INTERNSHIP REPORT

On

BROADCAST TECHNOLOGY

By
Md. Saiduzzaman
ID: 131-33-1435
Department of Electrical and Electronics Engineering

Supervised by
Professor Dr. M. Shamsul Alam, Dean
Department of EEE

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING
FACULTY OF ENGINEERING
DAFFODIL INTERNATIONAL UNIVERSITY

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Certification

This is to certify that this project and thesis entitled "**Internship report on broadcast technology at News24 TV**" is done by the following students under my direct supervision and this work has been carried out by them in the laboratories of the Department of Electrical and Electronic Engineering under the Faculty of Engineering of Daffodil International University in partial fulfillment of the requirements for the degree of Bachelor of Science in Electrical and Electronic Engineering. The presentation of the work was held on 21 January 2019.

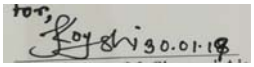
Md. Saiduzzaman

ID: 131-33-1435

EEE Department

Daffodil International University

Countersigned



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Professor Dr. M. Shamsul Alam

Dean

Department of Electrical and Electronic Engineering

Faculty of Science and Engineering

Daffodil International University

The project and thesis entitled **"Internship report on broadcast technology at News24 TV,"** submitted by **Md. Saiduzzaman**, ID No: 131-33-1435, Session: Spring 2013 has been accepted as satisfactory in partial fulfillment of the requirements for the degree of **Bachelor of Science in Electrical and Electronic Engineering** on 21 January 2019.

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Dedicated to

Our Parents

CONTENTS

LIST OF FIGURES

List of Abbreviations

PCR	Program Control Room
MCR	Master Control Room
CNN	Cable News Network
APTN	Aboriginal Peoples Television Network
DSNG	Digital Satellite News Gathering
ISS	International Space Station
DTH	Direct to Home
GPS	Global Positioning System
LEO	Low Earth Orbit
MEO	Medium Earth Orbit
GEO	Geostationary Earth Orbit
LNB	Low Noise Block Down Converter
SDI	Serial Data Interface
MPEG	Moving Picture Experts Group
ASI	Asynchronous Serial Interface
QPSK	Quadrature Phase Sift Keying
RF	Radio Frequency
BUC	Block Up Converter
SSPA	Solid State Power Amplifier
VTR	Video Tape Recorder
IRD	Integrated Receiver And Decoder
CAR	Central Apparatus Room
HPA	High Power Amplifier
LNA	Low Noise Amplifier

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First of all, we give thanks to Allah or God. Then we would like to take this opportunity to express our appreciation and gratitude to our project and thesis supervisor **Professor Dr. ShamsulAlam, Dean** of **Department of EEE** for being dedicated in supporting, motivating and guiding us through this project. This project can't be done without his useful advice and helps. Also thank you very much for giving us opportunity to choose this project.

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ABSTRACT

I have prepared this report based on my three-month practical experience at News24Television Pvt. Ltd. This internship program helped me to learn about the practical scenario of aTelevision station. This report has been presented based on my observation and experience gathered from the company.

Now-a-days Satellite TV is being considered with utmost significance as it has been contributing to every sector of our society. Certain differences have been brought to our life with a wide array of program ensuring several advantages to our day to day life. Now TV programs, broadcasted both in analog and digital format possessing higher quality of sound and picture, can entertain anyone from anywhere based on the availability of Satellite TV connection. It has been a great opportunity for me to gather a complete hand on experience on all the sections of Satellite TV channel during my internship in News24 TV and this report has been prepared based on the knowledge that I achieved during my working period. The complete illustration of Earth Station and Live Transmission process of News24 TV channel has been signified here as the core parts of my internship paper.

CHAPTER 1

INTRODUCTION

1.1 Introduction

In order to achieve my B.Sc. in Electrical and Electronic Engineering, I was required to complete an internship. I interned at **Satellite TV Broadcasting System**.

In this report, I will first describe about Communications Satellite, Satellite TV Channel and how to perform live broadcast.

I have been finished my internship at News24 Television Pvt. Ltd. which is a private 24-hours news channel. It is owned by one of Bangladesh's largest conglomerate Bashundhara Group. It situated in Bashundhara R/A, Dhaka. It obtained its license officially from the Government of Bangladesh. News24 uses latest Broadcast Technology in news gathering and program production.

1.2 Objectives of the Report

The main objectives of the proposed practical study **'Satellite TV Broadcasting System** at **NEWS24 TV'** are as follow:

1. TV Studio with Equipment
2. Studio Production Control Room (PCR)
3. Master Control Room (MCR)
4 Play out Automation
5. News room Automation
6. Local & International Feeds (CNN, APTN etc.)
7. Digital Satellite News Gathering (DSNG) Van
8. Digital Mobile News Gathering (DMNG)
9. Live Telecast Technology by BackPack

1.3 Overview of the Report

The material in this report Begins with a discussion of some of the basic background disciplines and sub systems inherent in **Satellite TV Broadcasting System**.

Chapter 2 introduces full concept about Communication Satellite. That means Use of Satellite, The main parts of satellite, Satellite Category, Satellite footprint, Satellite look angle, Satellite Sun outage.

Chapter 3 covers Uplink and downlink procedure, about downlink parameter.

Chapter 4 introduces all the section of a satellite TV station that means CAR, Earth Station, MCR, PCR and Studio. Also describe about Encoder, Modulator, BUC, SSPA, Antenna, and IRD.

Chapter 5 covers total live Broadcast System. Workflow of DSNG (Digital Satellite News Gathering), DMNG (Digital Mobile News Gathering) and working process of Fiber link CSI & Backpack.

This intern report has briefly introduced the genesis and characteristic features of communication satellites. A communication satellite is basically an electronic communication package placed in orbit whose prime objective is to initiate or assist communication transmission of information or message from one point to another through space. The information transferred most often corresponds to voice (telephone), video (television) and digital data.

CHAPTER 2

LITERATURE REVIEW

2.1: What is Satellite?

A satellite is a fake item or body which has been purposefully put into space around the earth by human undertaking to gather data or for correspondence. There are around 6,600 satellites have been propelled in the space; the most recent evaluations are that 3,600 stay in circle. The greater part of them are utilized for correspondence.

