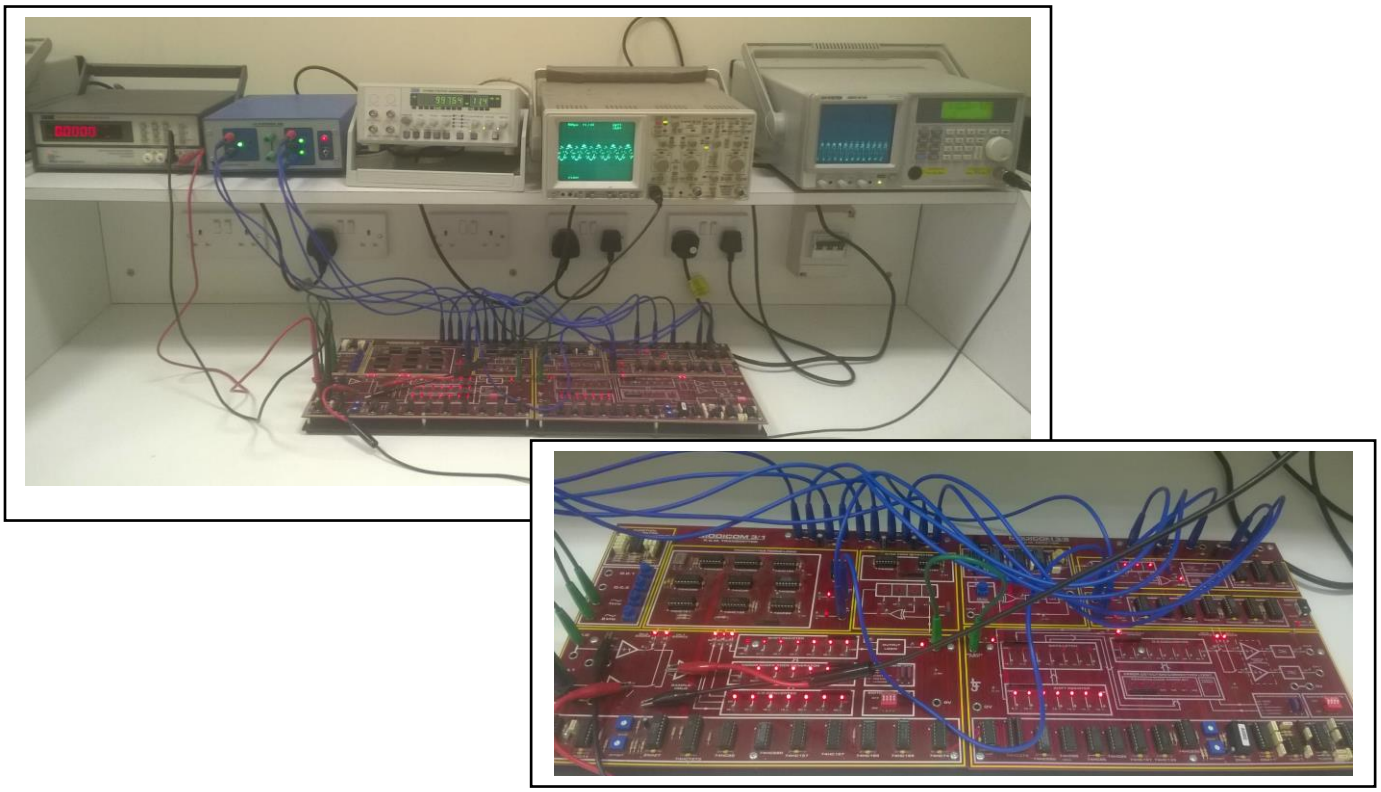
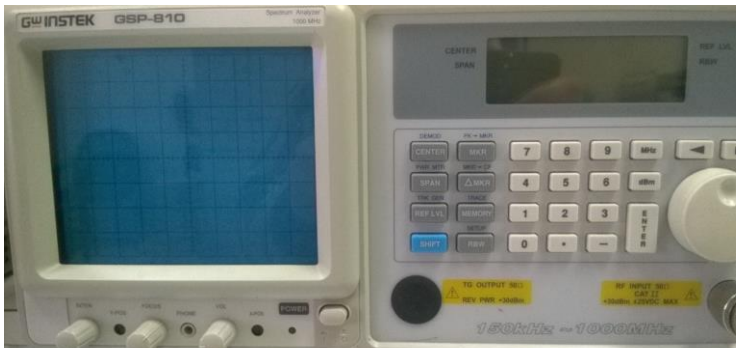
Communications Lab



