VACUUM TUBE VALLEY™

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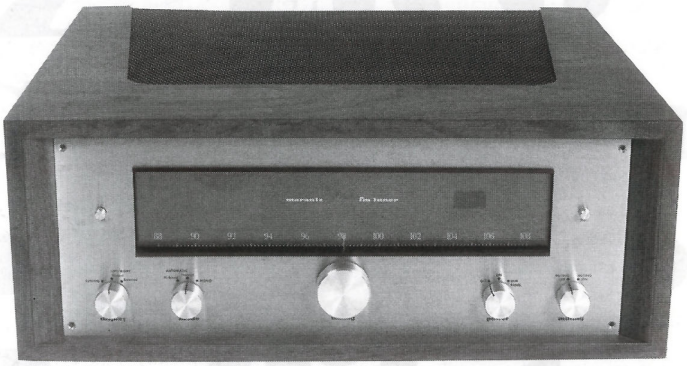
In This Issue

The Ultimate Tuner Shootout

Looking for Big Tone on the FM Band

VTV evaluates many of the best tuners, both new and vintage, tube and solid state.



Bendix Red Bank Tubes

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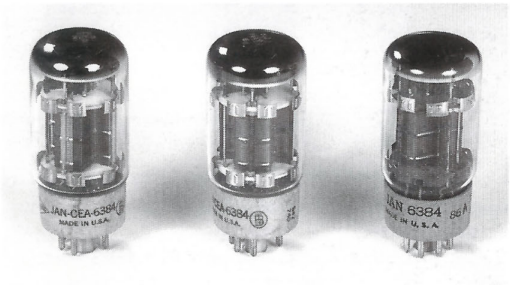


Hi-Fi in Hong Kong

VTV takes a look at the vintage audio marketplace in Asia

Uncle Eric's Deluxe SV811

Single-Ended Amplifier

It is commonplace for audio publishers to print feature articles of this type, about designs the authors themselves manufacture and profit from.

Barbour is not profiting from the sales of transformers, nor does he sell copies of the amplifier described here. He simply is an employee of the company that imports and distributes one of the tubes used in the amp.

VTV listening impressions of Eric's SV811 amplifier.

By Charlie Kittleson

All of us at VTV have had the experience of listening to and evaluating various single-ended amplifiers, including those using 300Bs. We were very curious how the new Svetlana SV811-10 tube compared to the famous 300B using Eric's SE test amp and the Cary Audio SE-1 kit amp. Our listening group included Steve Parr, Don Pettee, Terry Buddingh, John Atwood and myself. Speakers were either Klipsch Chorus 1s or B&W DM110s. Program material was CDs played on a modified Elite Electronics CD player plugged directly into the amp and not using a preamp.

We immediately noted that the SV811-10 was less colored than the 300B. Granted, the 300B has super mids, but the SV811-10 mids are every bit as good, especially on vocals. This is a well-balanced tube with musical highs and clean, powerful bass. The use of a thoriated tungsten filament emitting a bright yellow glow gives the SV811-10 that transmitting tube look and smooth, powerful sound. Also, there is lots of headroom with this tube, even when pushed. The 300B on the other hand, can sound mushy when pushed to equivalent volume levels.

Next we tried the Svetlana SV572-10, which is a direct plug in replacement for the SV811. It has a vintage transmitting tube look with a straight-sided glass envelope reminiscent of the early 1930s Sylvania and Taylor transmitting triodes. It sounded balanced and had tight bass. Overall sound was similar, but more refined than the SV811-10. The SV572 had a little better detail on the top-end.

Then we switched rectifiers. First trying the Chatham "Potato Masher" 5R4WGB, then a Chinese 5AR4 and finally a GE 5R4GA type. All of us agreed that the 5R4GA was cleaner, with better presence than the other rectifiers which seemed to be more rolled-off sounding.

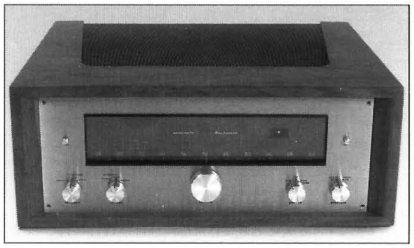
These new Svetlana tubes seemed to do everything well if used in a properly designed circuit. They are a reliable and powerful alternative to other medium-sized audio triodes.

The Birth of the Marantz 10B

By Michael Zuccaro

(From taped telephone interviews)

Let us make no mistake about it – anything well done, well made or well designed is a work of art. We know who painted the great paintings, who wrote the greatest pieces of music, maybe even who designed the greatest bridges or most respected cars, but I have always wanted to know who, for God's sake, was responsible for the actual circuit design of the venerable Marantz 10B tuner? It's no small task to design anything well - especially consumer electronics, where price is always a major factor, but in 1961, Saul Marantz had an idea which would both produce the most advanced FM stereo tuner of its time, and almost bankrupt his company: What would happen if we threw all the rules away, and built a no-holds-barred, money-is-no-object tuner?



