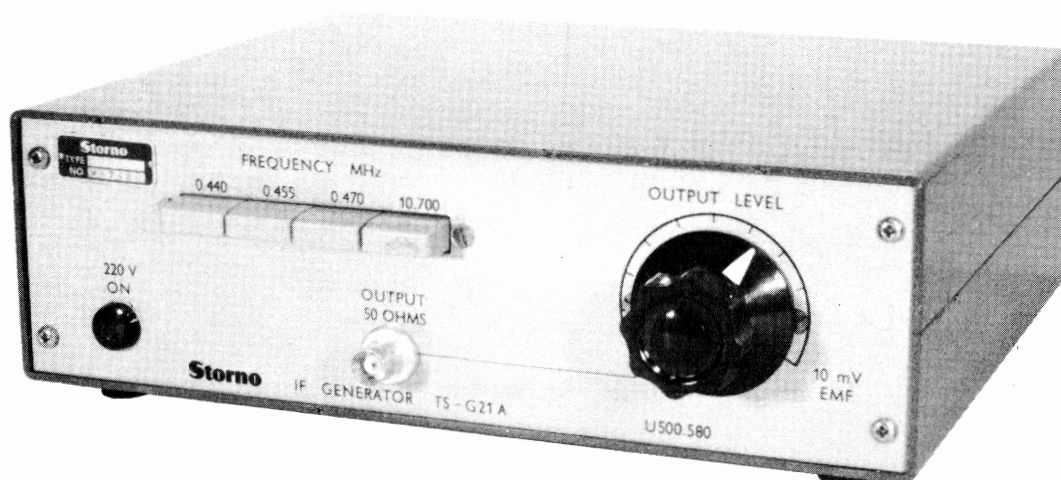


IF GENERATOR TS-G21A

CONTENTS

Description and Technical Specifications
Block Diagram
Circuit Diagram and Parts List
Component Layout
Adjustment Procedure

IF Generator, Model TS-G21A



Description

The generator is an unmodulated signal source for use in repair shops doing maintenance work on Storno radiotelephones of the 600-series. It contains four crystal controlled oscillators selected by pushbuttons. A mains power supply unit is built into the instrument.

The TS-G21A is functionally identical to TS-G21.

Technical Specification

Standard frequencies

Crystal controlled, selected by pushbuttons:

1	2	3	4
440 kHz	455 kHz	470 kHz	10,7 MHz.

Special frequencies

(to be specified with order):

Three frequencies in the range 400 - 500 kHz.

One frequency in the range 8 - 15 MHz.

Frequency adjustment

To be better than 1 ppm. Drift due to ageing and temperature variations depends on crystals, but is normally insignificant.

Quartz crystals

One ea. Storno type 98-5A. Three ea. CR-46/U or equivalent.

Standard frequency crystals are supplied with instrument.

Output level

10 millivolts max. EMF behind 50 ohms. Continuously variable 0 to -110 dB (± 10 dB).

Output connector

Type BNC (f).

Power requirements

220 - 240 V AC mains, 50 - 60 Hz, approx. 5 watts.

