# Test Reports 6L6GC types October 2005

## INTRODUCTION:

Object of the test

To evaluate the sound quality and reliability of the new batch of 6L6GC types in both modern and vintage amplifiers and compare against the best new old stock types for use both audio, guitar and bass applications.

Equipment used- guitar and bass

Fender 1959 re issue Bassman 4x10 fitted with Jensen P10R. Fender Twin switchable 25/100 watt fitted with stock speakers. Fender Hot Rod deluxe fitted with Jensen C12N.

Mesa Boogie 400 plus run through Ampeg 4 x 10 and 8 x 10 cabinets. Fender Bassman 100 head 'blackface' through Fender 4 x 12 cabinets for guitar. Fender Bassman 135 through the Fender 4 x 12 for Bass. Marshall 50 watt super bass run through a Marshall 1936 cabinet with G12H Celestions for guitar and Marshall 50 watt super lead run through a Marshall 1936 cabinet with G12H Celestions.

T.A.D silencer power attenuator.

Pedals: Butler tube driver, Butler blues driver, Reissue Ibanez TS808 tube screamer. MXR Zakk Wylde overdrive.

1973 Fender Stratocaster. 1981 Yamaha SA 2000S, 1993 Gibson Les Paul Standard. 1990's Fender Telecaster with Texas specials. 1974 Fender Precision Bass, 1977 Musicman Stingray, 1982 Musicman cutlass 2, 1983 Zemaitas fretless custom.

Equipment used- 6L6GC/KT66 audio

Thorens TD 124 mk 2 SME 3009/Shure, Tascam CD 450 player, NAD 1000s pre amp with 4 Quad 11 power amplifiers running the top and bottom end through the JBL crossover network into JBL 4430 studio monitors,

Single pair of Quad 11 into Tannoy DTM 12 studio monitors, Tannoy 12 inch monitor golds in Lancaster cabinets, Tannoy 10 inch monitor golds.

## HOW WE TESTED:

All valves were put through a controlled burn in process at high working plate voltages at 500 volt plate and screen.

The valves then where tested with 6 changes in grid bias with each stage monitored so that each valve tested had the same anode current and transconductance. We checked heater continuity both hot and cold and tested cathode heater insulation and gas. The valves that get through are then tested and matched at two different bias setting to ensure conformity on a digital tester on anode current and transconductane. The digital tester has an accuracy of plus or minus 1 m/a.

### 5881/HARMA:

The Harma 5881 is the button based Russian military valve that powered the Marshall and Mesa Boogie amps( STR 425) in the late eighties. This valve has bullet proof reliability and proven track record over decades of use in Russian military applications.

The bass response is OK; it is neither deep or well extended with the midrange quite recessed. The treble is forward and aggressive and tended to sound hard.

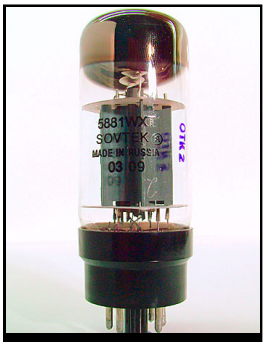
When the valve was pushed with the pedals at the front end the bass and mids merged.

Under full saturation the valves aggressive nature come through sounding very toppy and cutting, this I found quite hard on the ear. Any fine detail was lost into a wall of sound.

So overall the valve scores only for reliability and build quality.

### 5881WXT/SOVTEK:

The 5881 WXT has established itself as the industry standard as is fitted to most new amps. The reasons for this is simple, it is cheap, always available and is very reliable Electrically it is a good design, tone wise it does not meet up to the standards set by the other valves. The tone is warm but it lacks depth and loses detail. The valve loses control when moderately pushed. Under full saturation using the T.A.D silencer the sound turned into a hazy muddy wall of noise. Single note runs were blurred with power chords sounding flat. In the bass tests the boogie sounded like a low budget amp. It is fair to say that this tube was left behind in the tone stakes. What I will say that if you are on a tight budget and want reliability the Sovtek 5881 WXT cannot be beaten.



5881WXT/SOVTEK

### 6L6GC/7581A/G.E :

The genuine G.E 7581A are very hard to find and were not included in our earlier test reports. So I was very eager to get these in as G.E 6L6GC are my personal favorite.

G.E tried to provide the United States military with an alternative to the Philips/ Sylvania 7581a and get their hands on a contract with the world's biggest user of valves.