With the possible exception of McIntosh, no other hi-fi manufacturer of the time could have made such a calculated gamble. The Marantz name had the reputation for superb quality, to be sure. Their Model 7 preamp and 8 and 9 power amplifiers were already recognized as masterpieces of design by both engineers and hi-fi men. But they had never ventured into RF design, and a tuner was a natural next step. Chief Engineer Syd Smith conferred with Saul Marantz, and decided to hire on Dick Sequerra (later to produce the legendary FM1 Sequerra tuner) who designed the RF section, with Syd designing the multiplex, audio and power supply stages. So here in their own words is that story:

Syd Smith

"The thing that really started the 10B project was the adoption of the General Electric stereo system in the early 60's. When that happened, GE gave courses on multiplex FM Stereo. Dick was already aboard, working with me on the finishing details of the 9 amplifier. I couldn't be

Early Marantz factory at 25-14 Broadway, Long Island City, NY

spared from work, so we sent Dick. I had not had tuner experience, it wasn't my expertise. But Dick had some experience in RF work. If it weren't for him, we probably wouldn't have started it. Before that, I was the only engineer, except for occasional technicians helping me here and there. We had maybe 70 employees and were at 25-14 Broadway in Long Island City in Queens, New York. All the design work on the 10 was done there, as well as initial production.

We contracted out all the sheet metal work and stamping, and transformers we had made by several different companies. The last outfit was Magnetic Windings Company, who produced the prototype transformers for the 9, but they were not satisfactory. We found we had a guy in the factory who knew how to hand-wind transformers, and we learned enough to improve the transformers in the 8 and this became the 8B. Magnetic Windings is still in business in eastern Pennsylvania, Jim Loweth was our transformer guy. Anyway, back to the 10B. It started out as the model 10, with a slightly different front panel and IF configuration above the chassis, instead of below it. Originally, we used toroids as the inductors, but we learned, to our chagrin, that these were becoming magnetized on the production line by the Weller soldering guns! It changed the bandpass. We couldn't align them. So when we did the 10B we went to gapped pot cores, which had been very well tested for reliability. The drift of the magnetic characteristics would stay within spec. We made 100 of the model 10s, and they're OK if no one gets a magnet near them. There are always little problems in manufacture – the dial mechanism is a problem, for instance. We redesigned that in the 10B to make it easier to assemble. We had learned enough in production of the 10 that it took us another year to come out with the 10B.

We hired a consultant in the beginning named Mitch Cotter. (Mitch could not be reached for an interview.)

Mr. Saul Marantz discusses his revolutionary new model 10-B FM Stereo Tuner

Q. Mr. Marantz, your new 10-B tuner is quite revolutionary. Do you feel it will obsolete all other tuners?

Mr. Marantz: In one sense, yes. The performance of this tuner is so dramatically superior to conventional tuners that anyone who wants or needs perfect FM reception today has no choice but to use the model 10-B. Its superiority, however, does not necessarily *obsolete* conventional tuners. Rolls Royce, of course, makes superior cars, but they haven't obsoleted Chevrolets.

Q. Is this superior performance discernible to the average listener?

Mr. Marantz: Very much so. The difference is quite dramatic. As you know, conventional tuners have never been able to pick up and reproduce broadcasts which could match the quality of a fine disc or tape playback system. This has often been blamed on *broadcasting* quality. But the new 10-B disproves this theory. It reproduces the *broadcast* of a disc or a tape with the same clarity and separation as if played through a playback system – proving that broadcast quality is generally excellent.

Q. Is this true with weak broadcast signals also?

Mr. Marantz: Yes. In fact the model 10-B will reach 55 db quieting at only 3 microvolts! This is better than most conventional tuners will reach at 1000 microvolts. With a 25 microvolts station the Model 10-B reaches a phenomenal 70 db quieting which is about 20 db better than most conventional tuners can achieve at *any* signal strength. This means that with the Model 10-B there will be excellent reception even in fringe areas, particularly so because of the tuner's high sensitivity, its extremely sharp selectivity and reduced susceptibility to multipath effects, which on other tuners cause distortion.

Q. How are such improvements accomplished?

Mr. Marantz: The answer to that question is very complex, because the 10-B is far more than an improved tuning system; it is a completely new *design concept* with *many* technical innovations developed by Marantz engineers.

Q. Can you give us some examples?

Mr. Marantz: Yes. The RF section, for example, contains a balanced-bridge diode mixer – a technique used in modern sensitive radar designs to eliminate a major source of noise, harmonic distortion and other spurious interference. The whole RF circuit is balanced-tuned, using a precision tuning capacitor with four double sections, for further reduction of spurious images.

For the critical IF strip, we've developed the first commercial application of the "Butterworth," or phase-linear filter. This new concept provides a number of distinct characteristics essential for good results. The passband, for example, is phase-linear for extremely low distortion – especially at high frequencies – and it remains essentially phase-linear at all signal levels.

