



INSTALLING HOME SATELLITE SYSTEM

PRESENTATION OF THE PROJECTX-FINAL LEVEL 1.



GENERAL DESCRIPTION

- ▶ Title of the ProjectX
- ▶ INSTALLING HOME SATELLITE SYSTEM
- ▶ Core area
- ▶ GENERAL / KNOWLEDGE: Electronics
- ▶ PARTICULAR / ACTIVITY: Assembly, Measurement, Installing
- ▶ Promoting school
- ▶ Meram Vocational and Technical High School
- ▶ Schools participants in the revision of the ProjectX
- ▶ Valdorio (Portugal)
- ▶ University of Pitesti (Romania)
- ▶ Level of the students (according to EQF) - [see Europass supplement certificate]
- ▶ EQF LEVEL 3

Learning Outcomes achieved (to be developed in the future related with ECVET credit system)

- Understand Clark Orbit and TV-radio transponders
- Understand home satellite system's components (dish, LNB, receiver, connector and coaxial cable)
- Understand installation equipment for home satellite system
- Be able to focus the dish using satellite finder or strength field meter.
- Be able to set up satellite receiver

Time that is necessary to do the ProjectX (in hours)

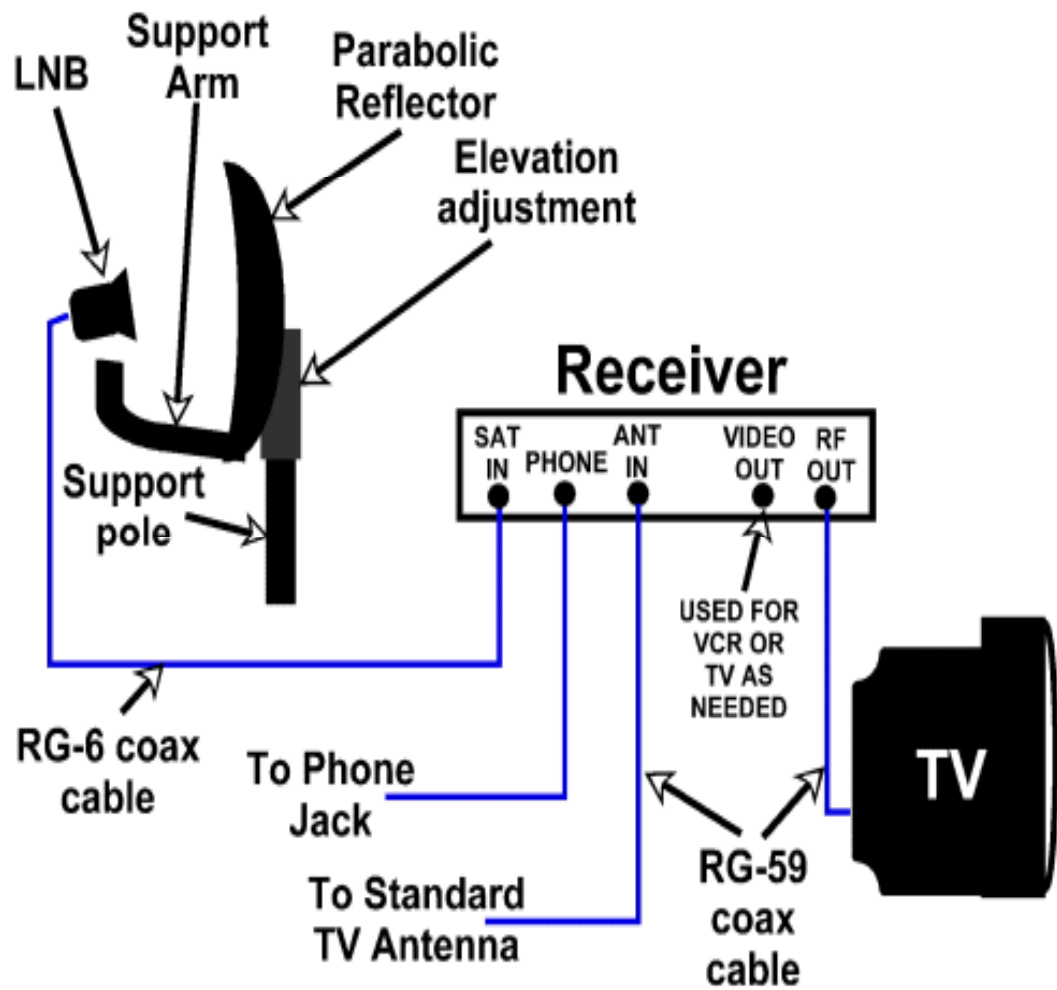
Theory: 8

Practice: 30

Link to real companies in your region (it is just informative)

NAME: Tezeller Electronics Ltd.Şti.

NAME: Alfatek Electronics



Simple Satellite TV System

Learning Outcomes

Understand Clark Orbit and TV-radio transponders

Each satellite location has its own footprint. A footprint is the area of each country that the satellite signal can reach.

How Signals are Transmitted

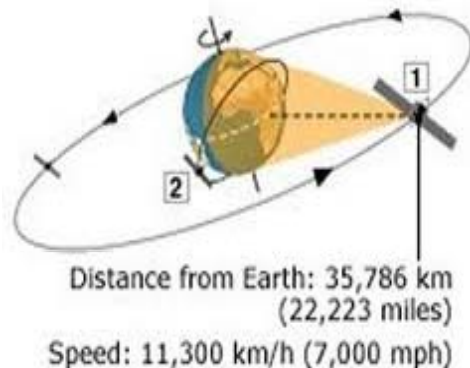
Polarity

DISH Network signals travel in a circular pattern from the satellite to the dish. This is referred to as "polarity." Two different types of circular polarity are used: vertical (13 volts) and horizontal (18 volts). DISH Network uses these polarities to enable equipment to distinguish between two satellites broadcasting on the exact same frequencies. In other words, circular polarity gives us the ability to provide more channels of digital quality.

