Robert Davidson
robertd3131@gmail.com

Robert Davidson OM/WB8IPB documents some of the beautiful and remarkable transistor radios in use throughout the Eastern Bloc during the Cold War period.

DOMESTIC RADIO ENGINEERING OF THE 20TH CENTURY

Fig. 1: The 'Sputnik' (1957/8).

Transistor Radios Behind the Curtain

Western European transistor radios made in the 1950s and '60s are about as well-documented these days as are their US and Japanese counterparts, yet transistor radios produced in Eastern Bloc countries during those same times still seem to be relatively unknown in the West. While much of this comes from an understandable lack of information sources and few examples of Eastern Bloc radios are to be found in the West, there is also an element of indifference here, perhaps partially fueled by a lingering prejudice best summed up by the 1960's American sentiment that *'the Russians can't even build a decent refrigerator.'*

It was not until 1959 or 1960 that Russia found herself capable of building a reasonably decent transistor radio for mass production and the radios that it did produce over the following few years offered few innovations that hadn't already been found in transistor radios made in the West several years earlier.

By contrast, the US's first transistor radio was marketed in 1954 and Japan's first transistor radio in 1955. By 1959, both countries had marketed a large array of models produced by dozens of different manufacturers.

Yet these Soviet-made radios were listened to by hundreds of millions of people sequestered from the rest of the world – these were the radios that were taken along to football matches, checked for weather reports, enjoyed for musical offerings. Regardless of their performance standards, the radios were part of the everyday lives of millions.

In the Soviet-occupied Eastern European countries of Poland, Czechoslovakia, the German Democratic Republic and Hungary, transistor radios with good quality reception performance arrived on their local markets several years ahead of Soviet radios, although they often did so by employing transistors made by European or Japanese manufacturers (Philips, Telefunken, Hitachi) in the circuits of their earliest radio models.

The development – first of the transistor devices themselves and then of the transistor radios incorporating them – took very different paths in the Soviet Union and in its Eastern European satellite countries.

Semiconductors Behind the Curtain

The Soviet Union's development of transistor devices was well behind the times, though probably not as far behind as most people in the West might have thought.

The USSR's first point-contact transistors were created in the early 1950s and the first Soviet-made junction transistors were produced in the mid (and late) 1950s.

Later devices among these included the black 'top hat' versions found in most of the early Soviet transistor radios from the late-1950s through the mid-1960s. Early Soviet transistor radios often relied on only two different transistor types for their circuits, even if the radio's circuit was comprised of up to ten transistors! This sort of thrift continued up until 1963 or 1964.

Transistor radios made in Eastern Europe at the time didn't make use of Soviet-made transistors – rather, the earliest radios employed transistors made in the West or ones developed within their own country.

Hungary's first transistor radio, the 1957 'Tunde', described as an experimental set, used transistors made by Telefunken. The 1958 'mass-production' version of the Tunde used Hitachi transistors.

East Germany's transistor production plant, the *Werk für Bauelemente der Nachrichtentechnik (WBN)*, began production of junction transistors in 1959 but the country's state radio manufacturer, *VEB Stern*, still had to rely on transistors from Western European manufacturers to complete its sets' circuits during its first several years of transistor radio production.

The earliest examples of Poland's first transistor radio (the 'Eltra MOT-59', see **Fig. 13**) used transistors made by Telefunken, while later examples used Philips transistors. Poland's 1961 Eltra Koliber MOT-601 also most likely made use of transistors from a Western European manufacturer, probably Philips.

Poland's own TEWA semiconductor manufacturing plant did not begin producing transistors until 1960 and then only AF (audio frequency) transistors for the first year or two. It is likely that the 1963 'Eltra Koliber 2' was the first Polish transistor radio to routinely employ Polish-made transistors.

