

33603-101/102/103 TF-B tx (2A) was built into a plastic enclosure. It required a separate microphone.

TF-B tx (2A) AC Mains bugs 1

33603

(GDR line bugs III)

Country of origin: GDR

(To be read in conjunction with Chapter 163.)

DATA SUMMARY

Organisation: MfS, Abt. 26.
Design/manufacture: MfS, OTS Abt. 33.
Year of Introduction: 1980's.
Purpose: Covert room overhearing using the existing 220V AC mains wiring for routing the output of a TF-B (2A) bug at an Operational Object to an Operational Support Point.
FM carrier frequencies: Ch.1 54.7kHz, Ch.2 72kHz, Ch.3 88.7kHz; $\pm 1/2$ kHz.
Modulation frequency deviation F3: Max. ± 2.8 kHz.
Frequency response: 0.3-3.5kHz.
Output level: 400mV @ 15 Ω .
Associated receiver: LWE 7-1/2/3* 220V.
Range: Limited to the local AC mains group.
Power supply: Derived from 220V AC mains.
Size (mm): Height 8, length 40, width 13.
Microphone: e.g. Knowles type BT 1751 or BT 1759.
Semiconductors: HEF 4046 BT (Valvo), BFN 22 (Siemens), BAV 99 (3x), BZX 79 (Valvo).
 * 3 different channels.

REMARKS

220 V AC mains (phase/neutral), in a building or apartment complex, was used as the transmission medium between an Operational Object (the actual concealed bug) to an Operational Support Point, known as 1st Subsystem.

The range of this system was limited to the local AC mains group, provided the same phase was used. From the Operational Support Point the intercepted audio was routed to the District CEKO.

The TF-B tx (2A) bug comprised a PLL chip which generated a carrier, FM modulated by the microphone, superposed on the AC mains. This FM carrier was 54.7kHz, 72kHz or 88.7kHz.

Three different bugs in the same building could be used simultaneously on the same 220V AC mains group providing different carrier frequency channels were selected. The range was limited to the local 220V AC mains group using the same phase. At MfS Abt. 26 the TF-B (2A) 220V AC mains system was known as 'Lichtnetz technik'.

There were, as far as could be traced, five different variations in the design of the TF-B tx (2) bugs, functionally similar but built with different components, used for specific purposes.

Variation 1 [in TF-B tx (2A) and TF-B tx (2C)] used a HEF 4046 PLL;

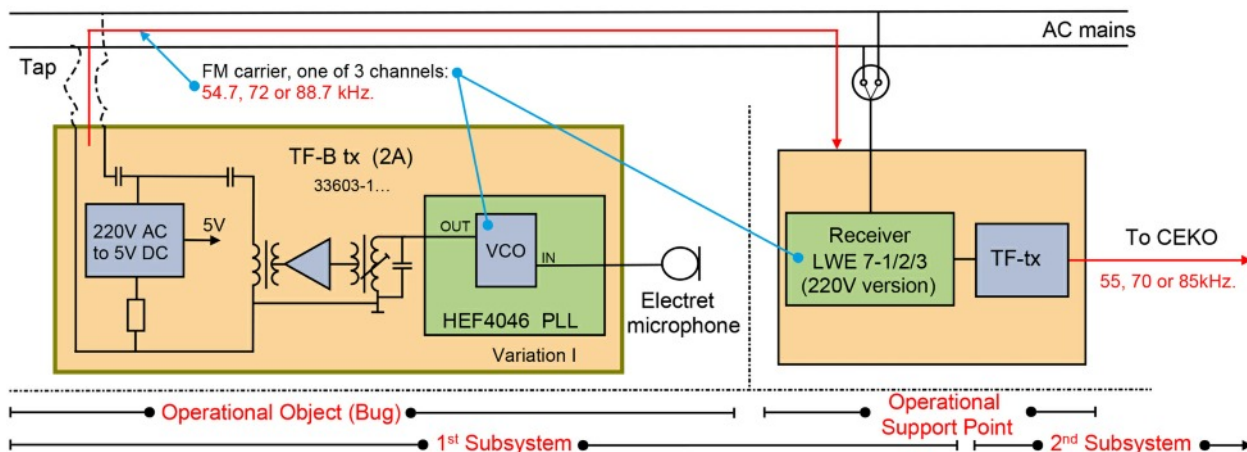
Variation 2 [in TF-B tx (2B)] used a CD 4046A PLL;

Variation 3 [in TF-B tx (2D)] used a VCO 30 PLL.