Transponders

A transponder is the part of the satellite used to send a signal to the earth using a specific frequency range.

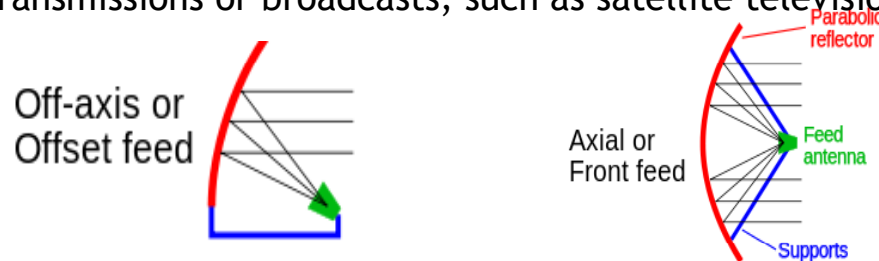
DISH Network satellites use one transponder to transmit many video and audio channels.



Understand home satellite system's components (dish, LNB, receiver, connector and coaxial cable)



A satellite dish is a dish-shaped type of parabolic antenna designed to receive electromagnetic signals from satellites, which transmit data transmissions or broadcasts, such as satellite television.

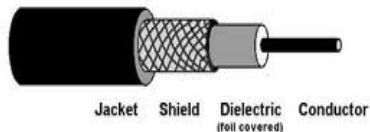


The LNB (low-noise block downconverter) is a combination of low-noise amplifier, frequency mixer, local oscillator and IF amplifier. It receives the microwave signal from the satellite collected by the dish, amplifies it, and down converts the block of frequencies to a lower block of intermediate frequencies (IF). This downconversion allows the signal to be carried to the indoor satellite TV receiver using relatively cheap coaxial cable; if the signal remained at its original microwave frequency it would require an expensive and impractical waveguide line.

satellite system's components (dish, LNB, receiver, connector and coaxial cable



Coaxial Cable Construction



Coaxial cable is used as a transmission line for radio frequency signals. Its applications include feed lines connecting radio transmitters and receivers with their antennas, computer network (Internet) connections, and distributing cable television signals. Coaxial cable also provides protection of the signal from external electromagnetic interference. The satellite receiver or set-top box demodulates and converts the signals to the desired form (outputs for television, audio, data, etc.) Sometimes, the receiver includes the capability to unscramble or decrypt the received signal; the receiver is then called an integrated receiver/decoder.