Soviet Transistor Radios

There is a comprehensive Russian-language Russian radio history site (Отечественная Радиотехника XX века; *'Domestic Radio Engineering of the 20th Century')* at this URL:
www.rw6ase.narod.ru

Interpreting the wealth of data amassed here, it appears that roughly 70 transistor radio models were produced in the former USSR up to 1965, though hundreds of more models were produced in subsequent years and up to 1989

The one model reportedly made in 1956 ('Travel') and the five models reportedly made in 1957 ('Surprise', 'Sputnik', 'Progress', 'Sverdlovsk' and 'Festival') were all described as 'experimental units', produced in runs only in the low hundreds or low thousands.

Russia had been doubly embarrassed; first by its slow development of transistor devices, as compared to the West (the USSR's 1957 history-changing 'Sputnik' satellite went into orbit without a single transistor in its circuits) and second by its slow-to-market application of transistors to consumer products such as radios.

Today, it is difficult to know exactly what these first few radio models truly represented: Were they really produced – albeit in small quantities – or did they just function as 'face-saving' prototypes?

The 1957 'Surprise' model is said to have had a production run exceeding 3,000 units but I have not yet found any evidence of an *actual radio*.

By contrast, the 1957/58 seven-transistor portable radio 'Sputnik' (**Fig. 1**) is definitely known to exist in collections today. It is reported to have had an initial production run of about 1,000 units. The original 'Sputnik' is reported to have had a solar power unit. However, I have never seen a photo showing this, just a sketch on a web page.

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Fig. 2: The 'Surprise' (1958).

As of now, the 'Sputnik' appears to be the earliest *verifiable* commercial transistor radio to have been produced in the Soviet Union.

The 1958 (seven-transistor) coat pocket radio that shared the name 'Surprise' (**Fig. 2**) with a previous (and questionable) 1957 model is a radio that certainly does exist in collections today; a small but verifiable number of examples are known. It is claimed to have had a production run of around 2,700 units.

However, a former worker at the Saratov plant, where it was produced, suggested to me in an e-mail that he believed that only about 500 units were, in fact, produced.

The Surprise's ornate Slavic cabinet design makes it nearly unique among transistor radios made in any country. It is a truly beautiful radio in its own right and a very rare one to boot.

Most likely, the first mass-production transistor radio produced in the Soviet Union was the 1959 'Atmosphere' (**Fig. 3**), a two-band, long and medium wave, seven-transistor, portable radio.

'Mass-production' may well be a generous term here; the Atmosphere's initial production run may not have exceeded 10,000 units.

In **Fig. 4** you can see a close-up of the transistors on its circuit board, with each one neatly laid out on its side.

It should be noted that these three radios ('Sputnik', 'Surprise' and 'Atmosphere') are not designated by any *model number*, only by their *names*.

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Fig. 3: The 'Atmosphere' (1959).

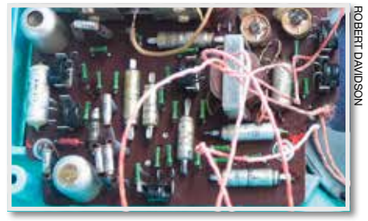

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Fig. 4: The Chassis of the 'Atmosphere' (1959).

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Fig. 5: The 'Gauja' (1961).

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Fig. 6: Handbook РАДИОПРИЕМНИК В КАРМАНЕ (Pocket Radio) (1961).

