SEQUENTIAL TONE TEST OSCILLATOR OS1/1

Introduction

The OS1/1 provides two different low-impedance zero-level tone outputs for distribution in central, studio and recording areas. These outputs are

(a) a 900-Hz line-up tone, and

(b) a repeating sequence of the four frequencies 60 Hz, 900 Hz, 5 kHz and 10 kHz for spot-check frequency testing.

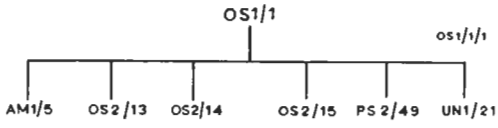

Fig. 1. Oscillator OS1/1: Sub-units

General Description

The equipment comprises six units (Fig. 1) which plug into a panel PN3/23 (Fig. 2) occupying 5¼ inches on a standard 19-inch bay. The individual units are

1. Oscillator OS2/15, providing 900-Hz line-up tone.
2. Oscillator OS2/13, providing 60-Hz and 900-Hz sequential tone.
3. Oscillator OS2/14, providing 5-kHz and 10-kHz sequential tone.
4. Switch Unit UN1/21, selecting the outputs of the OS2/13 and OS2/14 in the required sequence.
5. Amplifier AM1/5, which accepts the sequential tone signal from the UN1/21 and provides the required source impedance and output level for sending to line.
6. Power Supplier PS2/9, providing a 24·5-volt supply for the oscillators and amplifier.

The four narrower units (Fig. 2) are built on chassis CH1/18C and the two wider units UN1/21 and PS2/9 on chassis CH1/18E and CH1/18D. The positions of the index pegs provided on the various units are

oscillators: 6 and 9,
switch unit, 9 and 24,
amplifier, 5 and 30,
power supplier, 4 and 7.

Circuit Description

General

A simplified block diagram of the OS1/1 is given in Fig. 3, which also roughly indicates the PN3/23 signal-circuit wiring.

Line-up Circuit

The OS2/15 has two (uncoded) circuit boards, one a 900-Hz oscillator identical with the 900-Hz circuit of the OS2/13, and the other an amplifier identical in circuit with the AM1/5.

The 900-Hz output is delivered from a source impedance of 7 ohms or less at a level of 0 dB with a 600-ohm load. Owing to the low source impedance, the sending level is not appreciably affected by the connection of further parallel 600-ohm loads.

Sequential-tone Circuit

The outputs of four oscillator circuit boards, two in the OS2/13 and two in the OS2/14, are selected in rotation by the UN1/21, which provides the following repeating sequence:

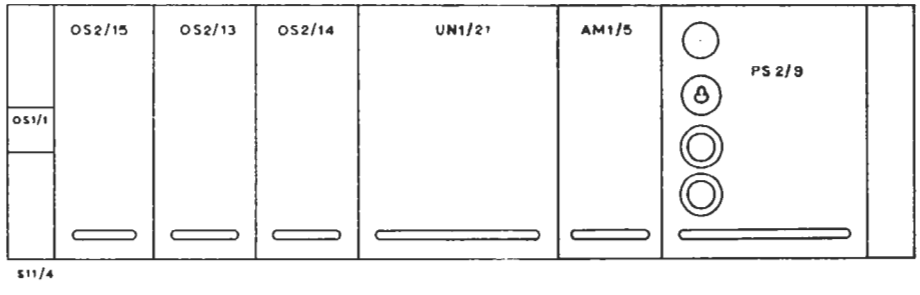

Fig. 2. Oscillator OS1/1: Layout

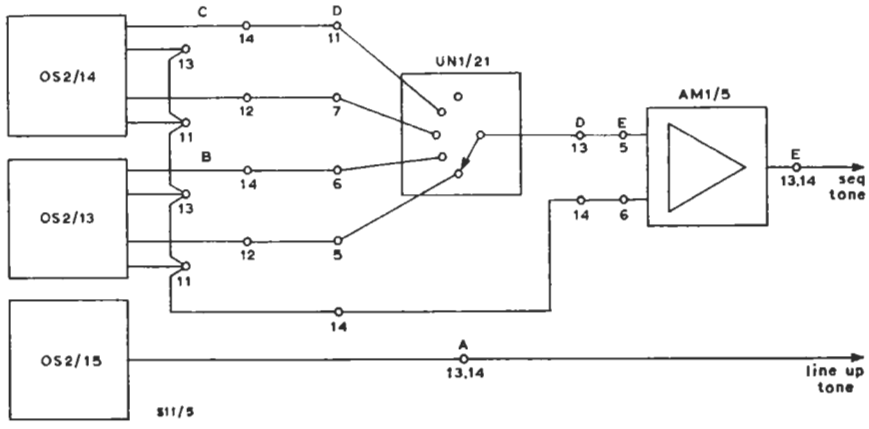

Fig. 3. Oscillator OS1/1: Simplified Block Diagram

60 Hz for 5 seconds,
900 Hz for 10 seconds,
5 kHz for 5 seconds,
10 kHz for 5 seconds,
no output for 5 seconds.

The output of the UN1/21 is passed to the AM1/5, which has an input impedance of 4·7 kilohms and an output impedance of not more than 7 ohms. The output level of the oscillators into the AM1/5 input impedance is +1·8 dB. The output of the AM1/5 is at zero level with a load of 600 ohms, and this level is not sensibly reduced by further similar parallel loads.

Test Data

Power Requirements

Mains supply for PS2/9.
50-volt d.c. supply for UN1/21.

Output Level

The level from both outputs irrespective of frequency should be 0 ±0·1 dB with a 600-ohm load. Small errors may be corrected by adjusting the preset resistors on the oscillator boards. Methods of correcting larger errors in oscillation level are given in Instructions on the oscillators.

The output of 900-Hz line-up tone may be measured at SKA-13/14. The output of sequential tone may be measured at SKE-13/14. If the UN1/21 is removed, the following connections enable the four tones to be checked separately at SKD.

Pins 5 and 14: 60 Hz,
Pins 6 and 14: 900 Hz,
Pins 7 and 14: 5 kHz,
Pins 11 and 14: 10 kHz.

Output Frequencies

Output frequencies should be within ±2 per cent of nominal values or better, as specified for individual oscillators.

Nonlinearity

Total harmonic content at either output should not exceed 0·4 per cent at 900 Hz with an output level of 0 dB and a 600-ohm load.

Switching Sequence

The timing and sequence of tones at the sequential output should be as previously indicated.

RAYK(X) 12/67