Cutoff slopes beyond the passband are extremely steep, allowing unprecedented selectivity; it is much less subject to the effects of multipath, and it doesn't require realignment with tube changes or aging. The old standby coupled IF circuits currently in use do not have any of these characteristics.

Q. Are there any innovations designed specifically for multiplex?

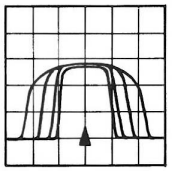
Mr. Marantz: Yes. For multiplex reception we've developed our own unique variation of stereo demodulator, which permits phase correction to maintain a very advanced order of stereo separation throughout the whole audio band.

Q. What is the purpose of the tuning and multipath indicator?

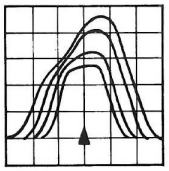
Mr. Marantz: This oscilloscope device is so versatile its single trace tells many easily understood stories. It shows when a station is tuned exactly to the center of the passband. The height of the pattern shows the signal strength. The indicator shows how much multipath is present, making it easy to adjust the antenna for best reception. It shows if the station is creating distortion by overmodulating. Also, technically informed users can check stereo separation of transmissions, discs and other sources.

Q. And how soon will the model 10-B be available in quantities?

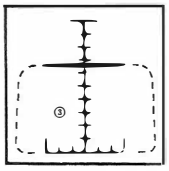
Mr. Marantz: The Model 10-B is a laboratory instrument of extremely high quality which will never be *mass* produced in the usual sense. However, production has been stepped up fourfold and all back-orders are now being filled by Marantz franchised dealers.



IF Passband retains phase linearity and sharp slopes at any signal strength for low distortion, sharp selectivity.

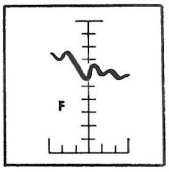


Conventional mutually-coupled IF circuits change characteristics drastically depending on signal strength.

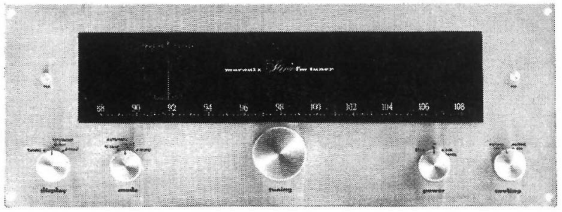


MARANTZ MULTIPATH/TUNING INDICATOR

Station tuning is simply and accurately adjusted by centering the trace.



Multipath (Ghosts) shows up as 'wiggles' on the tuning trace. Antenna is simply rotated until trace is smooth.



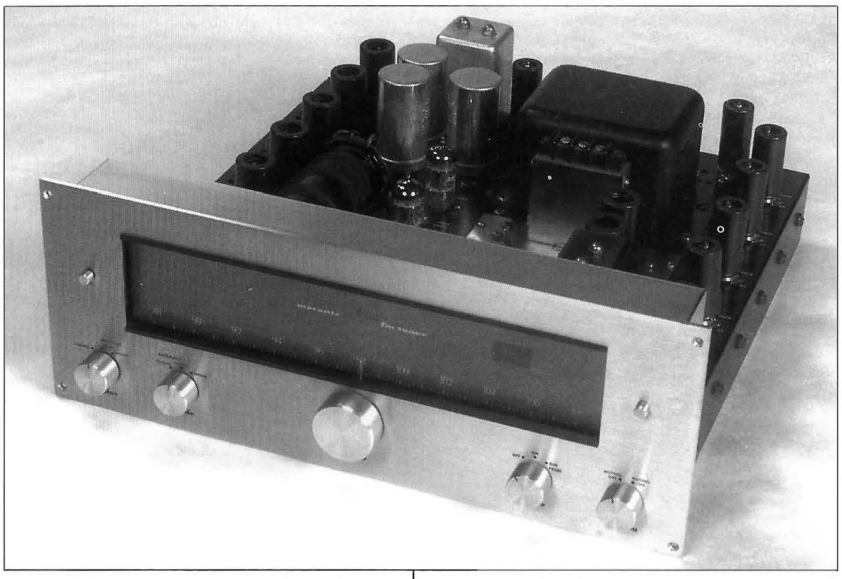
marantz

MARANTZ, INC., SUBSIDIARY OF SUPERSCOPE, INC., SUN VALLEY, CALIF.

The philosophy of the design, the proportioning of the stages, and so on with the 10, and some of the mathematics involved, were derived from Mitch. He was a theoretician. He wanted to use a switching power supply in the tuner, for example. It required many different voltages, including the CRT voltages, but in those days digital switching power supplies switched in the audio band, which was audible. We ultimately had to go to a linear supply. But he was a brilliant guy.

We used an idea we got from Tektronix oscilloscopes on the model 9 amp and 10B tuner – neon safety lamps, to protect the tubes at turn-on in the direct coupled audio stages. It kept the grids from going too far positive before the filaments come up – you could have a few hundred volts on the grids! It would arc internally, but the neons come on at 70, 80 volts and protect the grids. It only adds a few picofarads of capacity to the circuit. It's a great, cheap way to protect circuitry that's direct coupled. A lot of other companies should be using it. But that's what it's there for. ln the 10B we also used them in light-activated switches, which we made to switch from stereo to mono, and for muting. They were silent and very smooth. We put those together ourselves. We tried to build things that would last.