2.2: History of Satellite

Sputnik 1 the principal fake Earth satellite was propelled by the Soviet Union in 1957.At about the span of a ball, Sputnik 1 was furnished with a radio transmitter that emitted a blaring sign—helping the Soviets to follow it on its 98-minute circle and to motion to the world that the U.S.S.R. was the pioneer in space. It was put into space around Earth and was consequently in geocentric circle. Fake satellites start from in excess of 50 nations and have utilized the satellite propelling capacities of ten countries. A couple of hundred satellites are presently operational, though a large number of unused satellites and satellite sections circle the Earth as space flotsam and jetsam. A couple of room tests have been put into space around different bodies and wind up fake satellites to the Moon, Mercury, Venus, Mars, Jupiter, Saturn, Vesta, Eros, and the Sun. The International Space Station (ISS) is a space station, or a livable counterfeit satellite, in low Earth circle. It is a particular structure whose first segment was propelled in 1998. Presently the biggest fake body in circle, it can regularly be seen at the proper time with the stripped eye from Earth. On Aug. 12, 1960, NASA effectively propelled Echo 1; it was the principal satellite that was utilized for correspondence reason.

2.3 Uses of Satellite

India utilizes its satellites correspondence arrange – one of the biggest on the planet – for applications, for example, arrive the board, water assets the executives, catastrophic event , radio systems administration, climate determining, meteorological imaging and PC correspondence.

The INSAT-2 satellites additionally give phone connects to remote regions; information transmission for associations, for example, the portable satellite administration correspondences for private administrators, railroads and street transport; and communicate satellite administrations, utilized by India's state-claimed TV office just as business TV slots. Satellite utilized via Airtel Digital TV and Sun Direct DTH to communicate their DTH administrations. India propelled 3D Weather Forecasting Satellite in 2011. So Satellites are vital in: voice correspondences, video and radio transmission, route (GPS), remote detecting (maps, climate satellites).

2.4 Parts of a Satellite

Satellites come in many shapes and sizes. But most have at least two parts in common - an antenna and a power source. The antenna sends and receives information, often to and from Earth. The power source can be a solar panel or battery. Solar panels make power by turning sunlight into electricity.

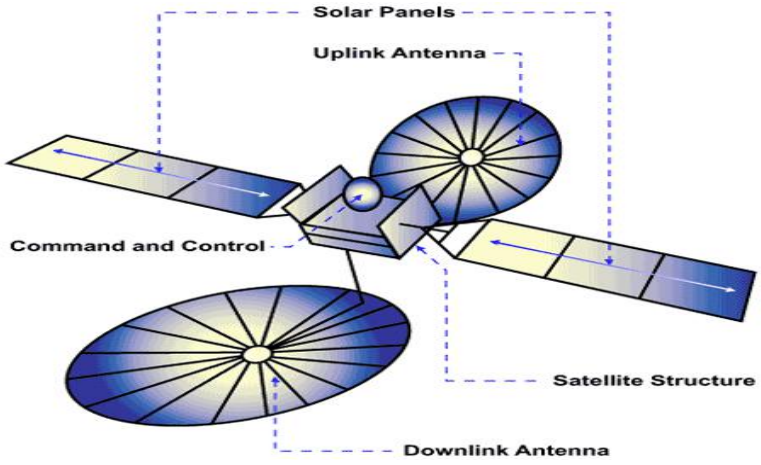

Fig 2.1: Parts of a Satellite

2.5 Satellite Category

Major types of Satellites-

2.5.1 Natural Satellites

- There are about 173 known natural satellites orbiting planets in the Solar System.
- All the planets that revolve around the Sun are Natural Satellites.
- The Moon is the only Natural Satellite of the Earth.

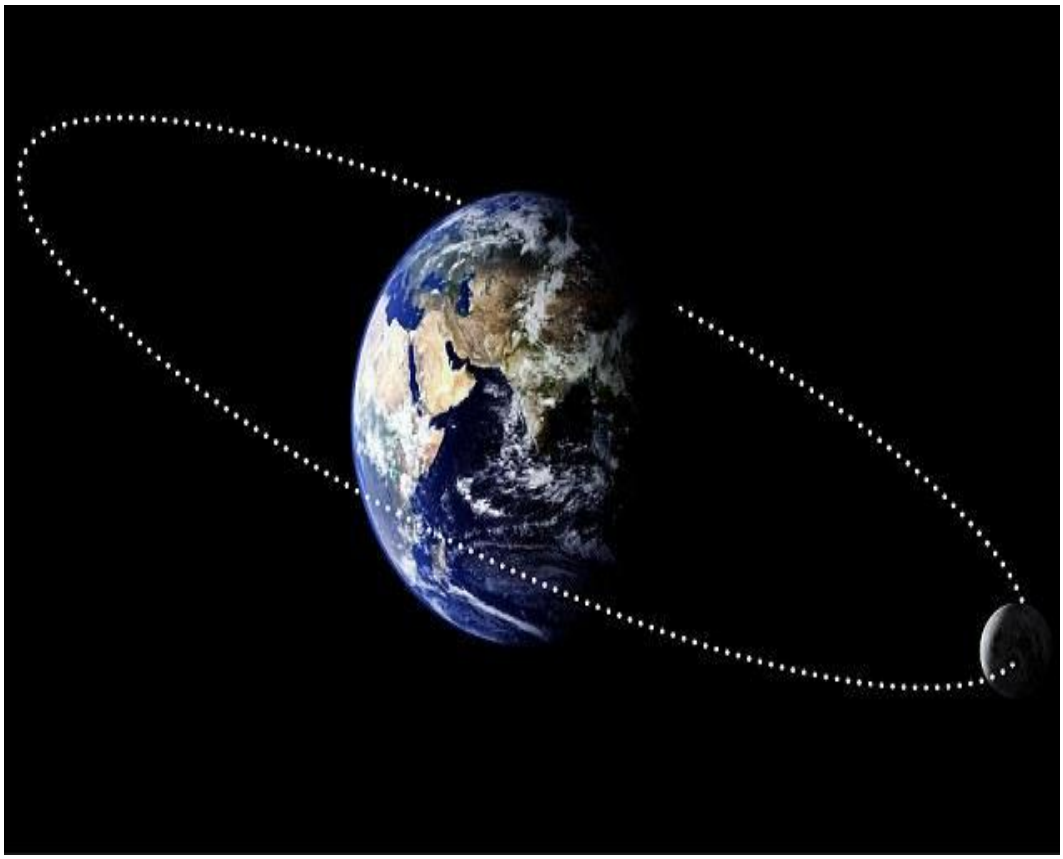

Fig 2.2: Moon revolving around Earth

2.5.2 Artificial Satellites

Fake satellite article built by people and put in circle around the earth or other heavenly body. The satellite is lifted from the world's surface by a rocket.