Modeled on the later type G.E 6L6GC and following the military specification it was launched. The 7581A had to meet very stringent military specification so the

quality of construction and materials on this valve is first rate.In terms of sound quality this quality really pays off.

All the sound qualities that you read about of the G.E 6L6GC are displayed in this valve. Deep and well extended bass. The mid range was forward with that classic rock and roll crunch. No loss of definition when the amp was saturated. The warm and rich harmonics are a joy to listen to, it simply begs you to carry on playing The G.E 7581a showed two major differences when compared to the standard item. The bass response was cleaner than the standard G.E 6L6GC making runs and phrases more defined. The second and most major difference was the treble which was brighter and more up front. This gave a particular sparkle to the Fenders and made chords just ring. The valve would break up sooner than the Philips 7581A and under full distortion it never lost its top end sparkle. This valve was a another contender for the top position.

6L6GC/7581A/G.E

## 6L6GC/GE LATE:

The later type G.E 6L6GC has a clear top and stands taller that it's earlier relative. This is the valve that Groove Tubes have copied with their 6L6GC G.E remake.

The valve has retained the warmth and dynamics of the earlier version. The balance is excellent with more leanness in the midrange. This makes the distortion not quite as fat with a little less sustain than the early 6L6GC G.E. This is still in the top league when compared to current production items. The trademark soundstage was really superb making the amps sound bigger than normal. The top end response was similar to the early type. In the bass guitar tests the valve came through with excellent results. This made the Mesa 400 plus, Marshall super bass and Fender bassman 135 sound like a class act.


6L6GC/GE LATE

## 6L6GC/GROOVE TUBE/GE REMAKE:

Groove tubes have reissued one of the most famous 6L6GC of all time and copied the G.E later type clear top 6L6GC. It is made in China with plate materials from the original G.E plant. Early samples had problems I discussed these with Aspen at N.A.M.M in January 2004. Once these problems had been sorted out and we started to stock and supply this valve. This valve has had the longest evaluation out of any of the valves tested. It is fair to say that it has had more than a fair chance to impress me. Why, because I really respect the effort, time and money that has go into this valve. So I really wanted it to succeed. So how did it sound ?

The bass response is very smooth and weighty. Chords, three and four note runs where well balanced. They we well balanced on the original Svetlana, Harma STR and TAD 6L6WGC so nothing out of the ordinary so far. What about that G.E soundstage and rich harmonic distortion? Totally lost, the real G.E qualities do not shine through. The valve sounded fairly ordinary. In the treble area it was not as smooth or as clear as the Winged C Svetlana. The Svetlana original was a far better clean sounding valve.

In distorted mode the valve provided a well balanced crunch that was musical. Unfortunately it was again out performed by the Winged C Svetlana.

What about that classic American clear top boogie sound and only include current production valves I hear you ask? Well OK if you go down that road then you must ask the Chinese production manager what he is doing different for TAD. It is made in the same factory and the T.A.D 6L6WGC leaves the Groove tube for dead. So even if it was the same price as the TAD I could not recommend it. The fact that it is over 4 times the price begs the question why.

The reissue is indeed more expensive than the real U.S.A G.E items. So would you pay more for a reissue 1957 Fender Stratocaster assembled in China with American parts or would you buy an original 1957 Fender Stratocaster made in America with American parts by Mr Leo Fender? I will leave you readers to ponder this question.

6L6GC/GROOVE TUBE/GE R

## 6L6GC/RCA:

The R.C.A is part of the Holy trinity of 6L6GC which include the G.E clear top and the Sylvania STR 387 as the best 6L6GC ever made. The R.C.A is considered by many to be the true reference as they handle every type of music with great authority. The bass was big with perfect balance and definition between top, middle and bottom. The valve has a sweet distortion and is easily

overdriven. This ease of overdrive is considered to be one of the main features of the R.C.A 6L6GC sound. The R.C.A has a nice musical distortion which is easy on the ear. This was not matched by any current production 6L6GC types. When overdriven hard it remains smooth and in control.
In audio application it sounded full and rich with plenty of detail, quite rightly a classic vacuum tube.

6L6GC/RCA

## 6L6GC/RETRO/HARMA:

The Harma Retro is modeled on the Sylvania STR 387 and is made at the Reflector factory. The 6L6GC –STR Harma is one of my favorite valves with a detailed well balanced sound and deep rich bass. So I was keen to try this.
The Retro goes as low but is not as clear or refined in the bass area as the Harma STR.
The a mid range is more forward and is a lot more cutting which was nice in the Fenders The top end was bright and a little dry sounding and less sparkling when compared to the original STR 387.When pushed it was very controlled, the mid becoming more forward which was good for single note runs and solos. When pushed it kicks into overdrive with a really crisp sustain. Add a touch of reverb and you have a bright punchy guitar sound. I do think that this is the best 6L6GC that reflector make.

