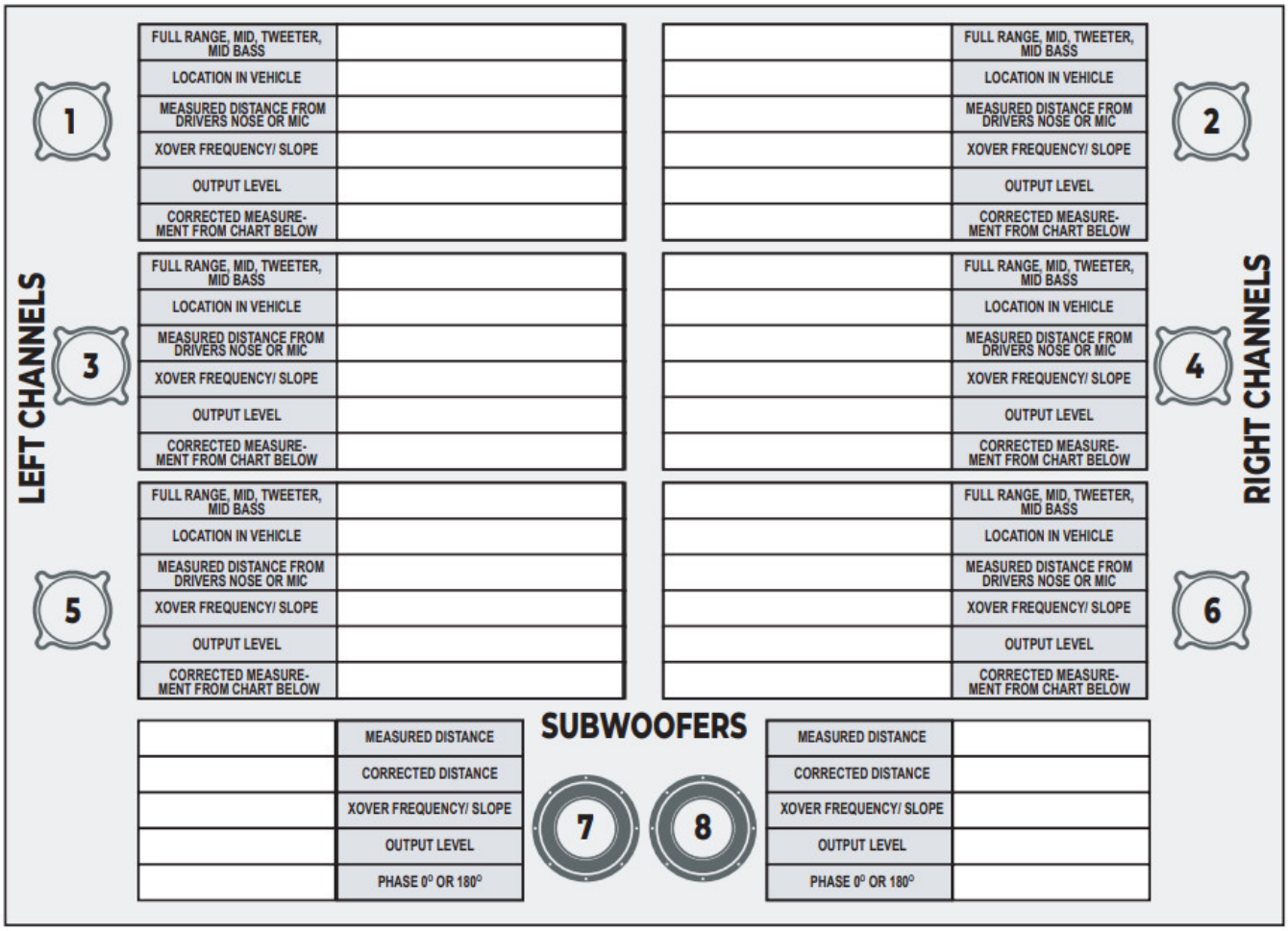
Follow this order when tuning and setting up the VIV68DSP