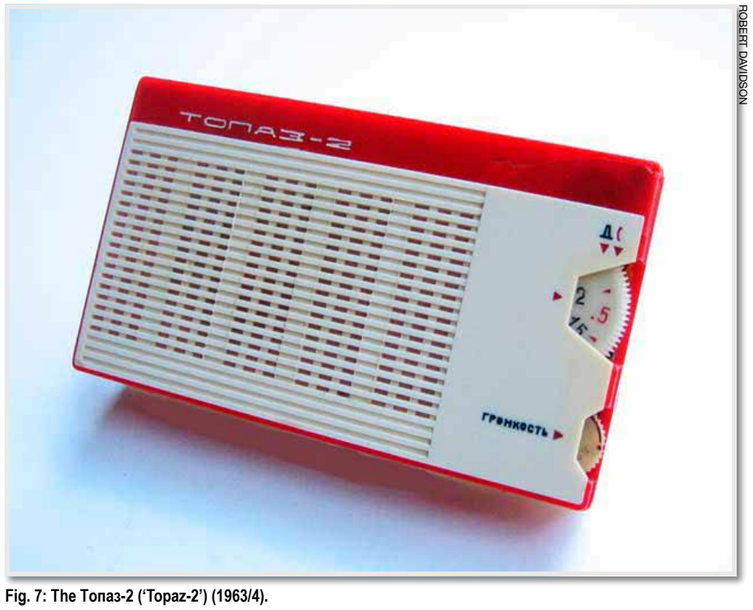

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Fig. 7: The Топаз-2 (‘Topaz-2’) (1963/4).

This was something typical in early Soviet transistor radios: Rather than having a model number, almost every Soviet transistor radio model had its own name and only its name – ‘Atmosphere’, ‘Gauja’, ‘Mir’, ‘Neva’, ‘Sokol’, ‘Topaz’ and so forth.

Western manufacturers such as Emerson, Hitachi, Grundig, Voxson (and Tesla in the East) also frequently gave their radio models names, yet these always were accompanied by model numbers as well (for instance Grundig’s ‘Mini Boy 200’ and ‘Solo Boy 201’ and Tesla’s ‘2702B Doris’ and ‘2710B Zuzana’).

The US manufacturer’s Emerson 888 series is probably the best-known example of transistor radios with names attached to a model number (‘Pioneer’, ‘Vanguard’, ‘Explorer’, ‘Atlas’, ‘Satellite’ or ‘Transitimer’); all these were Emerson 888s. However, radios produced in the Soviet Union are pretty much unique for having only names, free of *any* model numbering.

Several names found on Soviet transistor radios were ‘recycled’ over the years, sometimes more than once. The ‘Atmosphere’, for example, reappeared on two very different looking radios, first as ‘Atmosphere 2’ and later as ‘Atmosphere 2M’ — and why not, with a name as evocative as ‘Atmosphere’?

The first *true* mass-production transistor radios in the USSR did not appear until the first few years of the 1960s, beginning with the Russian-made 1960 ‘Neva’ shirt pocket radio, the 1960/61 ‘Spidola’ multiband portable radio from Latvia and the 1961 ‘Gauja’, also produced in Latvia. These radios had large production runs and were kept in manufacture over the course of several years.

Many Soviet transistor radios were exported in large numbers to Western European countries and Eastern European Soviet satellite states. This practice began in the early 1960s, with the above-mentioned 1960/61 ‘Spidola’ multiband portable and the 1961 ‘Gauja’ (**Fig. 5**), a six-transistor, long and medium wave, coat pocket radio.

Both models were made both for export and for the Soviet domestic market, with export models bearing the telltale English-language ‘MADE IN USSR’ imprint on the cabinet’s back face.

Most, if not all, of the Soviet Union’s transistor radio models produced over the following years were made both for export and for the domestic market.

One historical oddity here can be found in a small paperback book on transistor radio repair published in 1961 (РАДИОПРИЕМНИК В КАРМАНЕ, *Pocket Radio*) (**Fig. 6**). Among the many Eastern Bloc transistors radios detailed in it (with text, photos and schematics) are, in fact, three *Western* radios; the US ‘Hoffman BP-706’ solar-powered coat pocket radio, West Germany’s ‘Grundig Micro Boy 201’ and Japan’s ‘Toshiba 6TP-357’ shirt pocket radio.

It is unclear why these radios were included in the book – Western manufacturers were not exporting durable goods such as radios into the USSR at the time – and my own best guess is what one collector in Russia has suggested to me; the few Western radios that came into the Soviet Union arrived there only as personal possessions of Communist Party officials returning from visits to the West.