Now, the IFs. Most tuners use double-tuned IF cans, which go out of alignment with time. They drift. Our design goal was to make something that did not have to be aligned and tuned. Never try to adjust the IFs on a 10B!! We hid the tuning screws so no one could easily get into it. The final inductor in each stage is variable and these IF stages were aligned in a jig in the factory and people who want to get in there and twiddle with them are crazy! There may be no way to really put it back right again.



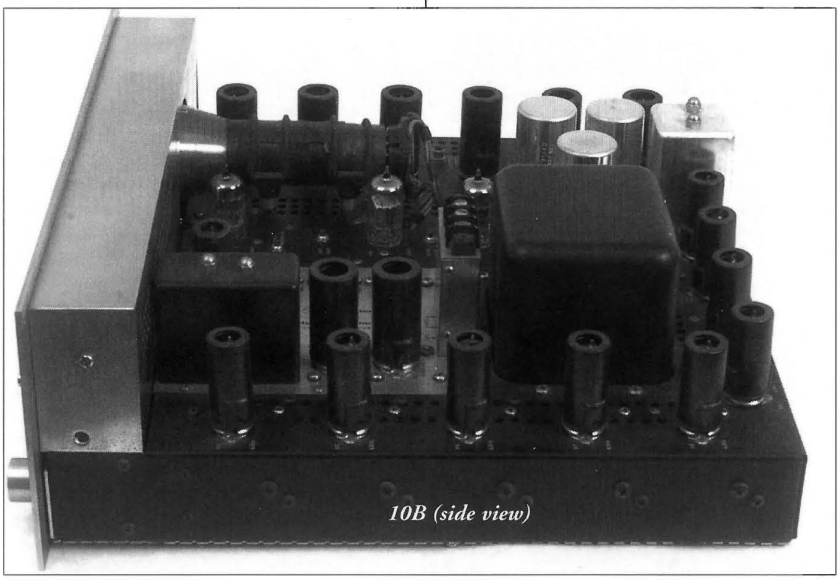
Here's what really should be said about those tuners. We had special equipment that we designed on the production lines to align these initially. It may be okay to adjust the last IF inductor if you change a tube for tilt of the passband if you have a sweep generator, but that's it!

We used a balanced RF system and a very special, expensive 8-section tuning capacitor made by Hammarlund. It's a similar system to push-pull, it balances out the circulating currents and minimizes cross-coupling from other stages. We used the same system (balanced) with the Sequerra tuner, but we used varactors.

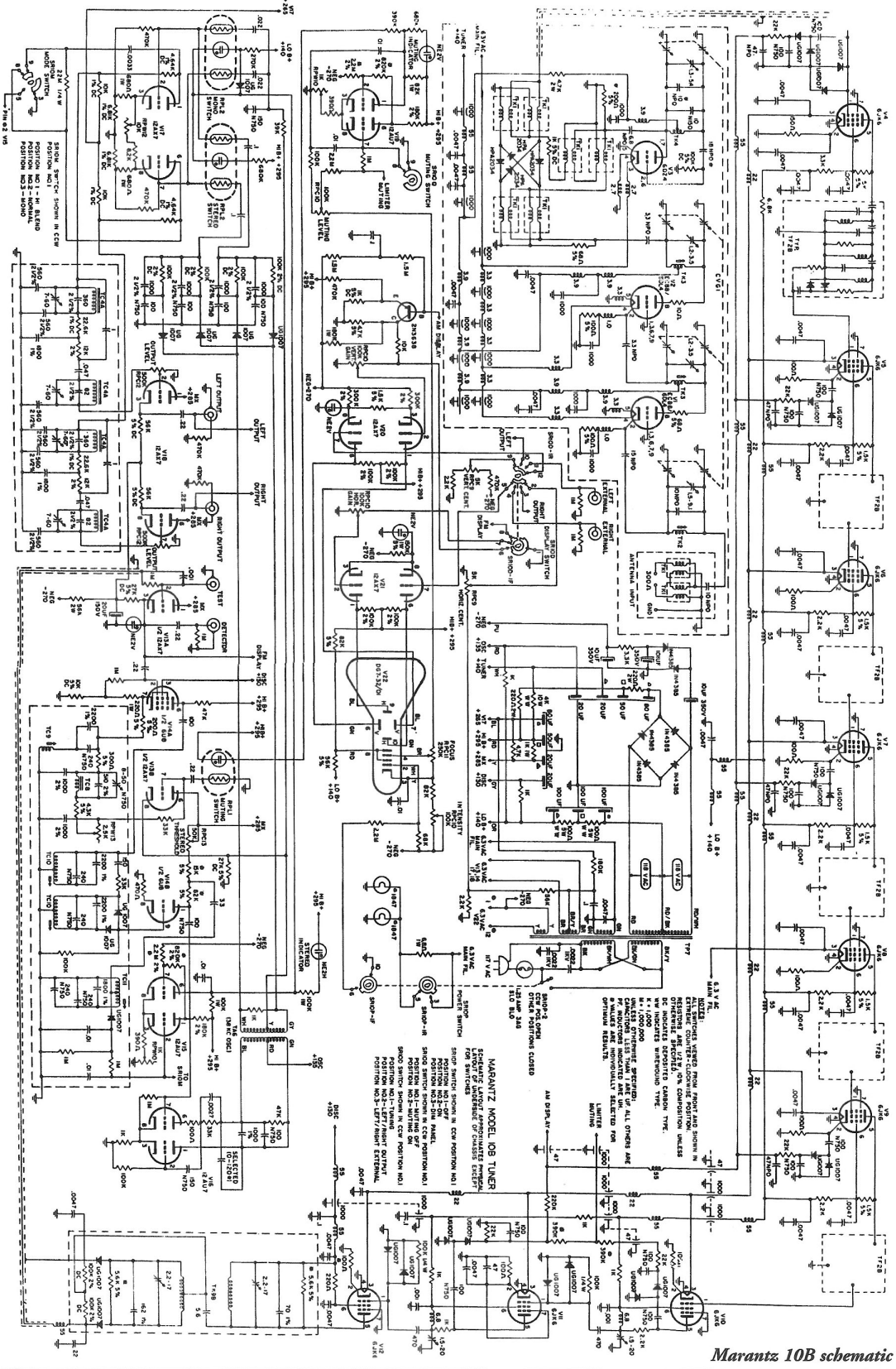
The multiplex section is something that people don't really appreciate. I never wrote an article on it. It's called "quasi-vestigial sideband system," we used more of the lower sideband than the upper sideband by unbalancing the mix between the two over the frequency range. The phase/amplitude relationship of that is very tricky, and we used a phase-linear filter to keep the separation high. I came up with that. To set this up in production I had to modify some of the available multiplex generators then. I had to "un-kink" some of the distortion. Later at Sequerra we designed our own.