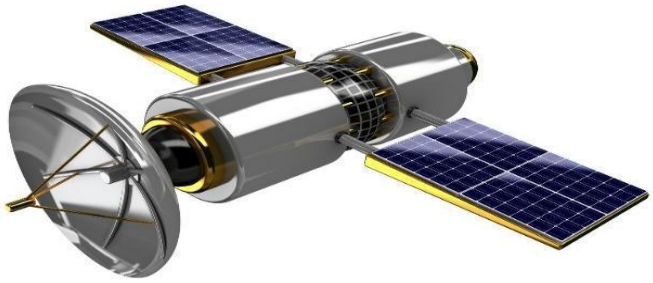

Fig 2.3: Artificial Satellite

At the point when a satellite is propelled, it is set in circle around the earth. The world's gravity holds the satellite in a specific way as it circumvents the earth, and that way is called a _orbit'. Counterfeit Satellites can be arranged by their capacities. Satellites are propelled into space to complete a particular employment.
According to the orbital position artificial satellite are three types-

2.5.2.1 Low Earth Orbit (LEO)

Most satellites, the International Space Station, the Space Shuttle, and the Hubble Space Telescope are all in Low Earth Orbit (usually called "LEO"). LEO satellites are a lot nearer to the earth than GEO satellites, going from 320 to 1100 km over the surface. LEO satellites don't remain in settled position in respect to the surface and are obvious for 15 to 20 minutes each pass. A LEO satellite's vicinity to earth contrasted with a GEO satellite gives it a superior flag quality and to a lesser extent a period delay, which improves it for point to point correspondence.

LEOs are for the most part utilized for information correspondence, for example, email, paging and video conferencing. Since LEOs are not settled in space in connection to the revolution of the earth, they move at high speeds and in this way information being transmitted by means of LEOs must be given off starting with one satellite then onto the next as the satellites move all through scope of the earth-bound transmitting stations that are sending the signs into space.

2.5.2.2 Medium Earth Orbit (MEO)

A medium earth circle (MEO) satellite is unified with a circle inside the range from a couple of hundred miles to a couple of thousand miles over the world's surface. Satellites of this sort circle higher than low earth circle (LEO) satellites, yet lower than geostationary satellites. The most widely recognized use for satellites in this locale is for route, correspondence, and space condition science The orbital times of MEO satellites go around 2 to 12 hours. Some MEO satellites circle in close impeccable circles, and in this manner have consistent height and travel at a steady speed. Other MEO satellites spin in lengthened circles. The perigee (least elevation) of a circular circle satellite is considerably less than its apogee (most prominent height). The orbital speed is a lot more prominent close perigee than close apogee. As observed from a point superficially, a satellite in a stretched circle crosses the sky in only a couple of minutes when it is close perigee, when contrasted with a few hours when it is close apogee. Curved circle satellites are simplest to access close apogee, on the grounds that the earth-based reception apparatus introduction does not need to be changed regularly, and the satellite is over the skyline for a genuinely prolonged stretch of time.

An armada of a few MEO satellites, with circles legitimately planned can give worldwide remote correspondence inclusion. Since MEO satellites are nearer to the earth than geostationary satellites, earth-based transmitters with generally low power and unobtrusive estimated reception apparatuses can get to the framework. Since MEO satellites circle at higher heights than LEO satellites, the valuable impression (inclusion zone on the world's surface) is more prominent for each satellite.

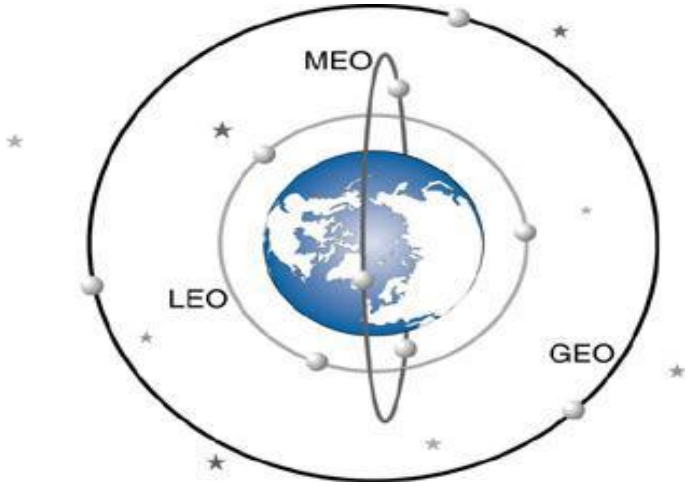

Fig2.4: Types of Orbit

2.5.2.3 Geostationary Earth Orbit (GEO)

A Geostationary Earth Orbit (GEO) is a circle whose situation in the sky continues as before for a stationary eyewitness on earth. These satellites are in circle 35,786 km over the world's surface along the equator. Items in Geostationary circle spin around the earth at indistinguishable speed from the earth pivots. This implies GEO satellites stay similarly situated with respect to the outside of earth. A GEO satellite's separation from earth gives it a huge inclusion zone, right around a fourth of the world's surface. A GEO satellite's separation additionally cause it to have both a nearly feeble flag and a period delay in the flag, which is terrible for point to point correspondence.

They are attached to the world's turn and are along these lines in a settled position in space in connection to the world's surface. The satellite goes around once in its circle for each revolution of the earth. The upside of a GEO framework is that the transmission station on earth needs to point to just a single place in space so as to transmit the flag to the GEO satellite. GEO frameworks are utilized for transmissions of fast information, TV signals and other wideband applications.

2.6 Satellites Footprint

The territory of the Earth secured by the microwave radiation from a satellite dish (transponder) is known as the satellites impression. The measure of the impression relies upon the area of the satellite in its circle, the shape and size of bar delivered by its transponder and the separation from the earth. [11] There is diverse impression for each satellite.

A transponder is a device for receives a radio signal and automatically transmits to a different signal.

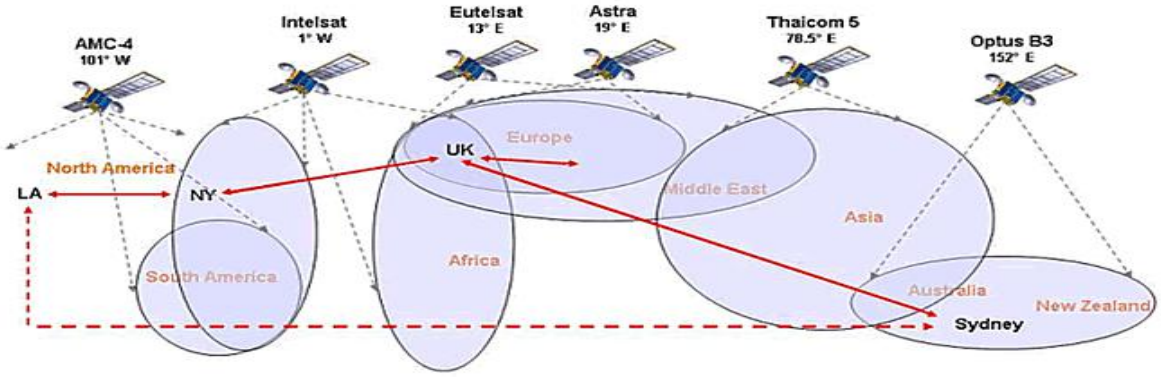

Fig2.5: Satellites footprint

2.7 Satellites look angle

The look plots for the ground station receiving wire are Azimuth and Elevation points. They are required at the receiving wire so it focuses specifically at the satellite. Look edges are determined by thinking about the circular circle. These points change so as to follow the satellite.