1. Install the Memphis DSP app software from the App store or Google Play on your phone or tablet.
2. On your radio set all EQs, bass, treble, balance, and fade to zero or flat.
3. On your amps, have all crossovers turned OFF and bass boost OFF or all the way down. The DSP will now handle all x-overs and EQ settings. (if the sub amps low-pass x- over cannot be turned off, turn it to the highest setting available on the amp.)
4. Turn the DSP remotes MAIN and SUB volume all the way up.
5. Set up your mixer in the DSP software. This will allow you to choose which outputs receive which inputs and also allows you to combine signals to get a full range signal to each output channel if needed.
6. Set your radio at its maximum undistorted volume (or ¾ volume if you're not sure). Set your gains on all of your amplifiers. The preferred way is with an oscilloscope. Set to 5dB of overlap on your full range amps and 10dB of overlap on your sub amps. If an oscilloscope is not available, this can be done with a multi-meter.
7. Adjust the crossovers in the DSP software for each output channel being used. We suggest using a 24dB per octave slope. Safe starting x-over points are as follows:
   Subs 80Hz low-pass
   Full range speakers 80Hz hi-pass
   Tweeters 5000Hz hi-pass.
8. Time alignment: Measure each speaker's distance from approximately the middle of where the driver's head would be. Input those measurements into the chart at the bottom of the DSP tuning cheat sheet. This will give you the corrected measurements needed to enter into the software. Do NOT enter the actual measurements you took into the DSP software.
9. Using the 1/3 octave tones from the Memphis test tone file. With your radio at a moderate volume play each individual frequency tone while sitting in the driver's seat. The goal is to adjust the individual left and right bands of the EQ to get each tone to sound as though they are coming from the center of your dash. You will need to lower the EQ at that frequency on the side the tone is stronger. Never turn up the EQ, only turn down the hotter side to get a strong center image at the frequency being played. It's not uncommon for one side of the EQ to need to be turned down 3-6 dB while the other side remains flat.
10. Grab some well-recorded music and listen to the system. If needed, adjust the output levels down on individual channels to get a good overall balance between the speakers in the DSP software. Only turn down the outputs on speakers that seem too loud or overpowering. The most common adjustments will be turning down the rear channels and turning down the subwoofer output on the remote of the DSP to keep the sub from overpowering the highs. Do not turn up any of the outputs, amps, or EQ settings.
11. Enjoy your newly tuned system. If further tweaking is needed to the x-overs or EQ settings, only make small changes one at a time. Evaluate each change before making another.

INPUT SECTION

SPEAKER WIRE OR RCA POSITION (FRONT, REAR, SUB)	1L	2R	3L	4R	5L	6R
FULL RANGE: YES OR NO (IF NO, IS IT A TW EETER, MID, SUB, ETC)						
DESIRED OUTPUT CHANNELS 1-8						
OUTPUT LEVEL OF MIXER 0-100						

OUTPUT SECTION



OUTPUT CHANNEL	ENTER THE MEASURED DISTANCE OF THE FUTHEST SPEAKER IN ALL BOXES BELOW		ACTUAL DISTANCE MEASURED FROM DRIVERS NOSE OR MICROPHONE		BOX 1 MINUS BOX 2 EQUALS THE NUMBER YOU INPUT INTO YOUR DSP SOFTWARE	ADDITIONAL NOTES ABOUT YOUR SYSTEM
1		−		=		
2		−		=		
3		−		=		
4		−		=		
5		−		=		
6		−		=		
7		−		=		
8		−		=		

Recommended Tools/App/Link/reference pages

- I IPad or I IPad mini you most likely already have one
- Sound Tools app by Studio Six Digital free from the apple store
- tries to TRS adapter I like the Kepulu that has a splitter on it $8.99 on Amazon

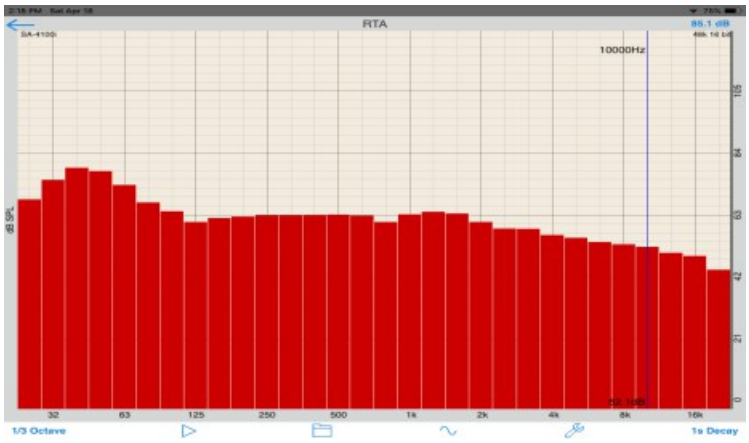
- Memphis Utpf-35r3 head phone to rca adapter
- cheap line out converter
- Dayton Audio IMM-6 mic $25-$30 Amazon or Parts Express

- 12ft 3.5mm stereo extension cable male to female 4 pole $8-$20 Amazon

- o-scope Liumy lm2020 or Mustool MT2808 $80-$90 Amazon

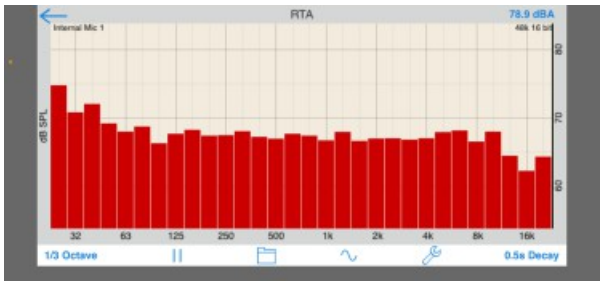
- link for setting time alignment made easy www.tracerite.com
- 707 is the value you multiply the amps output voltage by to get your target voltage