Our production manager was Joe Sclefani, who has since died. He was very conscientious about things, and every time we tried to blame a worker for something, he was right behind them. He was so helpful and important to us that we hired him on for a while at the Sequerra company. The service department changed a lot, and Engineering always worked closely with the guys in Service and Testing. Joe Sclefani would appoint people to quality control as part of the production department.

The 10B we built in sub-assemblies. It's very important to break things down like that. We followed the same philosophy with the Sequerra tuner, and on that project our roles were reversed. Dick was my boss since it was his company. If you can get in touch with him he could tell you more. Dick and I spent one day with Mitch on transistors, and that got us started



10B (side view)



Marantz 10B schematic

on the 7T preamp. We put off working with solid state deliberately, I didn't want to know anything about transistors while we were working on the 10. And that led to the 15, which I designed.

Interestingly, neither Mitch or Dick or I were graduate Electrical Engineers. Here's an interesting story: After the war, Mitch was in the Genius Program at the University of Chicago. They took genius kids out of school and taught them college level things in an experimental program. These were children 8, 10, 12 years old. Gave them research to do!! Mitch was one of these kids, educated by the University of Chicago but not on a regular degree program, as far as I know. And Dick is one of those guys who doesn't study by conventional means at all. I have no EE and Dick doesn't either. I had some speeded up radar training in WW2, then went to India and worked on direction-finding radios for airplanes. When I came back I wanted to be a singer! I did quite a bit of work to be an operatic tenor. I came to New York from Chicago after I worked for Radio Craftsmen. I have 3 years of college but most of it is in Music. Anyway, I had a list of about 8 different hi-fi companies that I interviewed with in NY, and I interviewed with Saul Marantz. He was making the Audio Consolette preamps in his basement at that time. He had one full time lady and a few part-time, and I came along just as he was finishing up the first 100. He was a commercial artist, and I met him in his art studio. This was the end of the summer of 1954. Shortly, he moved his operation from the basement of his house in Kew Gardens, Queens to Vernon Boulevard. And that's how I came to Marantz."