However, I still find the fact that a Russian book on radio repair should include these Western examples very strange.

Catching up with the West – Slowly

The use of only two different transistor types in Soviet radios continued until 1963 or 1964, changing with the introduction of radios such as the 1963/64 ‘Топаз-2’ (‘Topaz-2’) (**Fig. 7**) and ‘Нева-2’ (‘Neva-2’). In **Fig. 8**, you can see the 1963/4 ‘Нева-2’ manual. Both these radios incorporated three different transistors in their circuits.

These models were, in turn, followed by the 1964 ‘Планета’ (‘Planeta’) (**Fig. 9**), using four different transistors in its circuit. The ‘Topaz-2’ is of interest for its handsome cabinet design, including a translucent red cabinet in the example shown here, while the ‘Planeta’ is unique for having its tuning dial at the bottom of its cabinet face.

Even given its limitations with transistor development, Russia did produce some innovative radios in the mid-1960s. The 1965 ‘Micro’ (**Fig. 10**), was a stunningly tiny (45 x 30 x 13mm) six-transistor long and medium wave earphone radio, often described as the smallest transistor radio of its time produced anywhere in the world. It was all the more impressive for having been a two-band radio.

The domestic-market ‘Micro’ was also sold for export under that same name as well as under the name ‘Astrad Orion’.

In 1967, the ‘Orljonok’ (‘Орлёнок’) (**Fig. 11**) was introduced: a very pretty, long and medium wave, seven-transistor, ‘micro radio’ (97 x 54 x 29 mm), which was produced in a variety of toy-like cabinet colours. This radio managed to house two separate ferrite-rod antennas in its compact body, one for long wave and another one for medium wave.

Over the following years, the transistor complements in Soviet transistor radio circuits would finally reach par with those found in Western transistor radios.

Interestingly, it is not at all clear how important it was to get there. Several of the earliest US transistor radios (‘Regency TR-1’, ‘Raytheon 8TP’, ‘RCA 7BT-9J’) made use of only three transistor types in their circuits. Most other US transistor radios manufactured before 1958 used just four transistor types in their circuits.

The question was whether having only two transistor types in a radio’s circuit could provide good performance, especially in a radio such as the ‘Spidola’, covering frequencies up to 12MHz.

I put this question to several collectors who have a thorough knowledge of semiconductor devices and as of now there is no clear consensus.

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Fig. 8: The ‘Нева-2’ Owner’s Guide (1963/4).

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Fig. 9: The ‘Планета’ (‘Planeta’) (1964).

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Fig. 11: The ‘Орлёнок’ (‘Orljonok’) (1967).

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Fig. 12: The 'Электрон-2М' ('Electron 2M') Kit Radio (1969).

Radios 'for Young Experimenters'

During the Cold War years, a fair number of transistor radios in kit form were produced in the Soviet Union, often described on their boxes as aimed at *"young experimenters"* or "*young radio amateurs"*. These sets were, to some degree, part of the USSR's conscription campaign for technical talent that followed the start of the space race with the US in the early 1960s. This campaign also included State allocations of funds for amateur radio clubs and societies throughout the Soviet Union.

Most of these 'kit-radios' were very basic in circuit design and were targeted primarily at children, as opposed to the vast selection of sophisticated kits offered in the West by Heathkit and other manufacturers at that time.

One example of what was offered in the USSR is the 1969 'Electron 2M' ('Электрон-2М') (**Fig. 12**), a six-transistor super heterodyne medium wave radio using three different transistor types in its circuit.

While the space race imperative was certainly part of the motivation for offering kit radios such as the Electron 2M, radio kits had been produced routinely over the decades in the USSR, beginning as early as the 1920s. Kit radios such as the 'Electron 2M' were likely offered to the public as much for simple entertainment for children as out of any wider, geopolitical, motives.

