Introduction:

Today advanced communication technologies are growing in a tremendous way. Technologies like wireless communication, mobile communication, satellite communication, data communication, RF ID etc enters in our daily lives. M-ary signaling schemes are preferred over binary signaling schemes for transmitting digital information over band-pass channels when the requirement is to conserve bandwidth at the expense of increased power. In practice, we rarely find a communication channel that has the exact bandwidth required for transmitting the output of an information source by means of binary signaling schemes.

Both the phase and amplitude can simultaneously be varied in Quadrature Amplitude Modulation (QAM). More bits can be send in each symbol, but an unavoidable decrease in the tolerance for noise results. Thus, 16-QAM with many possible values works very well in wired & wireless channels.

ST2136 Training System is an ideal solution to bridge the gap between the theoretical studies and practical working of 16- QAM. With this student will study the step by step journey of the signals from source to destination. Real-time software mode will help student to perform experiments without having Analog or Digital Oscilloscope or Logic Analyzer.

Features :

- VLSI Based
- Encoding: 4 bits encoding with Symbol Mapper
- Modulation: 16-QAM Modulation with I & Q Channel
- Constellation (Vector / XY) View
- User Selectable Hardware / Real-Time Software Mode
- No need of external Data Acquisition Card
- With the help of Real-time Software, student can control as well as analyze Digital signals, Analog signals, Mixed signals and XY mode
- User selectable step variable clock frequency
- User Selectable 8 / 16 / 32 / 64 bit Data
- Digitally Synthesized Sine & Cosine Wave of Maximum 19.2KHz.
- External Trigger Out
- More than 25 Test Points
- Operational Manual for Theory, Procedure & Reference Results.

Technical Specifications :

- On board Digitally Synthesized Sine and Cosine wave Generator with Variable Step Frequencies
- On board Clock Generator with Step Variable Frequencies (150Hz, 300Hz, 600Hz, 1.2 KHz, 2.4 KHz, 4.8 KHz and 9.6 KHz and 19.2 KHz)
- On board Data generator with Step Variable data length (8, 16, 32, 64bits)
- Encoding Technique (4 bits encoding with Symbol Mapper, Gray to Binary Encoder)
- Modulation Technique (16QAM Modulation with I & Q Channel)
- Numerical Control Oscillator (on board NCO for demodulator)
- Decoding Techniques (4 bits decoding with Symbol Demapper, Binary to Gray Decoder)
- Power Supply: 220V ?   0%, 50Hz (60Hz on request)
- Power Consumption: 2.5VA (approx.)
- Weight: 1.5Kg (approx.)
- Dimension (mm): W365 X D260 X H75
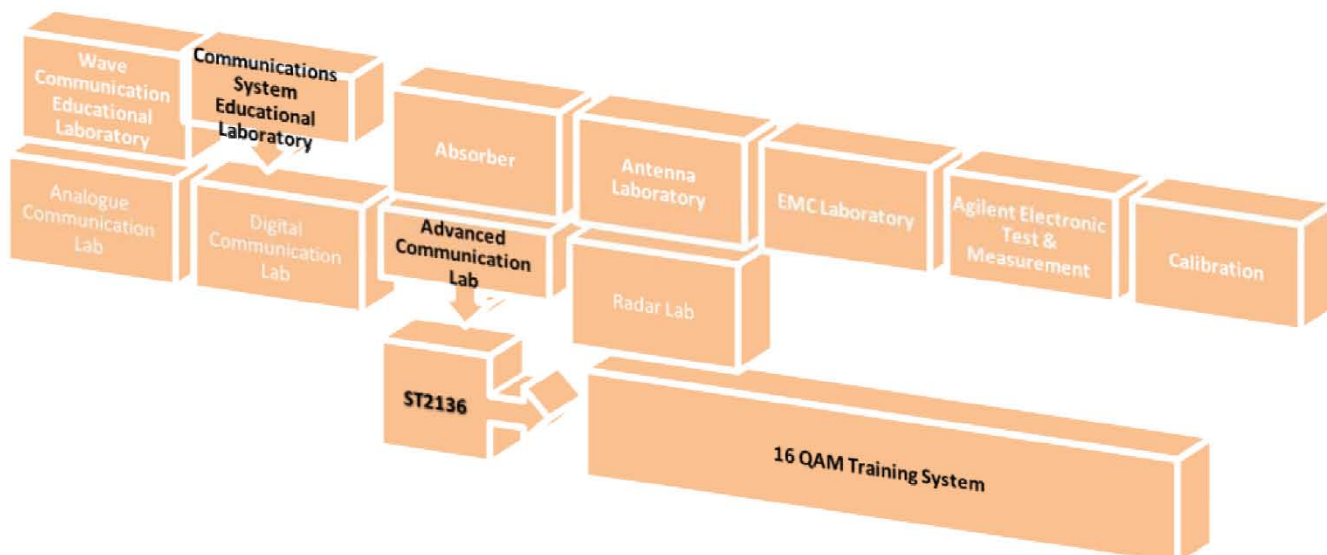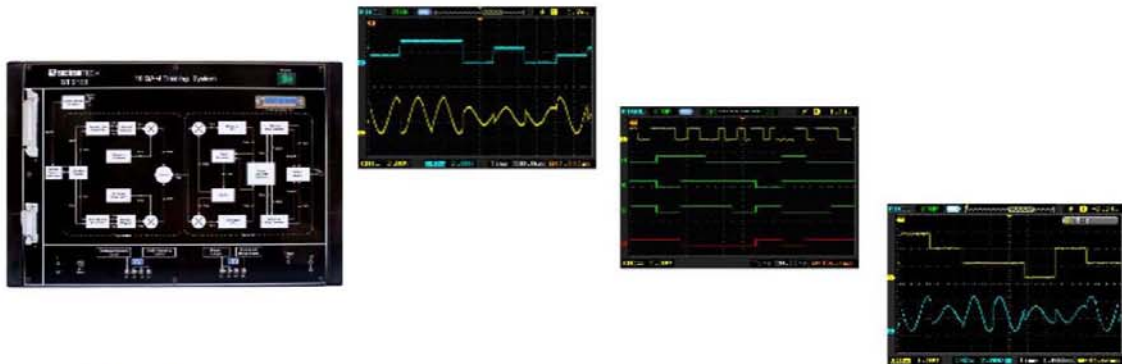
List of Experiments □

- Study, Analysis & Measurement of variable Data with respect to variable Clock
- Study, Analysis & Measurement of 4 bits encoding
- Study, Analysis & Measurement of I-Q Channel Gray to Binary Encoder
- Study, Analysis & Measurement of I-Q Channel Symbol Mapper & Constellation Pattern.
- Study, Analysis & Measurement of I-Q Channel Modulation
- Study, Analysis & Measurement of 16-QAM Modulation with respect to Symbol Mapper
- Study, Analysis & Measurement 16-QAM Demodulator
- Study, Analysis & Measurement of I-Q Channel Symbol Demapper
- Study, Analysis & Measurement of I-Q Channel Binary to Gray Decoder
- Study, Analysis & Measurement of 4 bits decoding
- Study, Analysis & Measurement of Complete 16-QAM Transmitter & Receiver System

List of Accessories

- 16-QAM Transmitter and Receiver Training System Software CD
- Parallel Port Cable with two 25pin male to male connectors
- Theory & Operating Manual

System Requirement

- Software runs on Windows 98 / XP / 2000 / NT / ME
- Parallel Port Mode: Standard Port Type