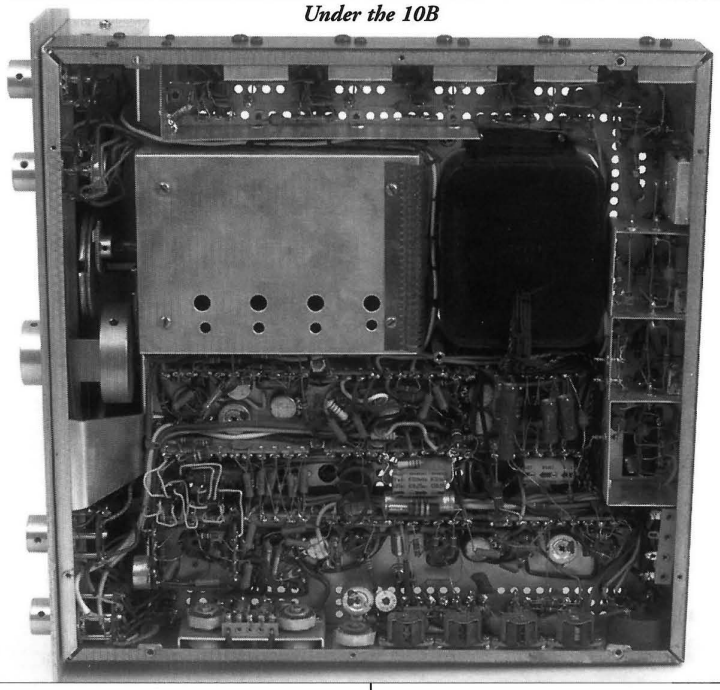
Dick Sequerra

Dick Sequerra is a man who doesn't rest. After working as an engineer at Pilot radio and running his own company (Unilux), and working for Marantz , he went into the speaker business and is now in the business of making spark plugs (advanced, and revolutionary, of course) for cars. Along the way he also started the Sequerra company to make the fabled FM1 tuner. Being such a busy guy, I felt doubly lucky to be able to interview him on his involvement with the 10B. Here's what he had to say:

"Before I went into the Army I worked for a company called Hudson Radio. I heard through a friend that Marantz needed some help. I had another business going at the time. I was interviewed by Saul and by Syd and I was hired on the basis that I could only be there 6 months or so, and tell me what you'd like to have done. They were setting up to make the transformers for the model 9, and asked if I could supervise that. I said "sure," since I was just getting my company, Unilux, off the ground. We were making the largest strobes in the world for commercial and industrial applications, like for inspections in steel mills, video, and so on. The company still exists. So I invented all of that. At Marantz, I supervised all the tests that had to be done and did general engineering work. Then, because I had worked on RF at Pilot, and since Marantz had no tuner, and I had done some tuners at Pilot, I started work on a mock-up of a conventional tuner for an audio show to show that Marantz had a tuner in the works. One thing led to another, my thing at Unilux went more slowly than I had hoped, and I started to work at Marantz. They kept on saying "this tuner has to be the best tuner in the whole world, beyond anything that has ever been done," so it all had to be looked at afresh. Mitch Kotter came in as a consultant. He had a firm up in Riverdale, and he said there are new approaches to doing this. The use of an oscilloscope was his suggestion, and more elaborate filters were also his suggestion, though he didn't design them. Essentially, that's the genesis of it, and as you know, when something gets started it gets a life of its own.

The ring bridge mixer was my idea.

Under the 10B



Ring modulators were developed many years before that, the Germans had used them, but the problem was we didn't have diodes of sufficient quality. Then Hewlett-Packard introduced hot-carrier diodes for use in military and instrumentation electronics. We were the first people to use these in a consumer product, or even a commercial product. They were terribly expensive (HPA-2034). We traded off a conversion gain to be able to balance out the common-mode anomalies, and it was designed with that in mind.

After I came back from the GE Stereo symposium, I built the first stereo generator that we used. The 10B was truly a collaborative effort between Syd and I, and we were both responsible for the finished product. Now for the IFs: there was an article published by the IRE (now the IEEE) by Dr. Dishell in which he defined, theoretically, the ideal filter for phase linearity over any given, defined bandwidth. Most of us were members of the IRE, and a guy who worked with Mitch, Larry Saleckson, now the head of test for Consumers Union, pointed out that Dishell's work, with a 3-pole filter, was probably the best way to approach this. But the realization of this, the actual design, was Syd and I. I bought a very exotic Q-meter and a scope that could do X-Y at 10 MHz, a Tektronix 536, so we could measure the phase change thru the filter and we could define it very carefully. But I realized the filters.

We worked a good two years, sometime 18 hours a day, weekends, it was really hell. Though it was built like a commercial or military item, we viewed it as a consumer product, with the constraints and compromises you would make for a consumer product, regardless of where it stood vis-a-vis the rest of the industry. I did not try to write up anything on the circuit. We didn't want to disclose too much because people might try to "sweeten it up," so to speak. That would cause trouble. Later, when I made the Sequerra I tuner, we had a few 10Bs that had never been touched. They just sat. There was nothing wrong with them. We specifically did this to help project a mean time between failure based on experience with the Marantz. Our opinions were validated that we should have not disclosed what constituted the tuner and how to align it. I had trained service men many years earlier, and I knew what with egos of service men, they would want the opportunity of improving it. This was a real anxiety of both Syd and myself. This was a new product, but the survival of the company depended on it. We did not want any problems in the field. We finally published a schematic. And that's all that was ever published. Now, in the 10B, (not the 10), the IF's were first put in an oven then put in an alignment fixture. They are aligned hot. I built a special jig to do this. We knew the temperature the set would reach, and that's the temperature they were aligned at.