Communications lab provides the students with the fundamental knowledge of communications lab devices and instruments. The construction of different types of transmitters and receivers are explained. Different types of modulation and demodulation is also investigated such as AM, FM, PCM, ASK and FSK.

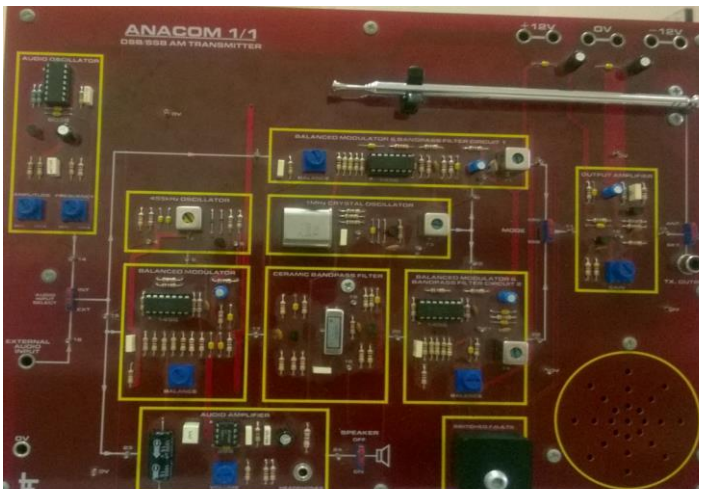
- Spectrum Analyzer:

Spectrum analyzer measures the magnitude of an input signal versus frequency within the full frequency range of the instrument. The primary use is to measure the power of the spectrum of known and unknown signals.



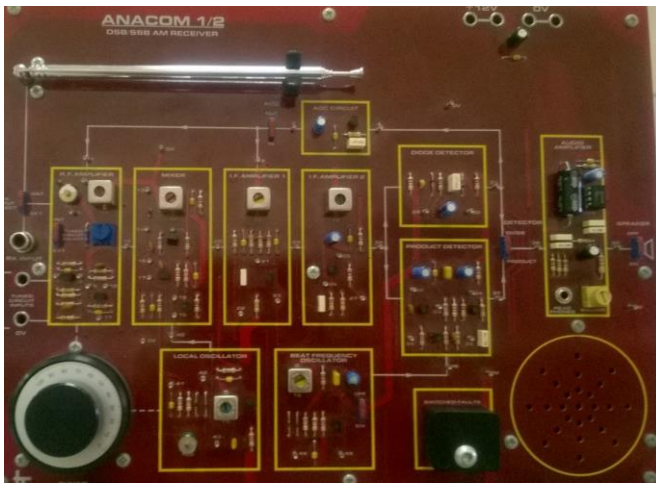
- ANACOM 1/1

ANACOM1/1 kit is simply an AM transmitter. Two different modulation methods can be performed; SSB and DSB.



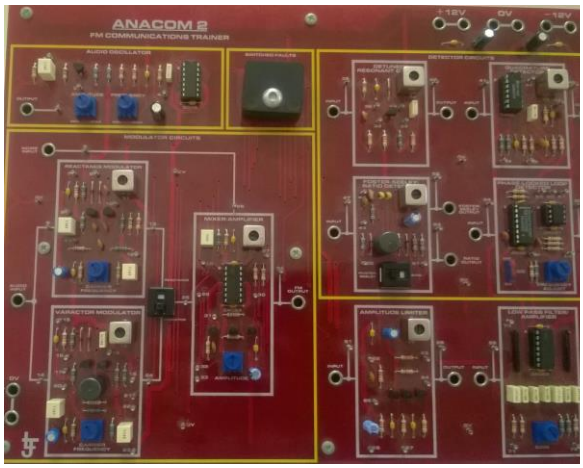
- ANACOM 1/2

ANACOM1/2 kit is simply an AM receiver. It receives the AM signal and demodulate it to reconstruct the message signal.