Dimensions

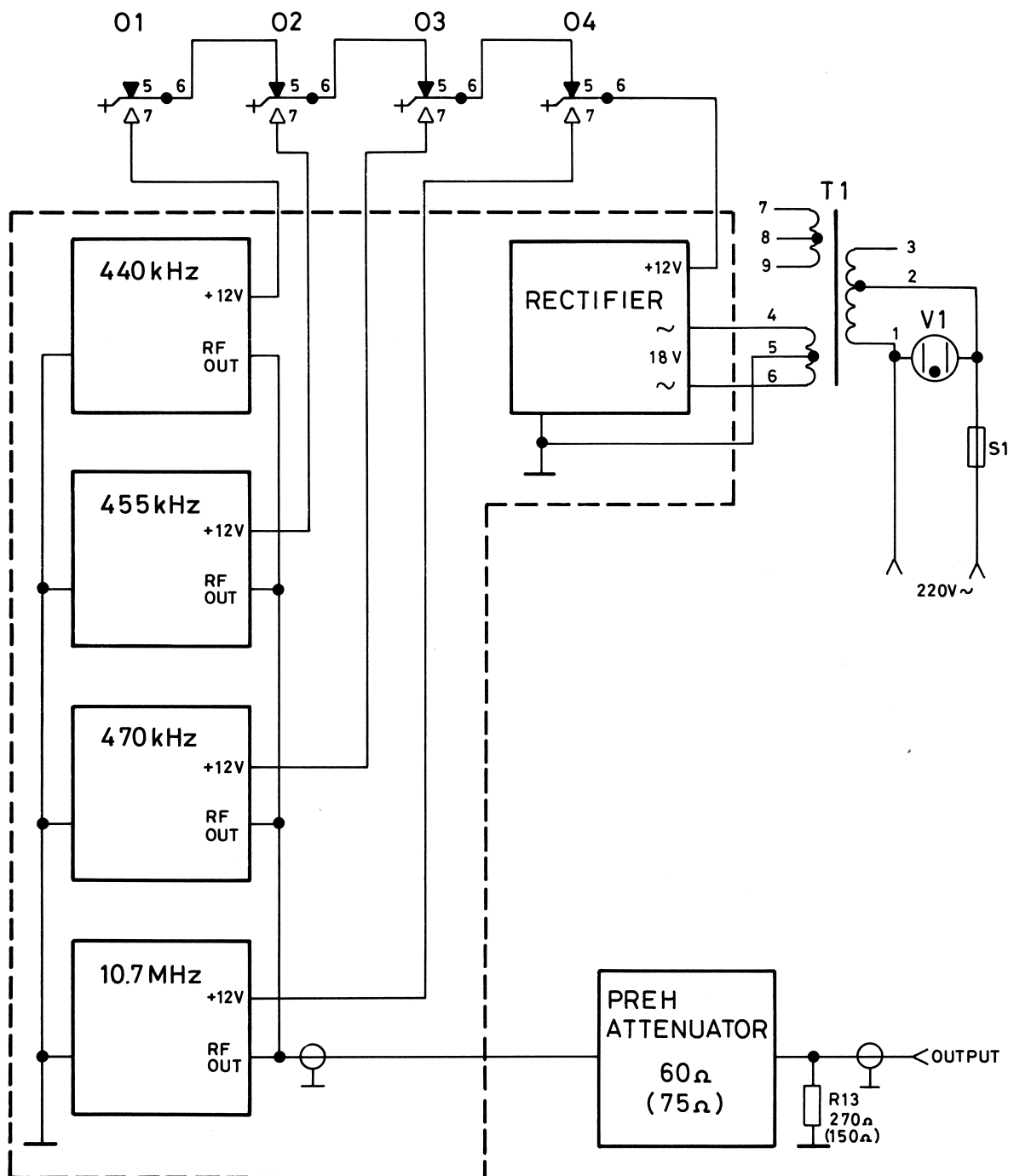
Height 70 mm

Width 230 mm

Depth 200 mm.