We used some very exotic front end tubes. We did not want to use Nuvistors. We used the 6JK6 tube because I was innocent - Sylvania misled me. It was their new tube at the time. They told me it had the highest transconductance (18,000), and it was going to be used universally in television sets. At the time it was the most fantastic little tube going. We designed the IFs around a gm of 8,000-9,000 so as the emission falls off in time, nothing would happen. Then, of course, TVs started going solid state, and the tube is now scarce. But I never would have designed it around the 6AU6. It's a much older design, it had other problems. I would have needed more gain, more tubes, and making that string of tubes longer gets tricky. If you look at the bottom of the tuner, you see all the shielding, all the bypassing and, frankly, I didn't have as clear an understanding of how to deal with some problems of RF feedback as I do now. It was very difficult to have that IF string turn around like that.

Now, the RF front end uses an all balanced system, and a very special 8-gang tuning capacitor. This was used by General Radio in their test equipment, but not in a home tuner because it is so expensive. It's only a question of money. Its a vastly better way of dealing with front end design because it balances out common-mode feedback problems. It was the most expensive gang that was ever used in almost any product, consumer or military. In order to get that gang, it took the head of design at Hammarlund and me probably a few weeks, then I went down to Mars Hill, North Carolina (the Hammarlund factory). They are all made out of Invar, so that their temperature coefficient is pretty flat. It was the most expensive part in the tuner. A gang like that is just unthinkable today. But I had insisted on a linear, 10 inch dial, which is another problem. Which meant that the increments, the delta changes in the tuning cap, had to be very accurately controlled.

I learned some of this at Pilot. I designed all their production test equipment. I designed a resistor noise measuring set that became the standard of the industry. Before that I was at Telefunken right after I got out of the Army. When you take an average engineer, which is what I am, and you give them the opportunity and the facilities and you don't sit on their backs then, you can produce wonderful things. I don't consider that I'm that unique, I think that my opportunity was unique. First of all, working with Syd. Two totally different types. Between the two of us, we've been told we make a very good engineer. I think Syd is the best engineer I've ever known, most capable and gifted. I'm more theoretical than Syd, we take different approaches, and when we fight and argue together. What has come out of our work over the years has been very nice. I want to emphasize the work that he did. Without either one of us, you never would have had the 10B. I miss working with him, there's an understanding, an empathy, after working all those years.

Marantz 10B Technical Features and Specifications

(from Marantz 10B Data Sheet)

Features:

RF Section – The precision tuning capacitor has a "Linear frequency" characteristic so that station calibrations appear evenly and accurately spaced along a full 10" tuning dial. RF stages are balanced-tuned throughout. An important feature is the radar-type balanced-bridge diode mixer.

IF Section – The unique MARANTZ IF circuit is based on the development of an "18-pole" phase-linear filter. The ideal characteristics of the filter passband permit performance improvements which are unobtainable with conventionally coupled circuits. Phase linearity in the 200 kc passband eliminates a major source of high-frequency distortion and loss of separation. 108 db/octave cutoff slope makes the Model 10B the most selective FM tuner in existence. The sttongest signals have no deteriorating effect on its ideal passband characteristics. IF alignment is permanent, being unaffected by tube changes or normal aging.

Limiters and Discriminators – There are 9 limiters in the Model 10B using matched pairs of silicon planar diodes. Each IF stage is self limiting, preventing overload on strong signals, and eliminating the usual need for AGC circuits. Quieting on weak signals is close to the theoretical threshold, with the ultimate quieting in excess of 70 db. The discriminator circuit is extremely linear, ensuring low distortion throughout the subchannel range.

Multiplex – The highly sophisticated MARANTZ circuit permits the inclusion of phase correction to maintain proper phase-amplitude relationships. This allows the use of an extremely effective SCA rejection filter without the usual loss of separation at high frequencies. Separation is well in excess of 30 db to 15 kc. The output filter circuit provides very sharp attenuation of residual sub-channel components above the audio range, eliminating noise and interference from SCA. Precision-gapped ferrite cup cores or precision toroidal cores are used in all filters. Automatic stereo switching and inter-channel muting are both accomplished by means of ingenious electronically triggered photoelectric circuits.

Multipath Tuning Indicator – In March, 1962, MARANTZ introduced the concept of using an oscilloscope tube as a multi-path and tuning indicator in the early prototypes of the model 10. As each station is tuned, its correct center position on the passband is clearly displayed. Simultaneously, the presence of multipath becomes visible, making it quite easy to readjust the antenna for beat results. A panel switch permits test display of the left and right FM channels, or external signals from tape recorders, discs, etc.

Specifications:

I.H.F. Sensitivity – 2 μV or better

Quieting Slope – at least 50 db @ 3 μV, 70 db @ 25 μV.

6 IF Stages – Each with 3-pole phase-linear bandpass filter. IF bandwidth, 200 kc. Cutoff slopes, 108 db/octave.

Selectivity Curve – Adjacent carrier – 42 db; Alternate carrier – 150 db.

