



31216-1

(GDR bugs V)

Country of origin: GDR

### DATA SUMMARY

**Organisation:** MfS Abt. 26, GDR

**Manufacturer:** OTS, GDR.

**Year of Introduction:** Around 1975.

**Purpose:** Wireless bug for covert overhearing.

**Transmitter:** Free running oscillator. Electret microphone embedded in the enclosure. FM without pre-emphasis.

**AF freq response:** 200Hz to 8kHz.

**Deviation:** Maximum  $\pm 75$ kHz.

**Frequency coverage:** 940-980MHz. (Band V)

**Range:** 30m in lightly build-up town area.

**RF output:**  $> 0.162$ mW at 1.3V in  $50\Omega$ .

**Aerial:**  $\frac{1}{4}$  wave; 110mm long flex wire.

**Power Supply:** 1.3V Mallory MP 675/1 mercury battery. Battery drain ca. 2mA. Estimated life about 100 hours.

**Dimensions:** 8mm high, 17.5mm wide, 37mm long, weight 10g.

### REMARKS

The 31216-1 was a self contained miniature 3<sup>rd</sup> generation wireless bug operating in the frequency range of 940-980MHz (band V), primarily used for covert overhearing. Variation 31216-143 did not had a built-in microphone and was used for a slightly different purpose related to transmission of overheard audio coming from another source to a central control point. The nominal range to an associated receiver in a normal town build-up was about 30m.

The RF oscillator was free running to keep the size of the bug small, but consequently relative unstable and dependent on temperature and battery voltage. It was for this reason that the associated receiver (31215 or 21225, see Chapters 128 and 132) had a very large tracking range.

The design of the RF part of the 31216, 31217 and 31218 series of bugs was basically similar.

The complete transmitter was mounted in a silver plated copper box with a separate battery compartment, closed with removable lid.

This box had a plastic enclosure. The microphone was fitted in the transmitter compartment with the speech opening fed through a tube at the side.

For stable operation the transmitter components were mounted on a 0.8mm thick  $Al_2O_3$  (Alumina) ceramic plate, copper plated on both sides.

Deliveries to MfS Abt. 26 were in batches of 5 or 10 units.

Each unit was issued with a certificate (See Chapter 128), containing serial number, RF output into 50 or 60 $\Omega$ , RF frequency and AF input sensitivity at a deviation of  $\pm 75$ kHz.

The latter was divided into three groups:

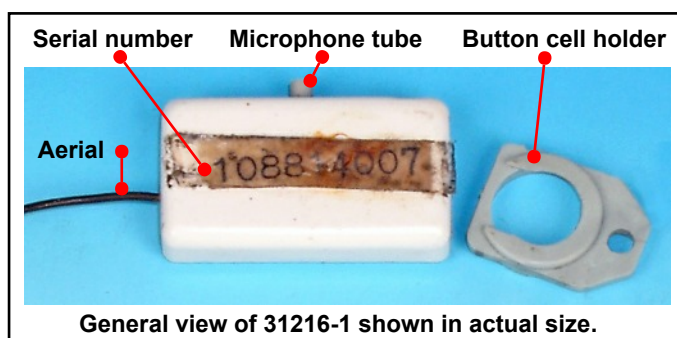
Group 1 with an acoustic pressure of  $0.5 \pm 0.3$   $\mu$ bar.

Group 2 with an acoustic pressure of  $1.1 \pm 0.3$   $\mu$ bar.