Storno code number

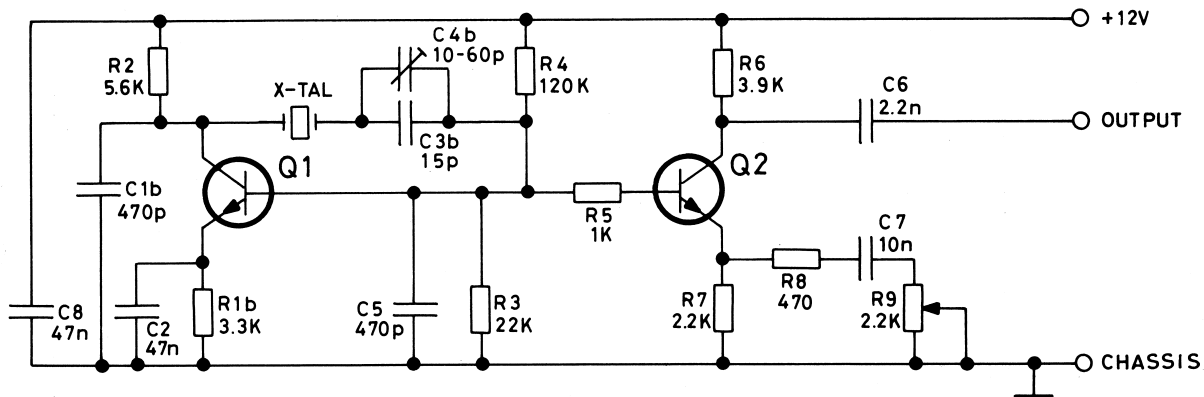
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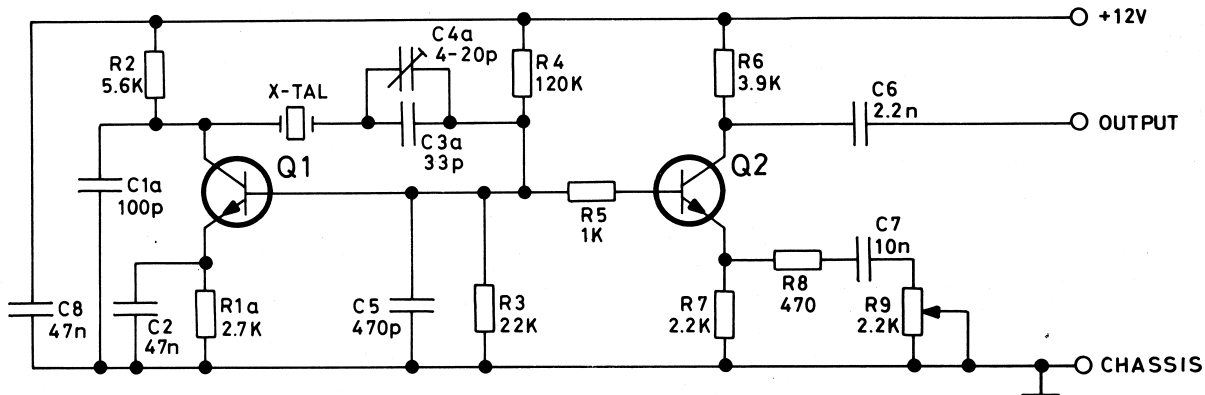
BLOCK DIAGRAM TS-G21A

D401.222

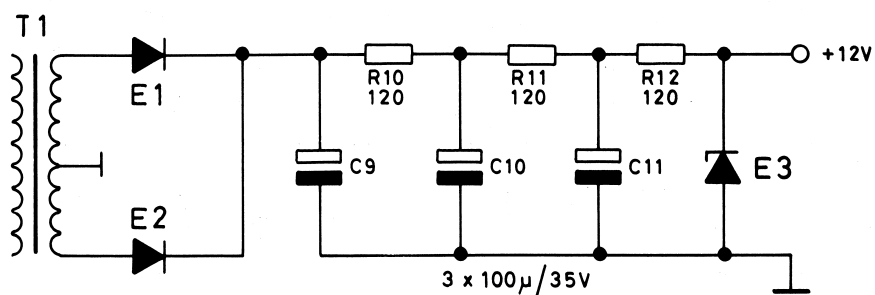
440-470 kHz OSC.