For geostationary circle, these edges esteems don't change as the satellites are stationary as for earth. Therefore expansive earth stations are utilized for business interchanges, these receiving wires pillar width is exceptionally thin and the following component is required to adjust for the development of the satellite about the ostensible geostationary position.

The look plots for the ground station radio wire are the azimuth and rise edges required at the receiving wire with the goal that it focuses specifically at the satellite. So as to follow a satellite situated in low earth circle (LEO), the look points need to change in light of the fact that the satellite is quicker than the Earth. Be that as it may, on account of satellite situated in geostationary circle no following is required in light of the fact that the satellite is stationary concerning the Earth.

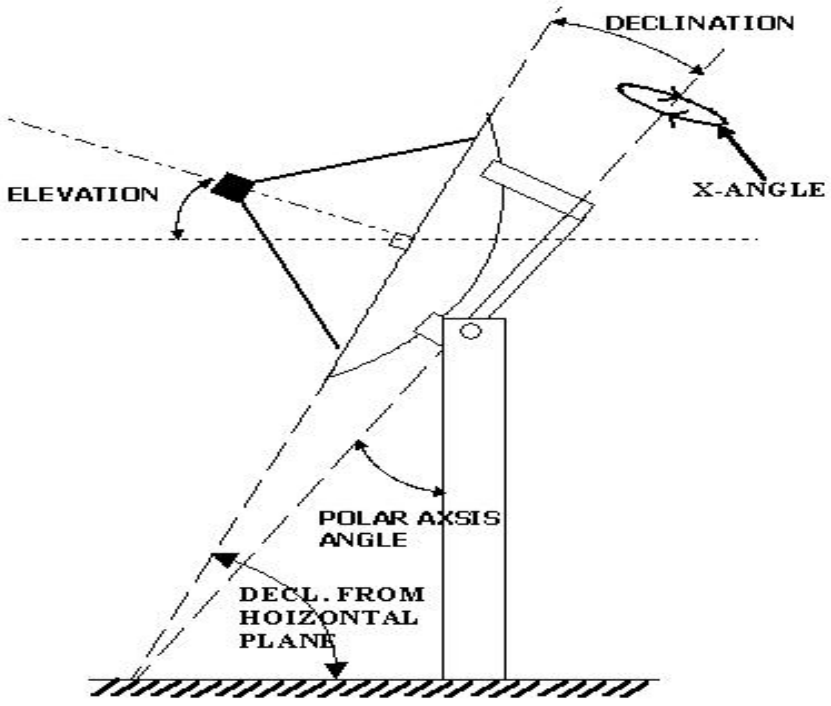

Fig 2.6: Satellites look angle

2.8 Satellite Sun Outages

Geostationary satellites are phenomenal methods for correspondence with the exception of one little issue called sun blackout. It is an intrusion of geostationary satellite signs brought about by impedance from sun based radiation. Since the sun is a ground-breaking broadband microwave source and has a commotion temperature. The raised temperature of the sun makes it transmit an abnormal state electrical commotion flag to the getting frameworks. This common fantasy happens two times per year when a satellite and an accepting earth station come straightforwardly in accordance with the sun. In the northern side of the equator, sun blackouts happen before the March (February, March) and after the (September and October).

A sun blackout happens in light of the fact that the earth station can't recognize the vitality from the sun and its expected correspondence flag.

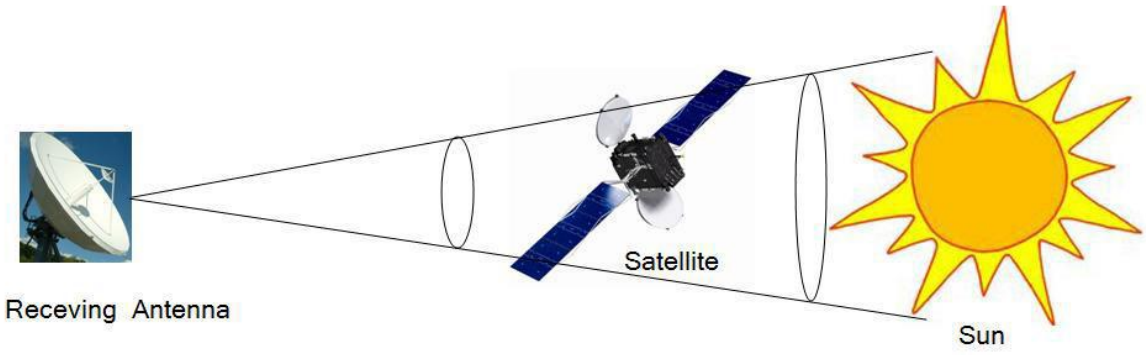

Fig 2.7: Graphical representation of sun outage problem

CHAPTER 3

SATELLITE TV STATION AND UPLINK-DOWNKINK

3.1 Satellite TV

Satellite TV is an arrangement of providing TV programming utilizing communicate signals handed-off from correspondence satellites. The signs are gotten through an open air illustrative reflector receiving wire for the most part alluded to as a satellite dish radio wire and a low-commotion square (LNB) down-converter. A satellite collector at that point interprets the ideal TV program for review on a TV. Satellite TV gives a wide scope of stations and administrations, particularly to geographic zones without earthly TV or digital TV.