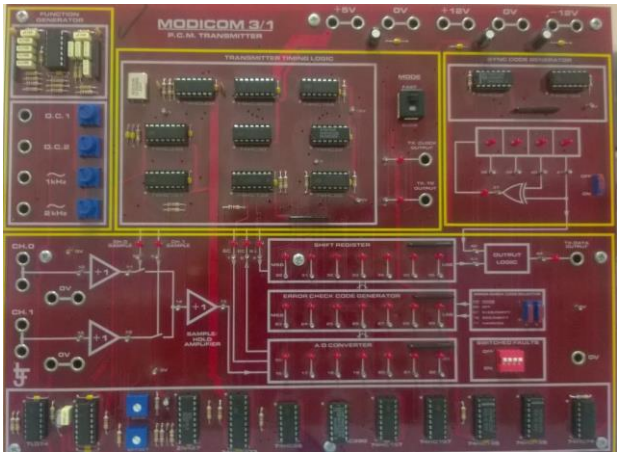
- ANACOM 2

ANACOM 2 kit is simply a FM modulator/demodulator. The message signal can be FM modulated using VARACTOR modulator or RACTANCE modulator. Also three different demodulators are investigated which are: Detuned Resonant Circuit and Quadrature Detector.



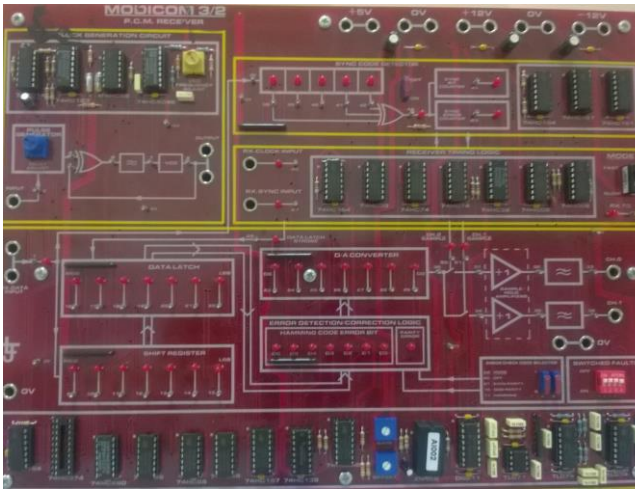
- MODICOM 3/1

MODICOM3/1 kit is simply a PCM modulator. The following procedure is performed on the message signal to finally become a PCM: Sampling, Quantization, A/D and Parallel/serial.



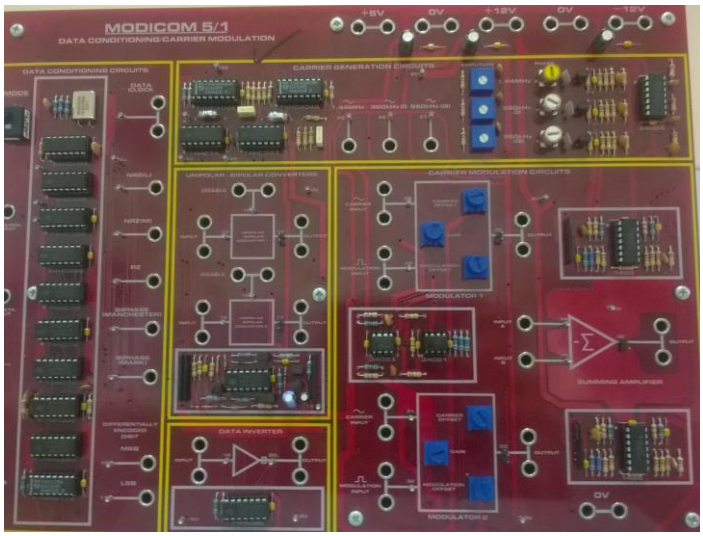
- MODICOM 3/2

MODICOM3/2 kit is simply a PCM demodulator. The following procedure is performed on the PCM signal to extract the message signal: Serial/Parallel, D/A and De-multiplexing.



