forms the 'master frequency source'. The oscillator signal is buffered at pin 19. Moreover, the signal reaches a divider that produces five different output signals: The oscillator signal divided by two is always present at pin 18, the other four signals (:1, :4, :8, :64) can be fed to a 14 stage divider, as desired. So, with the two switches (S1, S2) in the open position it already supplies 4 different signals. In addition there are 14 + 2 signals simultaneously available. The table shows all the possible combinations. The output pins of the IC are not indicated in the circuit diagram, but are found in the table. One final remark: The IC can be 'fed' with an external clock signal via pin 21, so that the various division factors can be used to the full!

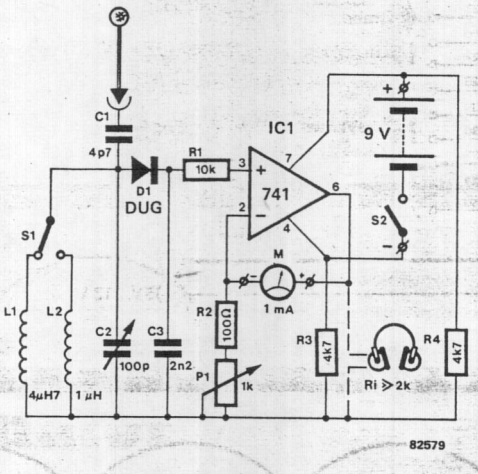
Rate Select		Rate
B	A	
0	0	X1
0	1	X8
1	0	X16
1	1	X64

Source: Motorola

10 signal strength meter

with audio output

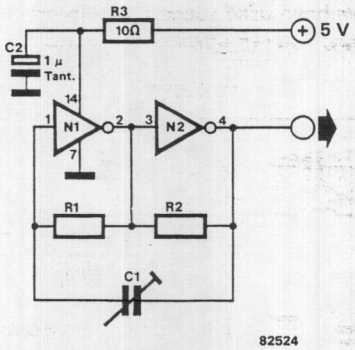
A meter of this kind is very useful for determining the radiation characteristics of directional beam transceiver aerials. It allows the user to trim the aerial accurately for an optimum transmitting radiation pattern.
An auxiliary aerial should be positioned a short way from the main transmitting one. The signal received by this is then fed to a resonance circuit formed by L1, L2 and the varicap C2. This enables the meter to be accurately tuned to the particular transmitting frequency to be measured. With the coil values shown in the circuit diagram the 'band width' of the meter is between 6 . . . 60 MHz. The RF signal is then fed to the diode D1, which constitutes a rectifier/demodulation stage. Finally the signal is routed to the non-inverting input of opamp IC1. The gain of this opamp and therefore the sensitivity of the 1 mA meter is adjusted by P1.
The prototype was found to be extremely sensitive, and highly selective. A pair of headphones can be connected to the output of the opamp allowing the actual transmission to be monitored. The overall resistance of these should not be less than 2k2 otherwise an extra amplification stage will be required.



11 inverter oscillator

can be crystal controlled

Not *another* TTL squarewave generator?! Surely, there are plenty of them in other issues of Elektor? Yes, but this is an oscillator with a difference: unlike most of its counterparts its frequency is variable. In fact it may be adjusted over a wide range.
The circuit shown here consists of two inverters with one or two external components. Resistors R1 and R2 and the trimming capacitor C1 set the frequency. With the given component values, the oscillator frequency may be adjusted from 800 kHz to 12 MHz. The resistors set the frequency in just about the right region, whereas C1 provides the fine adjustment. The resistor values are not really critical; just make sure that they are both the same.
The circuit is also suitable as a stable crystal oscillator. All you have to do is replace the trimming capacitor with a crystal with the corresponding frequency. Supposing, for instance, the oscillator frequency is to be 1 MHz, then the crystal will have to be a 1 MHz type.



N1,N2 = 74LS04
R1,R2 = 560 Ω . . . 4k7
C1 = 20 pF . . . 80 pF