10.7 MHz OSC.



POWER SUPPLY



IF GENERATOR

TS-G21A

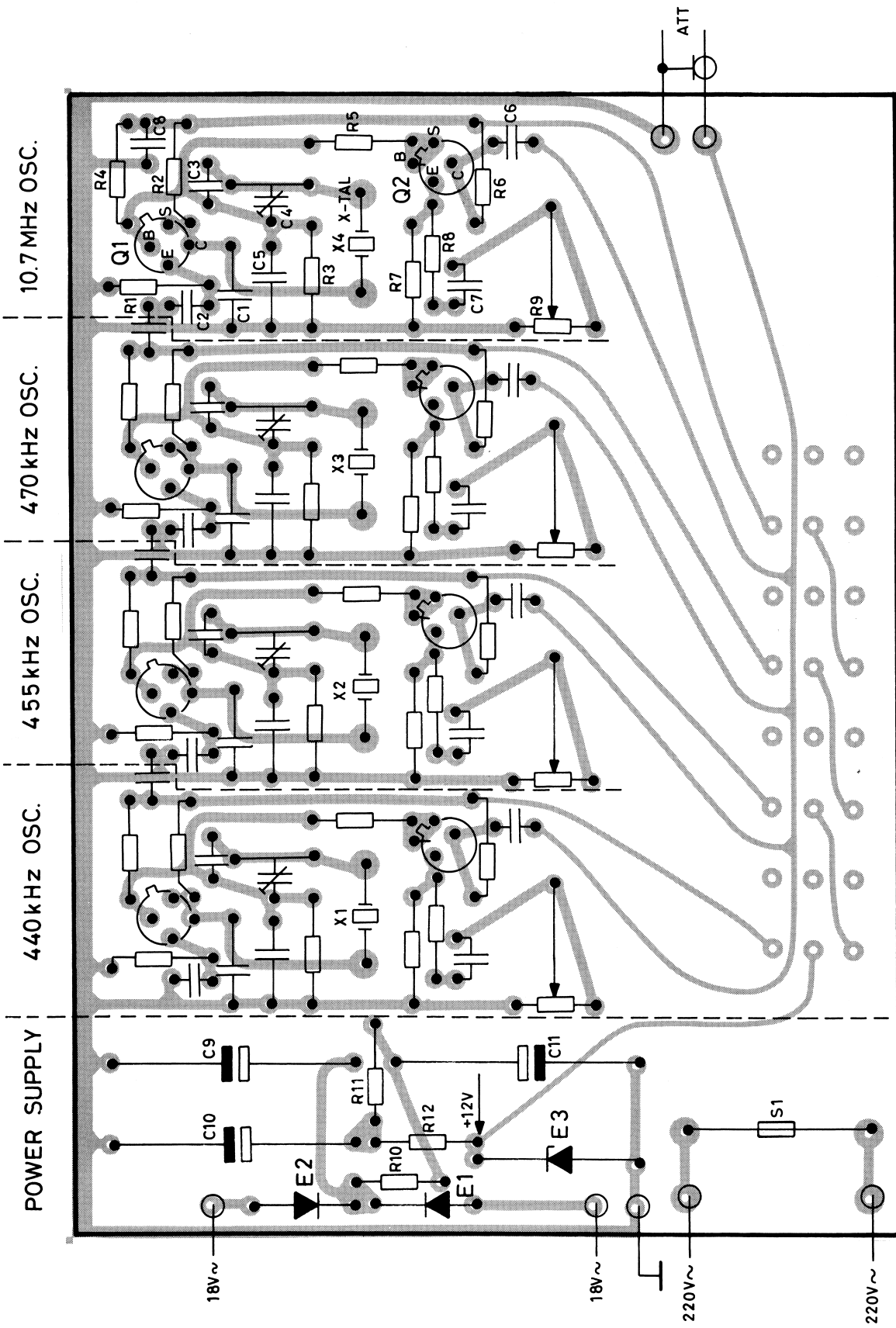
D401.223

TYPE	NO.	CODE	DATA
	C1a	76.5102	100pF 2.5% polystyr. TB
	C1b	76.5106	470pF 2.5% " TB
	C2	76.5072	47 nF 10% polyester.
	C3a	74.5116	33 pF 2% ceram. TB
	C3b	74.5105	15 pF 2% ceram. TB
	C4a	78.5031	4/20 pF ceram. DI
	C4b	78.5030	10/60 pF ceram. DI
	C5	76.5106	470 pF 2.5% polystyr. TB
	C6	76.5059	2.2 nF 10% polyester.
	C7	76.5070	10 nF 10% polyester.
	C8	76.5072	47 nF 10% polyester.
	C9	73.5071	100 μ F -10/+50% elco
	C10	73.5071	100 μ F -10/+50% elco
	C11	73.5071	100 μ F -10/+50% elco
	R1a	80.5254	2.7 k Ω 5% carbon film
	R1b	80.5255	3.3 k Ω 5% carbon film
	R2	80.5258	5.6 k Ω 5% carbon film
	R3	80.5265	22 k Ω 5% carbon film
	R4	80.5274	120 k Ω 5% carbon film
	R5	80.5249	1 k Ω 5% carbon film
	R6	80.5256	3.9 k Ω 5% carbon film
	R7	80.5253	2.2 k Ω 5% carbon film
	R8	80.5245	470 Ω 5% carbon film
	R9	86B5028	2.2 k Ω potm. lin. carbon film
	R10	80.5238	120 Ω 5% carbon film
	R11	80.5238	120 Ω 5% carbon film
	R12	80.5238	120 Ω 5% carbon film
	R13	80.5242	270 Ω 5% carbon film
	E1	99.5020	Diode 1N4004
	E2	99.5020	Diode 1N4004
	E3	99.5030	Zener diode 112Z4
	Q1	99.5166	Transistor BF167
	Q2	99.5166	Transistor BF167
	X1	98B5001	Crystal 440 kHz, CR 46/U
	X2	98B5002	Crystal 455 kHz, CR 46/U
	X3	98B5003	Crystal 470 kHz, CR 46/U
	X4	98B5004	Crystal 10.7 MHz, 98-5A
		41B5014	Crystal socket, AMP-no 380635-2
	T1	60B5006	Transformer 220-240V/2 x 36V, CT 0.3A
	S1	92.5025	Fuse 100mA slow, 5 x 20 mm