## 6L6GC/STR 387 SYLVANIA:

The Sylvania S.T.R 387 produced a rich clear top end response. This I felt was only bettered by the military version of this valve, the Philips 7581A. The bass was well extended, warm and tight. The valve was very punchy. In overdriven mode the valve was more forward in the mid but did not become harsh even when run at its limits. The valve had great sustain and was very musical.The valve did everything really well never muddy and always musical.

6L6GC/STR 387 SYLVANIA

## 6L6GC/STR/HARMA :

The Harma 6L6GC STR is made in Slovak's by the JJ factory.
The valve has a very deep powerful bass which is smooth and does not dominate the sound. Bass runs on the guitar were clear and had plenty of depth only beaten by the Philips 7581A. The midrange was also extremely smooth with a relaxed presentation. When pushed the valve natural compression kicked in give it a rich singing sustain. When really saturated the Harma gave a really fat creamy overdrive. Woman tone was large and dynamic allowing the quality of the guitar and amp to shine through.
In the bass and audio this valve performed superbly and is one of only a handful that can be used for guitar bass and in audio. A really high quality classic valve.

## 6L6GC/SVET/R:

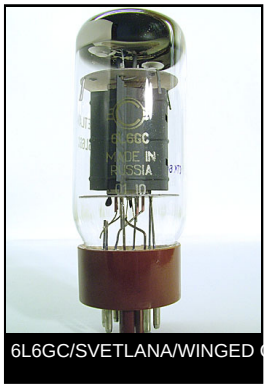
This Svetlana item is not the genuine Svetlana 6L6GC that you have come to know and love. The Svetlana brand name is now owned by Sovtek in the U.S.A and Canada.The Reflector made item is a totally different valve to the original Svetlana or winged C as it has become known as.
So how does this valve sound? Well it does not sound like the original Svetlana 6L6GC or Winged C as it is known in the U.S.A. It does not sound close.
The bass is more bottom heavy with the bass being deeper but less clear. The mid range is more forward in the overall sound and harder. The treble is a little dryer than and not as smooth as the original Svetlana. When pushed it does not get muddy like some other Reflector made items. The bass is less fluid and less defined than the original. The midrange has a nice kick when overdriven with a nice big sound stage. In the bass guitar test the bass heavy sound worked really well giving the bass a really thumping sound with a rounded warm tone.


6L6GC/SVET/R

## 6L6GC/SVETLANA/WINGED C:

The Original Svetlana 6L6GC is not to be confused with the recent Sovtek/ Reflector marketed version. The original Svetlana 6L6GC has become recognized one of the best current production 6L6GC since its introduction.
The valve is based on the Sylvania STR 387 but has a number of improvements such as thick mica spacers to reduce

microphonics. Since our last tests in 2000 the original Svetlana has seen its list of professional users grow and grow. The bass response is very detailed and fluid. Phrases and runs on the guitar were clear and well defined. The valve was also extremely smooth when in distorted mode with a very refined treble. Never sounding hard or un musical. Always maintained its balance. In the distorted test in the Marshall it gave nice break up with plenty of balance with no loss in the treble department. In Fenders this valve provided one of the sweetest clean sounds. Set the amp clean, dial in a little reverb, punch in the Ibanez tube screamer, then you have kicking tone with no muddiness. The bass tests also proved that this is a true all round valve well balanced with warm tone.



6L6GC/SVETLANA/WINGED

## 6L6GC/SYLVANIA:

These Sylvania 6L6GC are from the late 60's early 70's production and were the predecessors of the famous Sylvania STR 387.

These valves had Less punch and more warmth that the later item. They sounded full and rich with the treble was not as bright and was a little recessed. The valve did have with plenty of cut the valve did produce more midrange than any other of the New Old Stock 6L6GC. This did make it lose some of the sparkle.The valve was at its best when pushed a little with a Tube driver or Ibanez Tube screamer in the front end of the amp. This gave the mid a heavy warm blues sound with magical woman tone. When fully cranked the valve push more through the midrange which made it rather flabby. Nice for some settings but not to my taste. The bass also lost a little definition at this point but remained nice and tight. In all bass applications the valve performed really well. The mid warmth did reduce a little of the top growl from the precision bass but this was more than made up for in its large rounded tone.

