



Fig 10 : Component layout of the display PCB.

connect the shorting pin on the switch JP3. For tuning L1 - L4 at the receivers input and the demodulation discriminator L6 it is best to use a wobbler. Almost same result can be achieved using an rf generator (even an improvised test oscillator 137 - 141MHz with one transistor) a counter and a simple rf diode probe connected to an analogue voltmeter.

Connect a signal with frequency of 455kHz, preferably frequency modulated by tone of 1kHz, with frequency swing of 30kHz to pin 7 of IC1 using a 1nF capacitor. Connect an oscilloscope to pin 13 of IC1 and tune L6 for maximum amplitude of demodulated signal. By adjusting the value of R6 (a lower value will broaden the linear part of the curve) at least 30kHz of linear demodulation can be achieved. If a signal generator without frequency modulation is used, adjust it in steps 1kHz and plot a graph of the voltage at pin 13 of IC1. It is also possible to determine the value of R6 experimentally by monitoring the image quality (minimum noise, the highest loudness, sharpness of image details, etc.). The recommended value of R6 is 33-56K.

The next step is to fit filter F2 and connect the output signal from a wobbler generator or analyser to the receivers antenna input, connect the wobbler to pin 19 of IC1. This will enable the input selectivity to be adjusted without being affected by capacity of the signal source. Shunt the input coil L1 using a 50Ω

resistor and tune the band-pass filter L2, L3 and L4 to approximately the centre of the band (139MHz) and set the width of band-pass to 4MHz. If you do not intend to use the METEOSAT converter with your receiver, set the input band-pass filter to centre at approximately 137.6MHz. If it is necessary modify C6, C7 and C9, C10 (0.5-1pF) in order to adjust the coupling of the resonant circuits to critical or slightly supercritical. Remove the shunt resistor from L1 and also tune it to the centre of the selected received band, i.e. to 139 or 135.6MHz.

Now fit filter F1 and to insert the synthesiser and microcomputer ICs into their sockets. Switch on receivers power supply and use the trimming resistor on the front panel to set the LCD display contrast so that characters are legible. If turning of trimming resistor to both extremes does not help and no characters appear on LCD display, use an oscilloscope to check communication between PLL IC4 and microprocessor IC3 (pins 8 (CLB), 9 (DLEN) and 11 (DATA) TTL levels). Push any button on the display panel and look for a sequence of impulses, when microprocessor sends new data to the PLL synthesiser. If this is unsuccessful, check that the microprocessors reference oscillator is working.

With the LCD display showing a frequency of 137.5MHz, connect a voltmeter to the pin 23 of IC1 or even better to the test point "UL" and check that the first oscillator PLL is functioning cor-