TYPE	NO.	CODE	DATA
	V1	92B5017	Glow discharge lamp, Cerberus GF 21
		86B5018	60 ohm attenuator, Preh type 110 no 4955 0.1W
		47B5010	Pushbutton section, MEC type MX-4B
		41.150	BNC-f connector, 50 Ω

IF GENERATOR TS-G21A

X401.221



PRINTED CIRCUIT WIEVED FROM COMPONENT SIDE
TRYKT KREDSLØB SET FRA KOMPONENTSIDEN

IF GENERATOR

TS-G21A

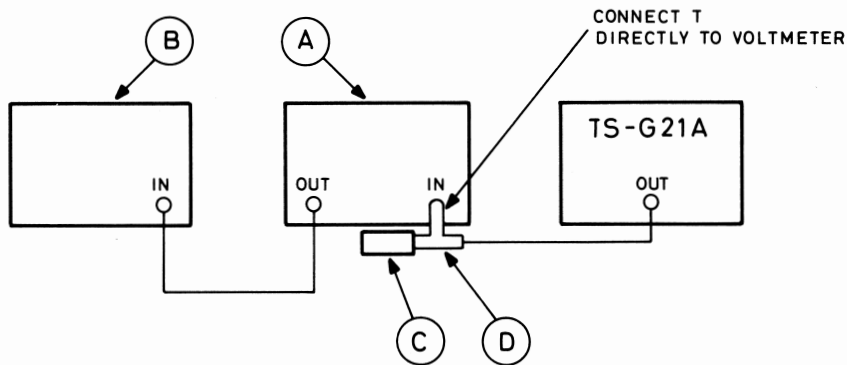
D401.224

Adjustment Procedure for TS-G21A

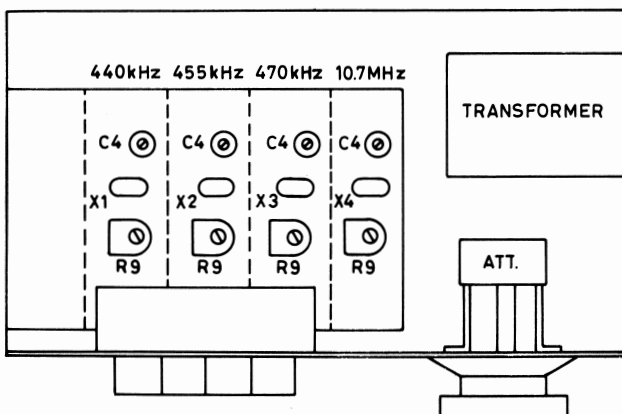
Required Test Equipment

POS.	INSTRUMENT	REQUIRED SPECIFICATIONS	RECOMMENDED MODEL
A	AC voltmeter	Range: 400 kHz - 11 MHz Sensitivity: 10 mV FSD Accuracy: $\pm 2\%$ Output amplifier	HP 400E
B	Frequency Counter	Range: 400 kHz - 11 MHz Sensitivity: min. 75 mV	HP 5245L
C	50 ohm load	Coaxial Resistor 1/8 W	Storno TS-W42
D	BNC "T"-connector		UG-274/U

Set-Up



Procedure



Before making any adjustments, check the power supply voltage to be approximately +12V.

1. Turn the OUTPUT LEVEL button for maximum output (fully clockwise).
2. Activate the pushbutton 10.700 MHz.
3. Turn R9 in the oscillator concerned fully counterclockwise.
4. Adjust C4 in the same oscillator for 10.700,000 MHz ± 10 Hz on the Frequency Counter.

CAUTION: Use alignment tool made of insulating material only.

5. Adjust R9 clockwise for a reading of 5 mV on the voltmeter.
6. Check that the oscillator frequency has not varied during step 5. If necessary repeat step 4.
7. Repeat steps 2 to 6 for the other three oscillators and adjust the frequencies for 440.000 kHz, 455.000 kHz and 470.000 kHz respectively.