The Satellite TV station block diagram is given below-

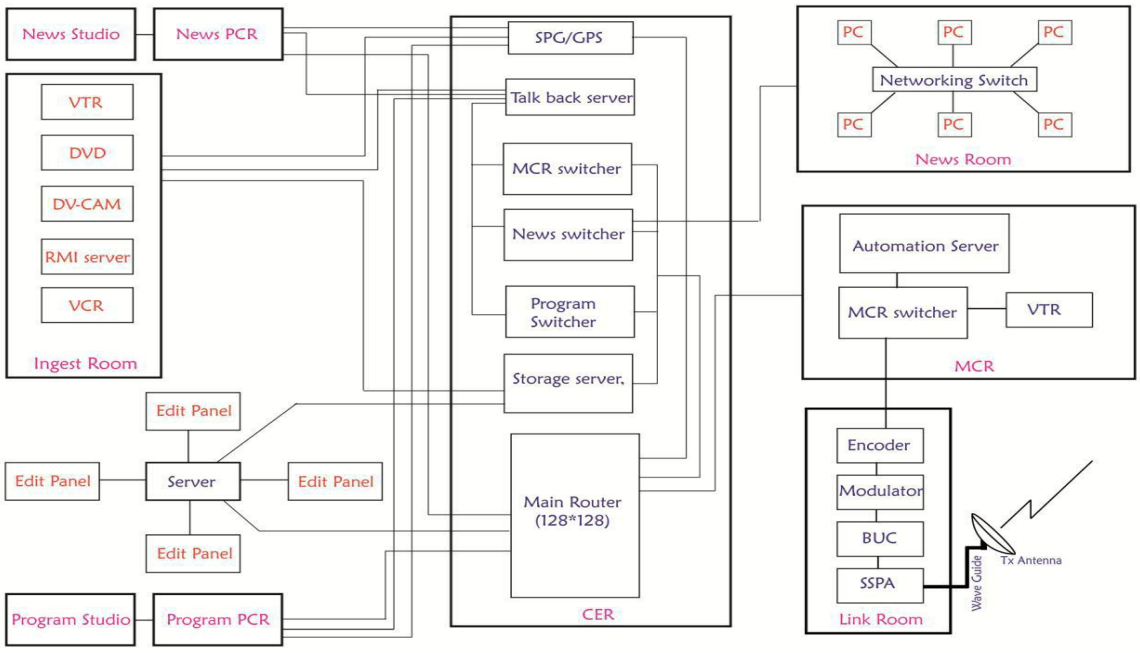

Fig 3.1: Block Diagram of a Satellite TV Station

3.2 Uplink & Downlink

The communication going from a satellite to ground is called downlink, and when it is going from ground to a satellite it is called uplink.

3.2.1 Uplink Procedure

Last video flag which will be on-publicized, that implies transmitted to satellite, originates from MCR (Master Control Room) – which flag arrange is SDI (Serial Digital Interface). SDI flag implanted both sound and video. So MCR ace out enters encoder as an information. At that point encoder encodes the SDI flag to ASI flag. At the communicate focus, the high caliber computerized stream of video experiences a MPEG encoder, which changes over the programming to MPEG-4 video of the right size and configuration for the satellite collector in our home. Encoding works related to pressure to investigations every video outline and wipe out excess or unimportant information and extrapolate data from different edges. This procedure lessens the general size of the document.

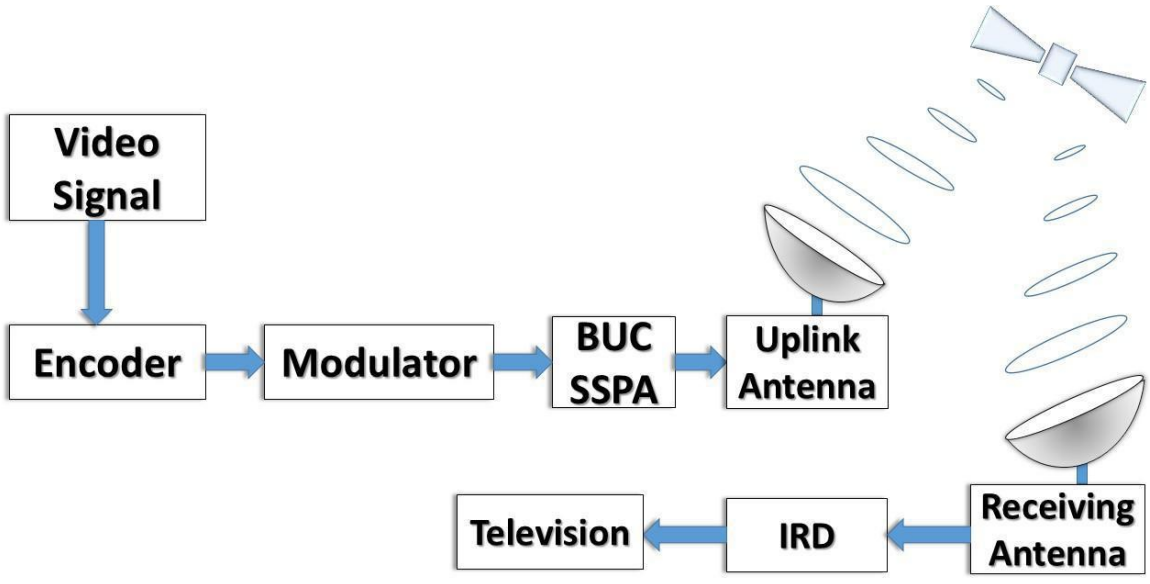

Fig 3.2: Uplink and Downlink Procedure

The ASI out from encoder then enters the modulator as info. A modulator is a gadget that performs adjustment. In broadcast communications, regulation is the way toward passing on a message motion, for instance an advanced piece stream or a simple sound flag, inside another flag that can

Be physically transmitted. Balance of a sine waveform changes a baseband message motion into a pass-band flag. Here in News24 they use QPSK as tweak method. Modulator yield is L-Band RF flag.

To transmit the RF motion in satellite, the recurrence range ought to be higher. So it's expected to expand the recurrence extend from L-Band to whatever other Band which has high range recurrence. Each satellite TV station in our nation utilizes the C-Band recurrence. A Block up Converter (BUC) is utilized in the transmission (uplink) of satellite signs. It changes over a band of frequencies from a lower recurrence to a higher recurrence. Present day BUCs convert from the L band to Ku band, C band and Ka band. More established BUCs convert from a 70 MHz halfway recurrence (IF) to Ku band or C band. SSPA (Solid State Power Amplifier) - a powerful speaker which give helpful enhancement at gigahertz frequencies. After advance up the recurrence its need to expand the ability to transmit it to the satellite due to diminish the level of misfortune. The last C-Band recurrence goes to uplink radio wire from SSPA through wave manage.