9 Dynamic Symmetrical-Aperture Limiters – full limiting on noise.

Ultra-linear Discriminator – For low distortion through sub-channel range.

Balanced-Bridge Diode Mixer.

Automatic Stereo Switching – Photoelectronic, with indicator light and threshold adjustment.

Interstation Muting – Photoelectronic, with defeat switch and threshold adjustment.

Total Spurious Rejection – Better than 100 db. Includes images, cross-modulation, etc.

Volume Sensitivity – -10db maximum (reached at 0.8 μv).

Harmonic Distortion – Less than 0.2% @ 15 kc after de-emphasis, and less than 1% at detector.

AM Rejection – At least 70 db @ 80% modulation with all signal levels.

Separation – Approximately 45 db average throughout the range. Better than 30 db at 15 kc.

Built-In Multipath/Tuning Indicator – 3" oscilloscope tube.

Tuning Gang – Military type, silver-plated, four balanced sections, ceramic spacer. Precision calibrated at 10 points.

Dimensions – Front Panel, 15 3/8" x 5 3/4" (39 cm x 14.6 cm); Chassis, 14 3/8" wide by 15" deep (36.5 cm wide by 38.1 cm deep) (Panel dimensions are identical to Model 7).

Panel Finish – Gold anodized, to match Model 7.

Shipping Weight – 38 lbs (17.2 kg).

Price – $650 dollars (higher in West)

Anyway, I stayed at Marantz from 1961 through 1967. The last project I worked on was the model 18 receiver. I left in February, Syd left in March (Marantz had been sold to Superscope, and Saul Marantz left the company at that time - MZ) Then Syd came with me and we developed some additional things for Unilux. I'm very proud of what we've done together. Syd is a very modest guy.

Now I've developed a new electrode for spark plugs, the company is called Research Transfer Technology, and I still have R. Sequerra company, making speakers and a new pre-amp. I was going to introduce a new world-wide tuner, from 10kc to about 500Mhz. But no one wanted it. The future is moving to satellite communication. Terrestrial things are serviced very nicely by a car or table model radio. The CD also put the nail in the coffin of radio. The Sequerra FM1 was not a commercial success. We made about 1400 of them, we had an offer to sell the company, one of the principals refused to sell, so Sydney and I walked. But it was never designed to make a profit; it was designed to set an example.

Incidentally, the 10B started out as the model 10. There were only 94 of them made. We took a look at it, it was like the pilot run. We said "Gee, we gotta take money out of this thing." It had 8 chrome plated chassis, the IF's are in cans above the chassis. The circuit is essentially the same with one or two small exceptions. We also made the 10B in a rack mount version. One of the reasons for the change in the IF layout was production. I had built the Model 10 IF's with toroids, and the Weller soldering guns used by some technicians would magnetize all of the toroids so the whole IF was ruined. We said "this is ridiculous, we can't use toroids," we couldn't take the chance. I also threw out all the solder guns. Then we went to pot cores, which are self-shielding. But once we got these bugs worked out it all worked smoothly. The tuner was produced into 1970, and we made about 14 or 15 thousand units, maybe even more. (*Note: Many Marantz experts think only about 5000 10Bs were made based on serial number surveys - Ed.*) They stopped making them when they moved out of the Woodside, New York plant to California. The Tushinsky brothers, who ran Superscope, were making 1,000 at a time, at least.

Saul Marantz

Like Sid Smith and Dick Sequerra, Saul Marantz is a gem. I called him out of the blue one Sunday morning. He spoke to me as if we were old friends, and he had this to say about the 10B:

"Many people feel, to this day, that the 10B was the best tuner ever made. When I was in Japan in 1975, the price on used ones was about $3,700, and a few years ago I heard they were over $10,000. When they were new, the last price was about $750, retail, and I still felt I was putting a few hundred dollars in every box. The cost of developing that unit, over about 3 1/2 years, was enormous. My wife had to put up some cash to help out. In fact, we were thinking of closing up, of finding some way to get out, when the offer from Superscope came up."

Incidentally, Saul recommends that anyone who needs old Marantz gear repaired contact Tom Cadawas of Staten Island, New York (718 981-9138) for repairs. Tom was the Service Manager at the Marantz factory from 1964 until Superscope moved the company to California in 1974. Tom says that 10Bs were definitely being produced until about 1973 in New York, and he remembered that the Measurements 310 RF signal generator was being used on the line for production testing, with custom designed stereo generators.

Bibliography

"An interview with Saul Marantz," ***The Absolute Sound***, issue 94, Spring 1994, pages 54-82 – A superb, in-depth interview with Mr. Marantz.

"*World's most expensive FM tuner*," ***Radio-Electronics***, July 1966 By Peter Sutheim, pages 30-34 – A rare interview with Dick Sequerra explaining some of the design details of the 10B.

"*This FM tuner costs $2500!*" by Len Feldman – ***Radio-Electronics*** March 1975 – Interview with Sequerra and details of his model 1 tuner.

Test Reports

Audio Magazine, April, 1965

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