Short Wave Listening in the USSR

If you remember the ubiquitous 'airplane drone' sound of Soviet jammer stations on the short wave bands during the Cold War years, you'll have to wonder just why the USSR produced so many multiband short wave radios for its citizens in those years. The 1960 'Spidola' was only the first of many multiband radios to be produced under that name over the following ten years or so; many other multiband portable radios, under different names, were produced for the Soviet public over the following decades, right up until the collapse of the Soviet Union in 1989.

All these radios were perfectly capable of receiving broadcasts from overseas. The only thing impeding their reception was interference from Soviet jammer stations, a fact that didn't stop Soviet authorities from arresting and prosecuting citizens found to have been involved in "*illicit receptions"* of broadcasts from the West.

An explanation for this seeming paradox is the obvious fact that Russia is a huge country that spans eleven time zones. Medium wave and long wave broadcasters could easily cover their nearby urban populations, not to mention the single-station 'cable' speaker boxes wired into every urban area residence.

However, more remote rural areas could only be reached by short wave broadcasts, specifically the 75 to 25m bands found on many short wave receivers available on the Soviet domestic market. Providing radios that covered the short wave bands was, in some sense, simply a 'necessary evil' for Soviet authorities at the time.

While it is true that each of those various radio models is now of interest on its own commercial and technical terms, every one of the millions of Soviet-made short wave radios produced in those days can also be seen as an object with both political and historical significance.

Consolidating Eastern Europe

During these early years of the transistor radio in the Soviet satellite states of Eastern Europe, Tesla appears to have been the only radio manufacturer in Czechoslovakia, VEB Stern the only radio manufacturer in the GDR (East Germany) and EMV the only radio manufacturer in Hungary.

In Poland, several different manufacturers were in operation at the time (Eltra, Diora, Omig). It is not clear to me how soon they were grouped together under the Unitra label and whether this occurred in the 1960s or the 1970s.

However, it is certainly clear that each of these Eastern European countries originally had numerous private radio manufacturers. Not long after Soviet hegemony, those separate companies were consolidated under a single manufacturer's name within each Eastern European country.

For example, all radio manufacturers in Czechoslovakia were placed under the single name of Tesla, all in the GDR were placed under the name of VEB Stern, all in Hungary were placed under the name of EMV and so on.

Interestingly, many of these East European sets were equal to – or surpassed – their West European counterparts in terms of cabinet design.

Poland's first transistor radio, the 1959 'Eltra MOT-59' (**Fig. 13**) is a classic 1950s 'retro'-looking design; at the same time, the GDR's first all-transistor radio, the 1959 Sternchen ('Little Star' **Fig. 13**) displayed a modern design, backed up by a wide choice of cabinet colours, several of them translucent. It should be noted that the 'Sternchen' was clearly copied from a Japanese cabinet design, the 'Kobe Kogyo KT-6', from around 1957. However, the Eltra's design was all its own.

The Czechoslovak Tesla Corporation's first radio, the 1958 'T58 2800B' (**Fig. 14**), was a compact transistor radio model with that nice, clean, look, which is so often missing in the larger, 'frumpier', portable radios made in Western Europe at the time under review here.

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Fig. 13: The 'Eltra MOT-59' (1959).

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Fig. 14: The 'Tesla T58 2800B' (1958).

Remembering a Shared History

A few years ago, I watched a Czech movie made in the mid-1960s. In one scene, a small group of men were sitting in the stands at a football match. One of the men had a pocket transistor radio hanging from a leather strap around his neck, which he was listening to as he watched the match, yelling and cheering along with his friends. It was such a simple scene of camaraderie and everyday life, yet it was staged in an occupied country behind an opaque curtain of repression.

I often think of that man portrayed in that old Czech movie made long ago, at the height of the Cold War: He was a fictional character, an actor. His pocket radio, however, was very real and today we have the opportunity to place that radio – and others like it – within the wider, ongoing history of radio.

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Author's pages

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