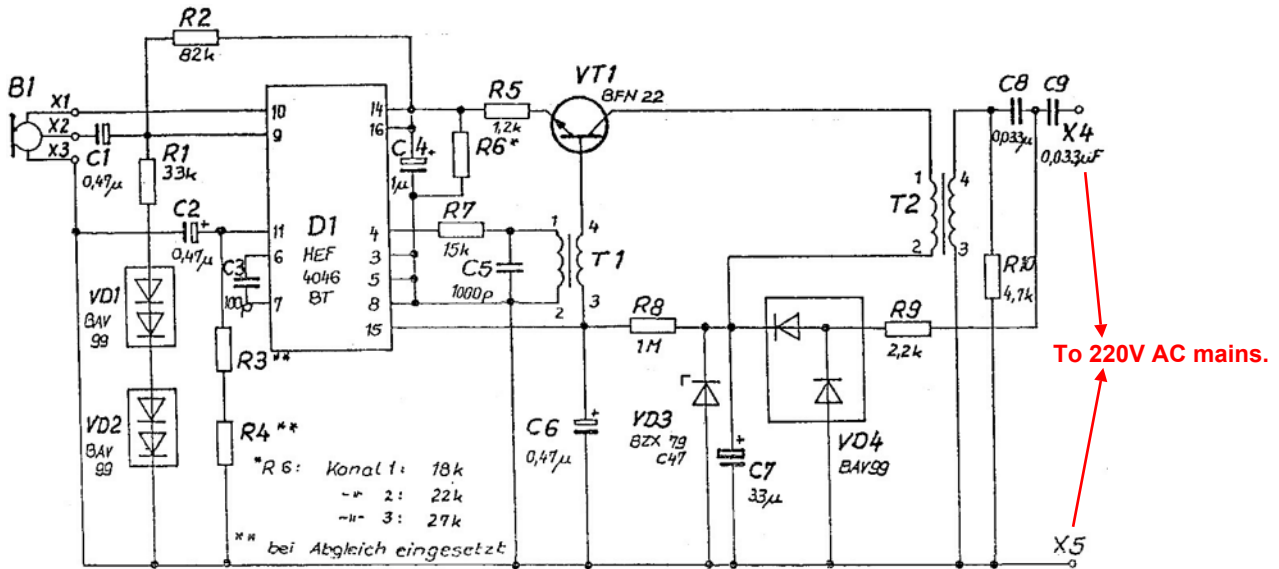
Variation 4 [in TF-B tx (2A)] OSA version with unknown components.

Variation 5 [in TF-B tx (2B)] 33014 with unknown thick film chip.

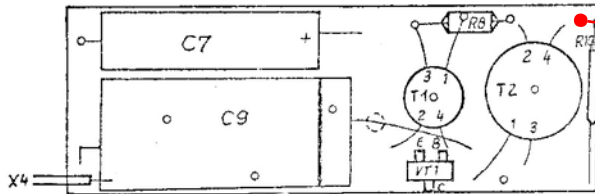
Apart from a different type PLL, there were numerous changes in the circuits, required for each application, e.g. input circuit, power requirement, FM carrier frequency and remote on-off switching.



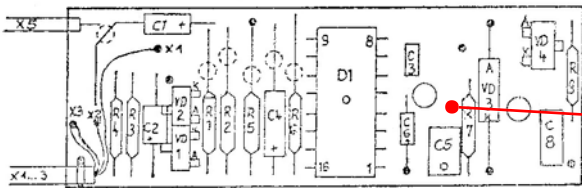
Block diagram of TF-B tx (2A) 220V mains system.



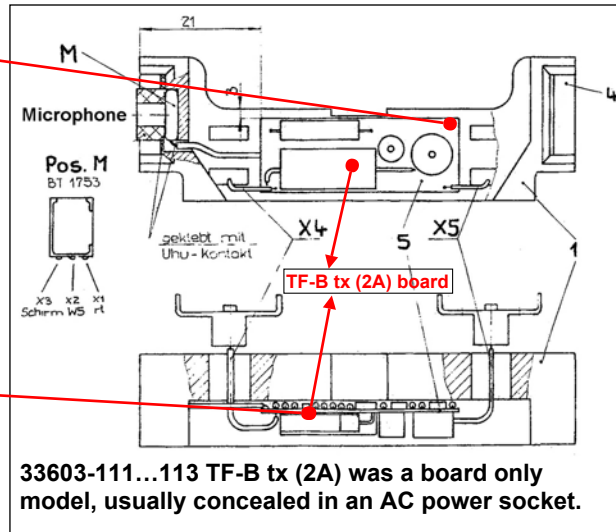
Circuit diagram of a TF-B tx (2A) bug 33603-101...103 or 111...113



Back view of board.



Components view.



33603-111...113 TF-B tx (2A) was a board only model, usually concealed in an AC power socket.

Currently known covert numbers related to TF-B tx (2A).

- 33601-11/12/13* TF-B tx (2A) Transmitter. No details known.
- 33602-11/12/13* TF-B rx (2A) Receiver. No details known.
- 33603-101/102/103* TF-B tx (2A) Transmitter in plastic enclosure.
- 33603-111/112/113* TF-B tx (2A) Transmitter concealed in AC power socket.
- 33604-101/102/103* TF-B rx (2A) Receiver LWE 7-1/2/3* 220V also known as E 7-1/2/3 * (See Chapter 176)
- 31122-11 TF-B rx Test receiver LWE 6-1 also known as E6-1. (See Chapter 174)

* 3 different channels.

References:

- With thanks to Detlev Vreisleben, DC7KG, Germany for taking excellent photographs and scans, and providing further technical and historical information.
- Various MfS documents via Detlev Vreisleben.