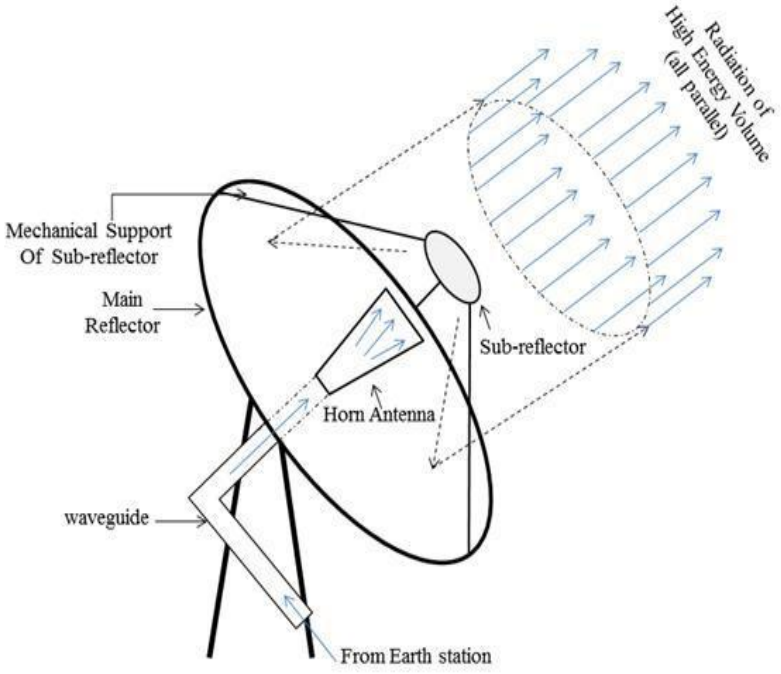

Fig 3.3: Radiation sequence from the antenna system

Subsequent to transmitting the flag, at that point it's gotten in satellite. All the more explicitly it's gotten by the transponder. A transponder is a remote correspondence, observing, or control gadget that gets and naturally reacts to an approaching sign. The term is a blend of the words transmitter and responder. In correspondence satellites, the transponder gets the flag from earth. At that point it evacuates the commotion, intensifies a similar flag, changes over the flag to downlink recurrence and transmits it to earth. At the telecom station or studio, they transmit the flag in Uplink recurrence to the satellite. The satellite transponder gets the flag; recoup the substance by evacuating commotion. At that point it enhances the flag and changes over it into downlink recurrence and transmits to earth. The collector gets the flag. Generally uplink recurrence is not quite the same as downlink recurrence. Uplink recurrence is high and downlink recurrence is low. It is for the most part utilized in satellite correspondence to exchange the got signs.

A transponder is typically composed of:

- An input band pass filter
- An input low-noise amplifier (LNA), designed to amplify the (normally very weak, because of the large distances involved) signals received from the earth station
- A frequency translator (normally composed of an oscillator and a frequency mixer) used to convert the frequency of the received signal to the frequency required for the transmitted signal
- An output band pass filter
- A power amplifier

3.2.2 Downlink Procedure

Initially, need to follow the satellite with accepting reception apparatus. When the satellite is followed then the given downlink parameter of wanted station is inputted in the IRD (Integrated Receiver and Decoder). When we get any channel, we downlink the recurrence as C-Band recurrence. Be that as it may, there is a LNB (Low Noise Block converter) mounted with the reception apparatus feed horn which changes over the C-band recurrence to L-Band recurrence by subtracting the C-band recurrence with the Local Oscillator recurrence. 'IRD' is minimal and proficient beneficiary. At the point when the 'IRD' gets the L-Band RF flag, at that point it initially demodulate the flag and after that decipher it, after that we got the video flag which is transmitting from the TV station. It took 3 seconds to finish the entire uplink and downlink process.

3.3 News24 Downlink Parameter

Complete downlink parameters for News24 are given below:

Satellite Name: Apster7

Orbital Position: 76.5° E

Transponder: C40

Symbol Rate: 2900 k Symbol/s

Uplink Frequency: 6312 MHz

Downlink Frequency: 4087 MHz

FEC: 3/4

Modulation Technique: QPSK

Polarization: Horizontal

Carrier Type: MPEG-4, DVB-S2

CHAPTER 4

EQUIPMENTS OF BROADCAST SYSTEM

4.1 CAR

In communicate offices, Central device Room (CAR) is the place shared hardware basic to every specialized region is found. This room may likewise be known as a focal Equipment room (CER), and is additionally alluded to as an information or server room. This incorporate SPG/GPS, Talk back server, MCR switcher, News switcher, Program Switcher, Main Router, Digital Audio Processor, Storage server, Networking gear, Cisco Switch Rack and so on. It ought to be cooled; anyway low-clamor determinations, for example, acoustical medications are discretionary. Gear is associated either specifically with a joined foldout screen, console and mouse or remotely through KVM switch, VLAN, or remote work area. It is leader of a TV station.

Fig 4.1: the rack in CAR of News24

4.2 Earth Station

An Earth stations use dish-molded receiving wires to transmit and get microwave signs to and from satellites. There is a ground-based getting or transmitting/accepting station in a satellite interchanges framework. Earth stations use dish-molded radio wires. An earth station is commonly comprised of a multiplexor, a modem, all over converters, a powerful speaker (HPA) and a low clamor intensifier (LNA). Practically all transmission to satellites is advanced, and the computerized information streams are consolidated in a multiplexor and sustained to a modem that regulates a bearer recurrence in the 50 to 180 MHz extend. An up-converter knocks the transporter into the gigahertz go, which goes to the HPA and dish. Down-convert, Demodulate and De-multiplex For accepting, the LNA supports the signs to the down-converter, which brings down the recurrence and sends it to the modem. The modem demodulates the bearer, and the advanced yield goes to the de-multiplexing gadget and after that to its goals.

Fig 4.2: the rack in Earth Station of NEWS24 TV

This includes Local Receiver, Modulator, Encoder, Antenna Controller, L BAND Splitter, Fiber-Link server, IRD, Spectrum Analyzer etc.

4.2.1 Encoder

An encoder is a device that converts information from one format to a coded value. In Telecommunications encoder is a device that used to change a signal or data into a code and TV broadcast system encoder convert SDI (Serial digital interface) video signal to ASI (Asynchronous Serial Interface).

Fig 4.3: ERICSSON Encoder

4.2.2 Modulator

In telecommunications, modulation is the process that combines the message signal to a carrier signal.

NEWS24 TV use QPSK modulation. The device that performs modulation is called modulator.

4.2.3 BUC

A block up-converter (BUC) is used in the transmission (uplink) of satellite signals. It converts a band of frequencies from a lower frequency to a higher frequency. Modern BUCs convert from the L band to Ku band, C band and Ka band. Older BUCs convert from a 70 MHz intermediate frequency (IF) to Ku band or C band.

4.2.4 SSPA

Solid Sate Power Amplifiers highly increase power level of the BUC output signal for transmit to satellite.

Fig 4.4.1: Ericsson SSPA

4.2.5 Antenna

A satellite dish is a dish-shaped antenna designed to receive electromagnetic signals from satellites, which transmit data transmissions or broadcasts, such as satellite television. There are 5 antennas inNEWS24 TV. The uplink antenna diameter is 1.8 meter and downlink antenna diameter is 4.8 m. One of them use for uplink purpose and others are for different channel from different satellite.

