

## KT66 TUBE TEST, 1/2 Jan. 2018, MB

### METHOD:

- Used MacGyver Amp (version 1/2.1.2018 with choke load in driver stage, ROGERS 6SN7 driver tubes)
- Tent Bias control in MacGyver Amp was set to fixed bias currents in output stage (set to 57 mA)
- Used RTX6001 + REW spectrum analyser to measure harmonic distortion (RTX output 1V, input 3.16V)
- Installed KT66 tubes in amp, turned amp on. Adjusted symmetry of phase splitter output to get lowest THD at SPKR-OUT after amp/tube warmup (when bias voltages and distortion values were stable).
- Test signal: 1 kHz sine, level adjusted to 2.84 V-RMS at speaker out with 8 Ohm dummy resistor (=1 Watt into 8 Ohm)
- Recorded harmonic distortion and grid bias voltages for tube pairs
- Repeated measurements on different days give consistent results. The harmonic distortion values are reproducible within about 10% to 20%.
- 23 different KT66 type tubes included in the test.

### OBSERVATIONS:

- Tube matching is important to get low THD despite the automatic symmetry of the bias currents (controlled by Tent Bias module).
- Within the reproducibility of the measurements, the THD results are very similar for different tube types (as long as the tubes are matched).
- While NOS GEC tubes are sometimes touted to be "the best", the newer (early Chinese?) production Groove Tubes tend to give the lowest harmonic distortion from all tubes included in the test (!).

TUBE LABEL	TYPE	BRAND	GLASS COATING	V-BIAS (V)	THD (%)	2ND (%)	3RD (%)	REMARKS
A	CV1075 / VT75	GEC	grey	-25.0	0.16	0.15	0.07	Coke bottle, bias out of spec
B	CV1075 / VT75	GEC	grey	-42.7				Coke bottle
C	CV1075	GEC (Mazda)	Semi-smoked	-43.2	0.1	0.058	0.085	Rounded plate holes, glass with translucent coating
D	CV1075	GEC (Mazda)	Semi-smoked	-53.4				glass with translucent coating, plate openings are rounded
E	CV1075	GEC (Mazda)	Semi-smoked	-42.3	0.018	0.003	0.018	Rounded plate holes, glass with translucent coating
F	CV1075	GEC (Mazda)	Semi-smoked	-43.0				Rounded plate holes, glass with translucent coating
T	KT66	Groove Tubes	clear	-47.0	0.007	0.002	0.006	"March 1998"
U	KT66	Groove Tubes	clear	-48.3				"March 1998"
V	KT66	Groove Tubes	clear	-53.6	0.01	0.002	0.009	"March 1998"
W	KT66	Groove Tubes	clear	-50.7				"March 1998"
G	KT66	GEC	grey	-39.0	0.012	0.0013	0.0096	
H	KT66	GEC	grey	-42.4				
I	KT66	GEC	grey	-53.2	0.04	0.038	0.025	
J	KT66	GEC	grey	-40.9				
K	KT66	Genalex (UK)	clear	-44.9	0.017	0.0013	0.016	UK Gold Lion
L	KT66	Genalex (UK)	clear	-42.9				UK Gold Lion
M	KT66	GEC	clear	-47.8	0.01	0.0009	0.01	
N	KT66	GEC	clear	-43.3				
O	KT66	GEC	clear	-49.4	0.0078	0.0038	0.0068	
(U)	KT66	Groove Tubes	clear	-47.9				used as dummy partner for tube O
P	KT66	GEC	clear	-46.9	0.015	0.008	0.011	
Q	KT66	GEC	clear	-46.5				
R	KT66	GEC	clear	-46.6	0.009	0.004	0.008	
S	KT66	GEC	clear	-45.2				

### Matched pairs (by grid bias voltage), with different glass coating:

P	KT66	GEC	clear	-46.4	0.01	0.003	0.01	Clear glass brown base GEC tubes
R	KT66	GEC	clear	-46.8				
T	KT66	Groove Tubes	clear	-47.0	0.007	0.002	0.006	Clear glass 1998 Groove Tubes tubes
U	KT66	Groove Tubes	clear	-48.3				
C	CV1075	GEC (Mazda)	Semi-smoked	-44.0	0.009	0.0005	0.0067	Rounded plate holes, glass with translucent coating
F	CV1075	GEC (Mazda)	Semi-smoked	-43.4				
H	KT66	GEC	grey	-42.3	0.007	0.0001	0.0068	Grey glass brown base GEC tubes
J	KT66	GEC	grey	-41.2				