I can see why Leo Fender chose Sylvania to make his STR 387. This is a classic sounding 6L6GC.

6L6GC/SYLVANIA

## 6L6GC-S.T.R C/TAD:

This is the latest in a long line of improved 6L6GC from China. The improvement in quality from China over the last 3 years is quite remarkable and is why this tube is in the tests.

I was impressed with the bass response which was cleaner and crisper than previous Chinese items. The mid range was a little over blown and fuzzy under distorted conditions and was not as clear as almost all the other 6L6GC. The top end was a miles better than earlier examples from China the hard buzzing and shrill treble has been greatly improved but not all together removed.

In the bass guitar tests this was the better of the two T.A.D 6L6GC.It still did not sound as full or smooth as the Svet/Winged C or the STR Harma.

## 6L6GC-SOV/EH:

The Electro Harmonix 6L6GC is the fourth version of the improvements made to the 5881 WXT. This has seen the 5881WXT go to 6L6WXT through 6L6WXT PLUS to arrive at the 6L6GC-EH. The improvements have been welcomed as the valve has a more linear response. Higher quality control with improved grid widings has resulted in an improved sound. The bass is clearer and slightly fuller than the 5881 WXT. The mid range haze and muddiness has greatly improved but not as clear as I would like. The distorted sound is a lot smoother but can still have harsh peaks. When fully saturated the valve still loses its grip and sounds harder than some other valves in this test.

6L6GC-SOV/EH

## 6L6WGB/5881 TUNG SOL RUSSIA:

A reissue of the famous Tong-sol 5881 by the Sovtek Company made in the reflector factory in Russia. The valve looks really fantastic and is a real close copy. Alas the looks are better than the sound. It sounds nothing like the 5881/6L6WGB family of valves and sounds like a regular 6L6GC. Indeed it sounds like the reflector made Svet but with less bass. The T.A.D 6L6WGC OUT PERFORMED IT IN ALL DEPARTMENTS. It has no trade mark midrange twang, it had no spacey highs. It is also quite expensive so it needs to be impressive, sadly it was not, which is a real shame. It was too plumy in the

Fender bass amp. So I did not bother in the Boogie 400 plus. One the positive side these are pure eye candy. Eye candy however is not enough.

## 6L6WGB/5881/JAN PHILIPS:

This was the valve that was made to satisfy the American government when in the early 1960's Tung-sol decided to stop making valves. Made to military standards the Philips 6L6WGB is very close to the Original Tung-Sol. Considering the price of the Tung-sols the Philips are some what of a bargain. The Philips offers that classic Fender Twang which no other 6L6 or KT66 past or present can even get near.The Philips has very tight bass and tremendous midrange clarity. Bass is not as deep as some of the other classic American 6L6GC which may not suit some metal players. What it has is the best midrange attack which is musically smooth. The soundstage is big which worked well in the Fender Hot Rod deluxe. In the Reissue 1959 Bassman the valve gave me sound that I could never get with any other 6L6. Power chords were perfect as you had enough crunch with plenty of top string detail. Picking chord and runs jumped out of the speakers. Broken chords sung. When distorted the Philips broke up earlier than the Tung-sols and this sounded fantastic and this seemed to work best with the reissue TS808 tube screamer in front of the amp.

In the bass amps, like the Tung-sol the Philips has a very tight bass which is not as deep as some of the other 6L6GC. This was not a problem in the Mesa Boogie 400 plus as you can dial in a little more bass. I have used 12 of these in my boogie since 1997. The dominant mid is great for Stingrays and Precision basses allowing them to cut through in every situation. In the Fender Bassmam 135 application they could do with going a little lower so may not be to all tastes.

To sum up this is a really great guitar valve which excels in Fenders.

## 6L6WGB/5881/TUNG-SOL:

The Tung-sol 6L6WGB/5881 established it self in history as the valve that gave the original 1959 Fender bassman its trademark sound. The bass is super tight and really well rounded. Tung-sol quality control was superb and all the Tung-sol valves I have ever tested have always been spot on. They produced a well balanced sound; treble is full and breaks up early and evenly. Under distorted and saturated conditions the valve does not change character and in overdriven mode have a really tight sustain.

The classic midrange Keith Richard style twang is just perfect with just the right amount of punch and grit. This is why this valve has classic status.