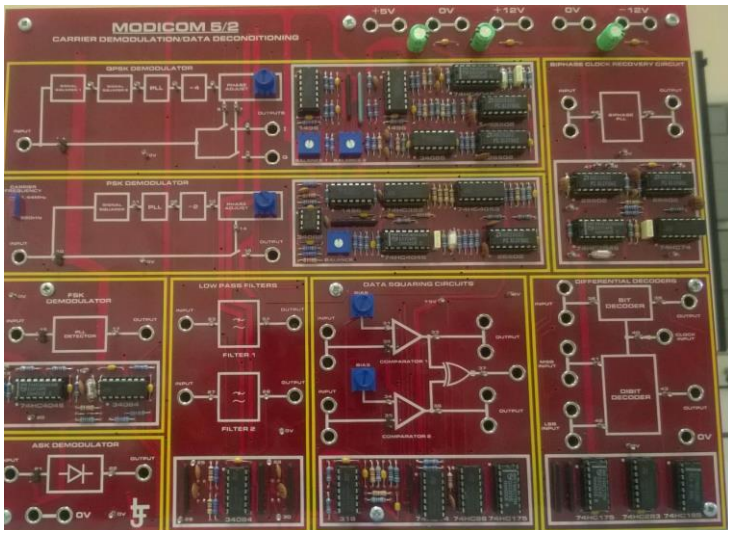
- MODICOM 5/1

MODICOM5/1 kit can perform different type of data conditioning such as NRZ, RZ and MANCHETER. Also this kit can perform ASK modulation, FSK modulation, PSK and QPSK.



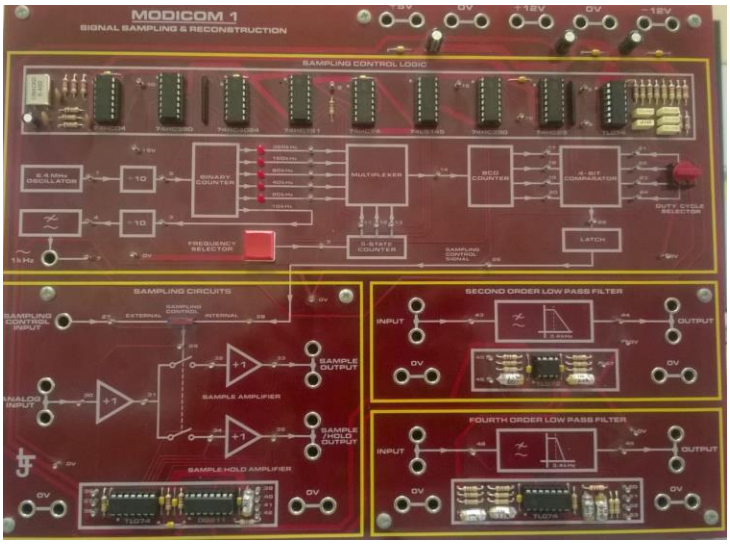
MODICOM 5/2

MODICOM5/1 kit can perform different type of data conditioning such as NRZ, RZ and MANCHETER. Also this kit can perform ASK modulation, FSK modulation, PSK and QPSK.



- MODICOM 1

MODICOM 1 kit investigates sampling theorem in details. Natural sampling and sample/hold, the effect of changing the sampling frequency on the sampled and reconstructed signal, the effect of changing the duty cycle on the sampled and reconstructed signal is being investigated. Two low pass filter is being used to reconstruct the message signal: second- order and fourth order.



List of communications Lab Experiments:

- Experiment 1: Spectral Analysis
- Experiment 2: Introduction Amplitude Modulation
- Experiment 3: Double Sideband (Transmitter and Receiver)
- Experiment 4: FM Modulators/Demodulators
- Experiment 5: Sampling and Reconstruction
- Experiment 6: PCM Transmitter
- Experiment 7: PCM Receiver
- Experiment 8: ASK – FSK (Modulation & Demodulation)