Understand installation equipment for home satellite system



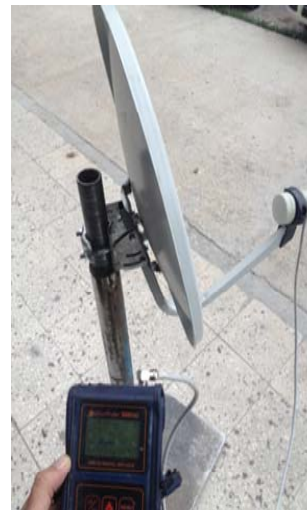
A satellite finder (or sat finder) is a satellite signal meter used to accurately point satellite dishes at communications satellites in geostationary orbit



Tool box and drill



Be able to focus the dish using satellite finder or strength field meter.



Firstly, it is necessary to assemble the satellite dish parts.

It is known the position of the satellite to determine the best placement of the dish with a CLEAR VIEW towards the satellite. This means there can be no buildings, trees, power lines, etc., between your dish and the sky. Then determine where the dish must be installed and how the cable needs to be run to reach the Receiver.

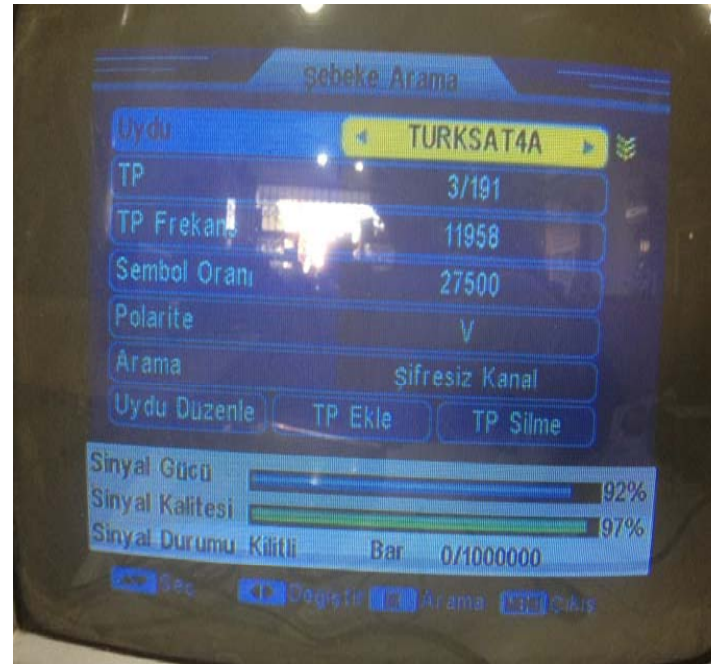
Be able to focus the dish using satellite finder or strength field meter



Following steps are applied:

1. Connect LNB to the sat finder using coaxial test cable.
2. Select correct satellite frequency knowledge on the sat finder.
3. Standing behind the dish, move it towards the correct setting.
4. Very slowly, move it in both directions until you receive a signal on your meter/screen.
5. Then move the dish very slowly up and down to peak the signal.
6. Then turn the LNB very slowly and move it in and out of the bracket.
7. These steps should be done repeatedly, until the maximum signal is received.
8. Once you are satisfied with your signal strength, tighten all the bolts.

Be able to set up satellite receiver



9. Connect the receiver to the TV with scart or HDMI cable.
10. Recognize the receiver set up menu.
11. Search the focused satellite to find TV and radio channels.