**Output from LTSpice simulation. (LT1253+Bitx40 RD16HHF Power Amp.asc)**

**Circuit: \* C:\Hobbies\Ham Radio\Kits & Projects\Dueling 612s\Phoenix 612\Simulations\LT1253+Bitx40 RD16HHF Power Amp.asc**

**WARNING: Node VINS is floating.**

**Direct Newton iteration for .op point succeeded.**

**N-Period=all**

**Fourier components of V(vins)**

**DC component:-0.00253629**

**Harmonic Frequency Fourier Normalized Number [Hz] Component Component**

Pretty clean output from LT1253 amp

**1 1.410e+07 5.958e-01 1.000e+00**

**2 2.820e+07 5.090e-03 8.544e-03**

**3 4.230e+07 5.233e-03 8.783e-03**



**4 5.640e+07 1.202e-03 2.018e-03**

**Total Harmonic Distortion: 1.241821%(1.351911%)**

Faily dirty output from Bitx40 amp. Definitely need LPF to clean it up



**N-Period=all**

**Fourier components of V(vo)**

**DC component:0.182196**

**Harmonic Frequency Fourier Normalized Number [Hz] Component Component**

**1 1.410e+07 2.119e+01 1.000e+00**



**2 2.820e+07 7.298e-01 3.445e-02**

**3 4.230e+07 6.691e+00 3.158e-01**

**4 5.640e+07 7.563e-01 3.569e-02**



**Total Harmonic Distortion: 31.968021%(39.896312%)**



Output from 2nd SA612 is -33dBm or 0.014Vp



**vsr: RMS(v(vs))=0.00987709 FROM 0 TO 1e-005**

**vsp: MAX(v(vs))=0.014 FROM 0 TO 1e-005**



**vpap: MAX(v(vins))=0.596733 FROM 0 TO 1e-005**



**vpsr: RMS(v(vins))=0.421316 FROM 0 TO 1e-005**

**vinsr: RMS(v(vins))=0.421316 FROM 0 TO 1e-005**

To get 5W out need drive of about 0.5Vp into Bitx40 PA



**vinr: RMS(v(vin))=0.186663 FROM 0 TO 1e-005**

**vor: RMS(v(vo))=16.1319 FROM 0 TO 1e-005**

**iinr: RMS(i(rin))=0.00307325 FROM 0 TO 1e-005**

**vb1r: RMS(v(vb1))=3.6856 FROM 0 TO 1e-005**

**vb1avg: AVG(v(vb1))=3.68087 FROM 0 TO 1e-005**

**vb1max: MAX(v(vb1))=3.92531 FROM 0 TO 1e-005**

**vb1min: MIN(v(vb1))=3.38746 FROM 0 TO 1e-005**

**vpp1r: vb1max-vb1min=0.537845**

**vp1r: vb1max-vbe1=3.30531**

**cd1: vp1r/vpp1r=6.14547**

**vb2r: RMS(v(vb2))=1.3624 FROM 0 TO 1e-005**

**vb2avg: AVG(v(vb2))=0.954112 FROM 0 TO 1e-005**

**vb2max: MAX(v(vb2))=2.15623 FROM 0 TO 1e-005**

**vb2min: MIN(v(vb2))=-0.542671 FROM 0 TO 1e-005**

**vpp2r: vb2max-vb2min=2.6989**

Mosfet runs cool. Should not heat much (in theory). We can drive this sucker more!

**vp2r: vb2max-vbe2=1.55623**

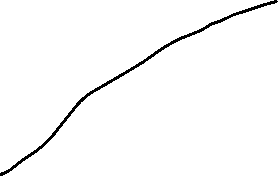
**cd2: vp2r/vpp2r=0.576616**

**vgr: RMS(v(vg))=5.66007 FROM 0 TO 1e-005**

**vgavg: AVG(v(vg))=4.14986 FROM 0 TO 1e-005**

**vgmax: MAX(v(vg))=8.36582 FROM 0 TO 1e-005**

**vgmin: MIN(v(vg))=-0.614728 FROM 0 TO 1e-005**



Input impedance to Bitx40 amp is 64R close enough to 50R

**vbiasr: RMS(v(vbias))=4.2 FROM 0 TO 1e-005**

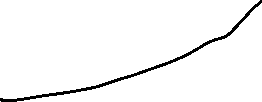
**vppr: vgmax-vgmin=8.98055**

**vpr: vgmax-vgs=5.49582**

**cd: vpr/vppr=0.611969**

**idr: RMS(id(m1))=0.940623 FROM 0 TO 1e-005**

**pdis: AVG(v(vd)\*id(m1) + v(vg)\*ig(m1))=1.00968 FROM 0 TO 1e-005**



**temp: pdis\*rja=62.6**



**rheatsink: ((tj-25)/pdis-rcs-rjc)=119.802**

**zin: z\*vinr/(vinsr-vinr)=63.6385**

Good conduction angles. (i.e. > 180 deg). All transistors in Class AB operation. Good for SSB & CW

**cd1angle: cd1\*360=2212.37**

**cd2angle: cd2\*360=207.582**



**cdangle: cd\*360=220.309**

**pinpa: zin\*iinr\*iinr=0.000601056**

**pin: vsr\*vsr/50=1.95114e-006**

**pout: AVG(v(vo)\*i(rout))=5.20477 FROM 0 TO 1e-005**

Power output of 5 W with margin of 4 W i.e. mosfet dissipates about 1 watt (heat)

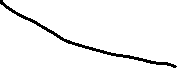


**pmar: pout-pdis=4.1951**



**gp: 10\*log10(pout/pin)=64.2611**

**gv: 20\*log10(vor/vinr)=38.7326**



**Date: Wed Sep 14 17:59:09 2022**

LT1253+BitX40 amp about 64 dB gain

BitX40 amp alone about 38 dB of gain

**Total elapsed time: 18.106 seconds.**

**tnom = 27**

**temp = 27**

**method = modified trap**

**totiter = 124344**

**traniter = 124335**

**tranpoints = 31152**

**accept = 20858**

**rejected = 10294**

**matrix size = 154**

**fillins = 194**

**solver = Alternate**

**Thread vector: 271.7/136.2[3] 85.0/45.2[3] 18.0/13.4[3] 12.2/24.7[1] 2592/500**

**Matrix Compiler1: 30.44 KB object code size 73.8/54.9/[28.7]**

**Matrix Compiler2: 20.11 KB object code size 28.4/38.4/[12.1]**