Fig 4.4: Uplink antenna of NEWS24 TV

4.2.6 IRD

IRD stand for Integrated Receiver Decoder. This is ultimately a signal receiver. The operational sequence of IRD is reversing than that of the earth station. The received RF signal by LNB (low noise blocker) is converted to L-band frequency; that is operational for IRD. The IRD process this L-band frequency then demodulate it and then decode it according to the encoding system. And thus the desired base-band signal is recovered.

Fig 4.5: Integrated Receiver Decoder (IRD)

4.2.7 Video switcher

Video switcher is a device used to select between several different video sources and in some cases compositing (mix) **video** sources together to create special effects.

(a) Ross Carbonite video switcher

(b) Ross MC-1 video switcher

(c) Ross video switcher

Fig: 4.6: Some kinds of video switchers

4.2.8 Automation plays out

There is software for automation play out at night as most of the time at night the recorded programs are played. NEWS24 TV use ―Marina software for automation plays out.

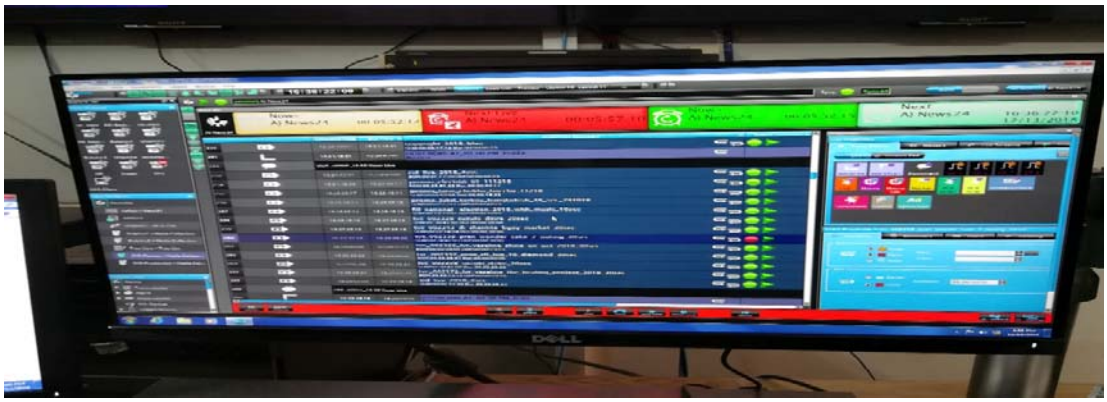

Fig: 4.8 Automation play out device

4.2.9 Ingest VTR

There are some kinds of recording devices which records all the programs of a TV channel. This tool is mainly used to archive the programs and at night they can play the programs from the device directly if there is any kind of problem in automation play out. Thus we can say it can also be used as a backup device.

Fig: 4.9 VTR Ingest devices

4.2.10 Miranda

Miranda server provides logo to the final out which is being on-aired.

Fig: 4.10 Miranda server of News24

4.2.11 Router

Router is used to destine the received signal to a suitable interface.

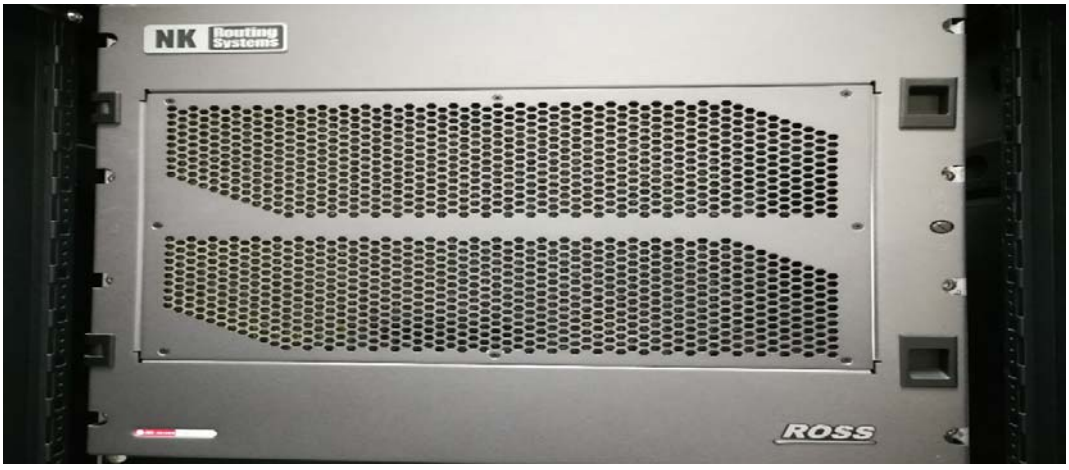

Fig 4.11: Router

4.3 MCR

Master control Room is the technical hub of a broadcast operation common among most over-the-air television stations and television networks. It is distinct from a production control room (PCR) in television studios where the activities such as switching from camera to camera are coordinated. MCR is the heart of our operations with full bank of monitors, VTR, Automation Server, communications equipment and computers with complete built-in redundant systems. MCR is the final point before a signal is transmitted over-the-air with channel Logo.

Fig 4.11: MCR of News24

4.4 PCR

Production control Room is a room where finally program or news executes from camera to MCR. It designed specifically for the time-critical, chaotic, and pressure-filled environments of television broadcast and live production, which works with your choice of equipment, grows and adapts to your changing control needs, and provides easy-to-use, precise, reliable, and repeatable control. Production control systems scale from simple VTR or video server play out. To production switcher control of rundown play out of VTRs, Video Servers, Routers, Production Switchers, Master Control Switchers, Audio Mixers, Camera Pedestals, Multi-viewers.

Fig 4.12: PCR of News24

CHAPTER 5

LIVE BROADCAST SYSTEM

5.1 Drive-Away DSNG

DSNG represents a whole new way of flexible news gathering. Digital Satellite News Gathering (DSNG) system is used as mobile earth station. To perform live broadcasting from a remote place where any physical link like optical fiber, transmission wire, radio link are not available, then the satellite link is the only way to send the raw footage to the TV station.

