



DEGEM
SYSTEMS

Com & Telecom

Modern Communication

Fiber Optic Communication

Antennas

Radar

Cellular Communication

Global Position Systems

Satellite Communication

Microwaves

Telecommunication Networks

MDC-3261

Satellite Communication Training System

The MDC-3261 training system provides an in-depth look at basic satellite communications terminology and concepts. The system provides practical training for technicians and engineers in the fundamentals of satellite reception systems.

MDC-3261 introduces the student to theory and applications of satellite receivers. It reveals many aspects of the orbit and satellite theory; hardware; design; adjustments; engineering and operations of satellite television reception systems.

MDC-3262 is an expanded version of MDC-3261. It consists of the same satellite reception equipment, but that allows 20 students to perform experiments from 10 workstations using a local area network.

MDC-3263 expands the basic MDC-3261 training system by adding an additional workstation.

A comprehensive student theory and experiment manual details clearly all relevant aspects and experiment procedure.

Specifications

DESCRIPTION

The MDC-3261 training system provides the basic principles and an in-depth demonstration of the concepts used in a satellite television reception system. MDC-3261 is designed as a self-contained, satellite television reception system and contains all the elements necessary to perform the recommended experiments.

The training system contains in addition to the main components of the reception system, a set of measuring instruments and accessories required to perform all activities in the course of training.

EXPERIMENTS

Structure and operation of the satellite TV reception system

- Familiarization with system components.
- Connect the main receiver components:
 - 2-way power divider (splitter)
 - Analog/digital receiver
 - C/Ku LNB's
 - Dish actuator
 - Field strength meter
 - Television
 - Oscilloscope

Set up receiver channels carrier to noise (C/N), digital channel power (DCP) and AGC measurements

- Measure the C/N in digital channel with optimal satellite beam alignment
- Measure the C/N in digital channel with moving dish
- Measure the C/N in analog channel with optimal satellite beam alignment
- Measure the C/N in analog channel with moving dish
- Measure the DCP in digital channel with optimal satellite beam alignment
- Measure the DCP with moving dish alignment
- Measure analog AGC output with optimal satellite beam alignment
- Measure analog AGC output with moving dish
- Measure digital AGC output with optimal satellite beam alignment
- Measure digital AGC output with moving dish

Bit Error Rate (BER) and Signal to Noise Ratio (SNR) measurements in a digital channel

- Measure the BER in a digital channel
- Measure the post Viterbi BER
- Measure the Reed Solomon Uncorrected BER (RU)
- Measure SNR

Satellite transmission – channel bandwidth, transponders

- Record list of transponders available in a specific satellite
- Measure the gain of the channels in dBu
- Measure the channel bandwidth of each transponder

Satellites link budgets – measurements and calculations

- Calculate the elevation of the dish
- Calculate the azimuth
- Calculate the path distance to satellite
- Calculate the wavelength
- Calculate the free space loss
- Calculate the noise factor F of the LNB
- Calculate the total system temperature
- Calculate the noise bandwidth (NB)
- Calculate the figure of merit G/T

Video signals in the reception system

- Display a complete TV line
- Identify the following parameters:
 - Width and amplitude of the line synchronization signal
 - Time interval between two consecutive synchronization signals
 - Location and amplitude of the color sync burst
 - Location and amplitude of the video signal
- Display one TV field
 - Identify the following parameters:
 - Width and amplitude of the field synchronization signal
 - Time interval between two consecutive signals
 - Shape and amplitude of the video signals

MAIN SATELLITE COMPONENTS

- Analog/digital receiver positioner
- Antenna with 1.8m diameter, complete with all associated components LNB for Ku wide band and C band

REQUIRED ACCESSORIES

- Field Strength Meter (950-2150MHz)
- 60MHz Dual Trace Oscilloscope
- DMM 3.5 Digits
- Television set that is multisystem compatible

MANUAL

The SAT-1 MK-II is supplied with a well-organized and readily comprehensive manual containing theory and experiments. The manual incorporates the most up-to-date material prepared by experts in the fields of satellite communications and education.