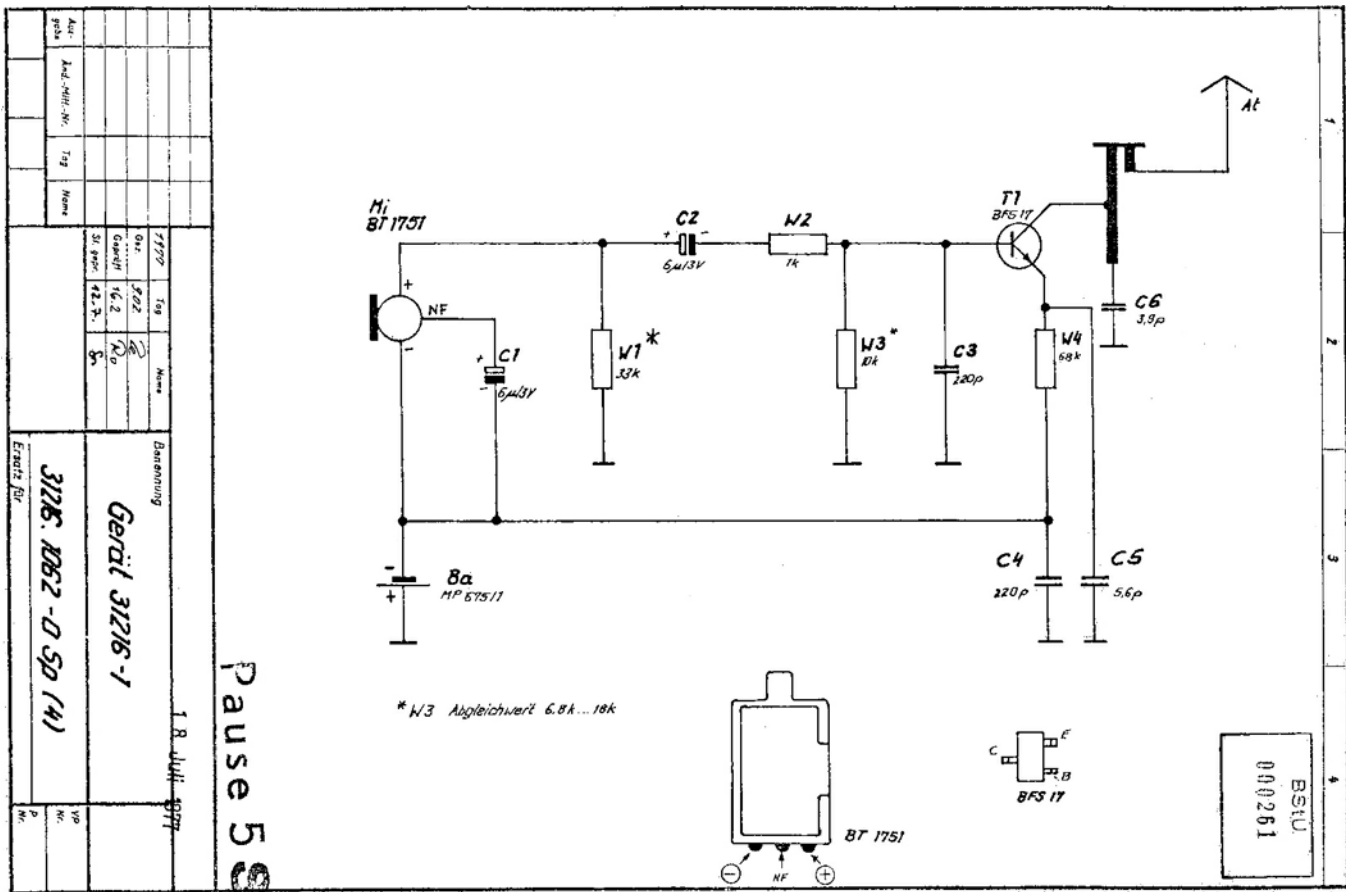
Group 3 with an acoustic pressure of  $1.7 \pm 0.3$   $\mu$ bar.

### References:

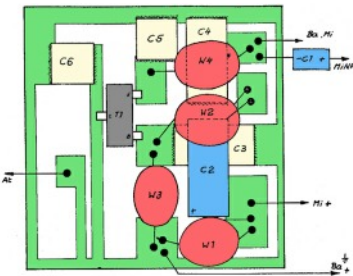
- With thanks to Detlev Vreisleben, DC7KG, Germany for taking excellent photographs and scans, and providing further technical and historical information.
- OTS document: Kennblatt Gerät (Data summary Equipment) 31216-1, July 1977.



General view of 31216-1 shown in actual size.



Circuit diagram of the 31216-1.



Top view drawing of the transmitter ceramic circuit plate about 3x enlarged. (Left)

The base material of the ceramic circuit plate was Alumina. This is used in various technical applications due to its excellent characteristics. The Alumina ceramics feature a variety of properties: good mechanical strength, high resistance to heat shock, low warping and stable at very high temperatures.