In bass tests we again excluded the Mesa 400 plus but in both Fender and Marshall the valve performed excellently giving a really tight sound. This valve is now very rare and hard to find. In the King of amplifiers this valve is the king of the vacuum tubes.

6L6WGB/5881/TUNG-SOL

## KT66/GEC:

This valve is the ultimate valve for tone. The bass was deeper more controlled and more fluid than any of the other KT 66. This was most noticeable audio tests in the Quad 11 through the JBL speakers.

The midrange was also the most transparent. The key to the sound of the G.E.C is how it distorts. It is the most musical and clear sounding valve on test. The crunch sounds had huge bite but it never sounded hard. The more you pushed them the sweeter the sound.

Top end was silky smooth. In the Marshall you had instant blues breaker tone. It was so good here that I decided to try the pair of G12H heritage Celestions. I then found the classic rock sound that I have been looking. The sustain was immense and this confirmed that this really is the best blues valve on the planet

KT66/GEC

## KT66-HP-HP/GROOVE TUBES:

The Groove tubes performance was identical to the Harma

# CONCLUSION:

6L6GC/5881 TEST CONCLUSIONS.

It has taken the best part of two years to complete this report. Mainly due the the amount of new 6L6GC that have come to the market. We now have more choice than ever before which can only be good for the future.We now have a good choice of dependable and reliable valves available. We also now have a number of manufactures competing so have seen increased consistency and quality of the product.

The winners will depend on what you wish to get from your amp. So here I have highlighted the valves that will perform better given a certain criteria.

The best valve for clean Fender sounds was the same as it was 5 years ago the military Philips 7581A. This valve has a clarity which I doubt we will ever see again in a 6L6GC.

Second was the G.E 7581A

The best rock sounding 6L6GC was the same as it was in our previous tests, the G.E 6L6GC early type. In second The famous R.C.A 'blackplate'6L6GC.In third place the Sylvania 6L6GC/STR 387. So the holy trinity still held firm.

The Fender bassman is one of the classic sounding designs of all time. Indeed it was no surprise that the rock 6L6GC was the clear winner and indeed in most of the Fender amps was the Original G.E 6L6GC early type. The classic edge of break up Fender/Keith Richards sound was easy with the Philips 6L6WGB, so this got the second place. Indeed the Philips sounded excellent in all the Fender amps and crunched superbly in the Marshalls.

Of the modern production 6L6GC three valves were head and shoulders above the rest.
The original Svetlana/winged c 6L6GC was ideal in all applications with a great clean sound. So the best choice if clean is your requirement. For an out and out rock valve the Harma STR 6L6GC (which is the same as the Groove tube 6L6-S and made in the Slovak Republic) is the best. This has the best rock overdrive sound.

One valve which really did impress me was the TAD 6L6WGC-STR for that classic Keith Richards sound. In the Bassman or Deluxe this valve supplied that sound.
It shows that they are now starting to make valves sound like they did in the valve making hey day. The big surprise and major development is that this valve is from China.

It was decided that in the modern category the first place was given to the Original Svetlana/winged C 6L6GC as it produced the best performance across the board.

The second place was given to Harma STR 6L6GC and third spot to the new T.A.D 6L6WGC-STR.

6L6GC/5881 BASS GUITAR TEST RESULT CONCLUSIONS.

One valve was the clear winner for the bass guitar tests. For depth and clarity and the most headroom the Philips 7581A was a long way a head of the pack.

In the Boogie The Philips 6L6WGB sounded great really and fat sounding, but put these in the Fender 135 bassman and the distortion is to early, giving fat too much midrange. The TAD 6L6WGC-STR was also suffering from the same problems

The best current production 6L6GC for bass was a close call between the big bottom end of the Harma 6L6GC and the nice top end punch of the original Svetlana/ winged C 6L6GC. In the end the nod was given to the original Svetlana / winged C for the simply reason the in the most common bass amp applications of 100 to 135 watts. Most bassist would struggle in terms of volume. So the extra headroom of the Svetlana/winged C 6L6GC could save the day.

6L6GC/5881 HI-FI TEST RESULTCONCLUSIONS

To be honest I was concerned at the gap in audio sound quality.
The GEC KT66 was by far the best, the Quad 11 were designed around the KT66.
So I naturally assumed that the KT66 from Russia and China would be up there.

The Chinese item was poor and although the Russian KT66 branded Harma and Groove tubes were dynamic and enjoyable to listen too. Some of the detail was missing.

The only real choice was the Philips 7581A with the GE 7581A coming in second place.