Good reference curve to aim for when tuning

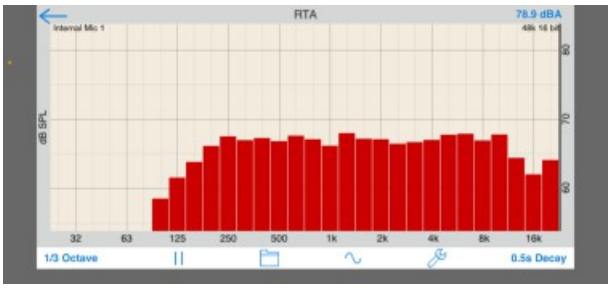


Examples of radio outputs

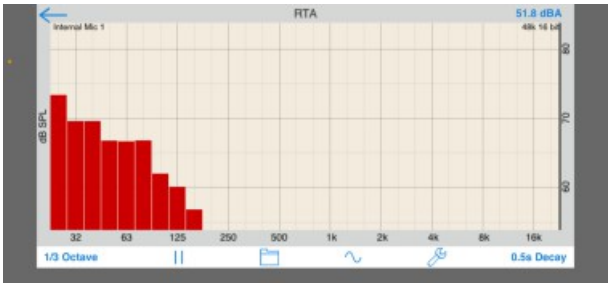
Full range



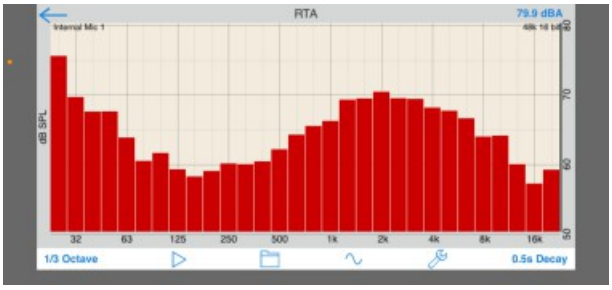
No bass



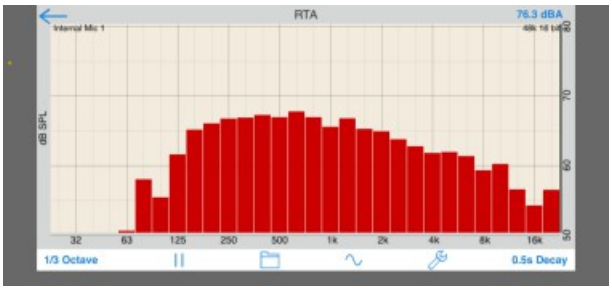
No highs



Funky eq



Mid-range only

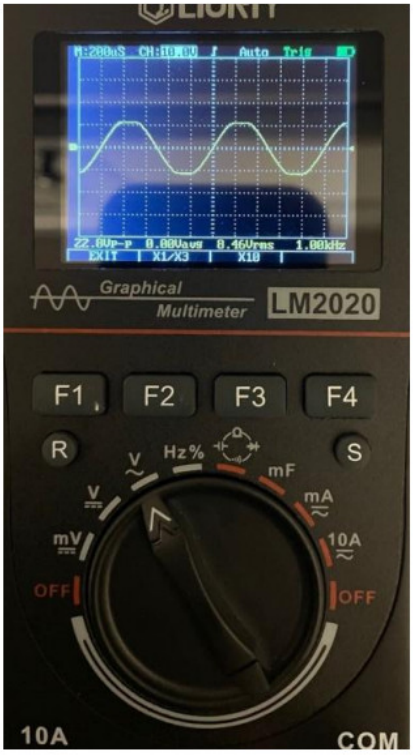


Examples of o-scope

Clean signal

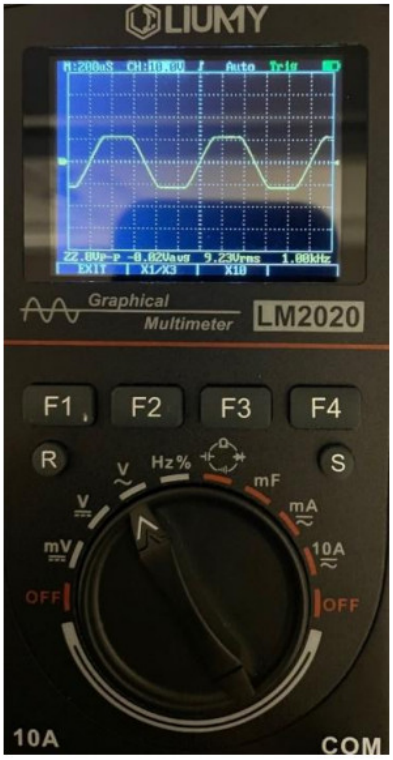
Good

start of clipping



Bad

hard clipping



Very Bad

Memphis tech support
800-903-6979
techsupport@memphiscaraudio.com

Documents / Resources

	MEMPHIS VIV68DSP DSP Tuning Steps for Tuning [pdf] User Guide VIV68DSP, DSP Tuning Steps for Tuning, VIV68DSP DSP Tuning Steps for Tuning