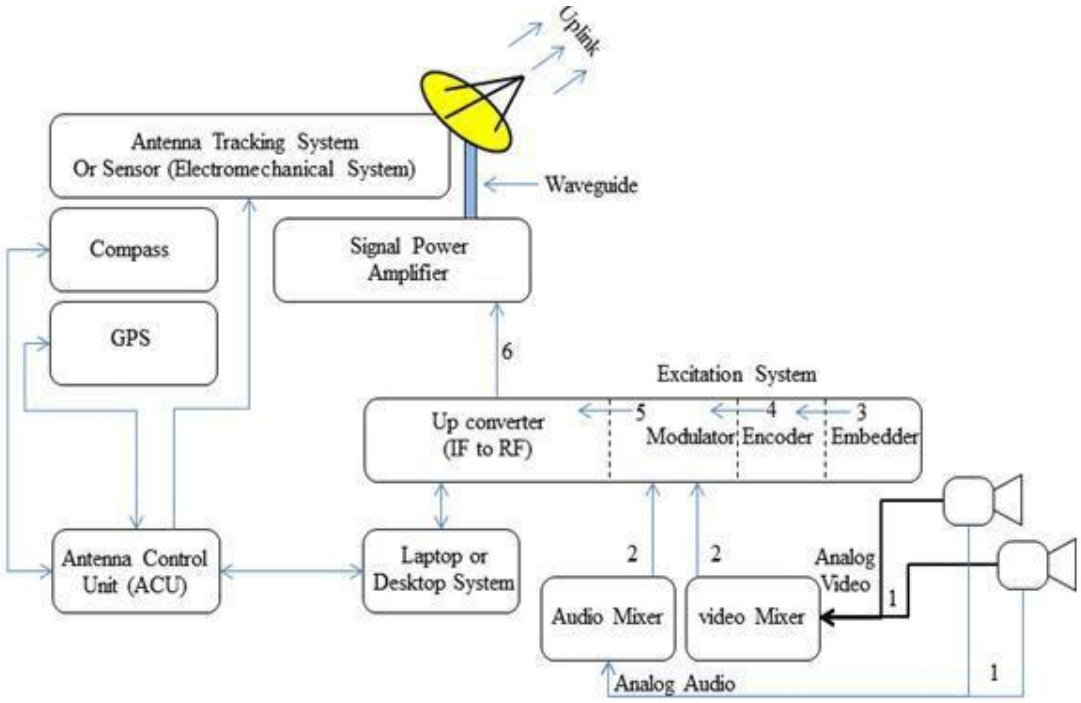

Fig 5.1: Block diagram of DSNG system workflow

The DSNG system is approximately similar to the earth station system. The signal flows in the DSNG system as like as before.TV station can use the same satellite or different satellite for main up-link and DSNG system.

After transmitting the raw footage by DSNG, main station receives that signal. It comes to the base band section, processed and then made ready for final on-air through the main up-link antenna

Fig 5.2: DSNG of News24

5.2 DMNG

DMNG stands for Digital Mobile News Gathering. Where cable connection is unavailable and satellite link is unnecessary in that situation DMNG is used. DMNG is basically a mobile app.

5.3 Fiber link CSI

Communication Specialties, Incorporated (CSI) named by its company. The Fiber link CSI transmitter transmits 3G, HD or SD-SDI through Optical fiber. It is too much easy and reliable process because it doesn‘t use satellite. NEWS24 TV occurred so many live in this process. Its wave length is 1310 nm. CSI transmitter properly transmits HD signal within 22-25km and SD signal within 25-28km.

(a) **(b)**

Fig 5.3: (a) Fiber link CSI Transmitter

(b) Fiber link CSI Receiver

This process as like as point to point fiber optic connection. The CSI transmitter power actives with +12v. The camera SDI signal input to CSI transmitter. CSI transmitter convert it SDI to Optical signal. Then this signal transmits to ISP office through optical fiber cable. ISP office increase signal power level and retransmit to NEWS24 TV office. It is very costly process and can‘t perform from long distance.

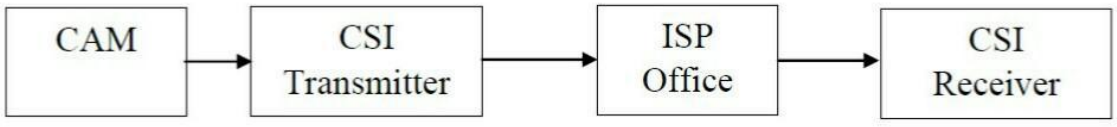

Fig 5.4: CSI transmit and receiving procedure

5.4 LiveU Backpack

LiveU backpacks the ultimate combination of quality and mobility, with boot time under a minute. It‘s essential for the mobile journalist always on the go. The most advanced bonding technology offering the highest quality output with lowest delay.

Fig 5.5: LiveU backpack

The LiveUBackpack has been designed through innovation, research & development and customer feedback. It transmits via bonded 3G/4G, satellite, Wi-Fi to a Quick link server direct to the newsroom or website.

CHAPTER 6
CONCLUSION

6.1 Conclusion

In this intern report, the main parts of the satellite television have been discussed in NEWS24 TV. How a signal is transmitted accurately from earth station to satellite, and how it will down form satellite to earth station. The total workflow or working processes of a TV station that means several sections of the station like MCR, PCR, CAR, Studio and Antenna have been experimented thoroughly and their functions have been achieved. The operation of various broadcast related equipment have been learned properly. Live broadcast from outdoor or indoor Studio.

6.2 Limitations of the Work

Transmission and production section are very sensitive. Most of the time they telecast live. So it's very difficult to get practical experience. All the equipment's are related with transmission system.

6.3 Future Scopes of the Work

Few television Station transmit Full HD signal in Bangladesh. May be within short time we will receive digital signal from our residence. Virtual studio is most popular in the whole world. If we can properly use it in Bangladesh then we can see a good quality of picture.

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East West
MEDIA GROUP LTD

Ref: News24/Admin/Appt./F-01/201/2016 Date: 06/08/2016

Md. Saiduzzaman
74/D, Azimpur Govt. Colony,
Dhaka-1205

SUBJECT: LETTER OF APPOINTMENT

The Management of the East West Media Group Limited (EWMGL) has been pleased to appoint you as **Executive, Broadcast & Engineering** of the group's television channel **News24** under the following Terms & Conditions:

01 That, your place of posting will be at the **Broadcast & Engineering Department** of **News24, Plot# 371/A, Block# D, Bashundhara Residential Area, Dhaka.**

02 You will directly report to the CEO.

03 You may also be required to remain loyal to the nominated official (s) of the management of EWMGL.

04 Your monthly remuneration details are as follows-

05 You are to pay the income tax and other forms of taxes as per the law of the land. Your emoluments will be made from East West Media Group Limited.

06 That, you will be on probation for a period of 6 (six) months with effect from the date of your joining and the probationary period may be extended, if necessary, for a further period of 3 (three) months and such extension will be intimated to you in time. During the probation period your service may be terminated without showing any reason.

07 You will strictly abide by the rules and regulations of the group. You will not act in any way in contravention of the rules and regulations for which your services can be terminated with immediate effect.

08 You will not leave the company before you have completed 1 (One) year of service calculated from the date of your joining or a period as may be agreed by you and the company. In breach of this provision you shall have to pay compensation to the company equivalent to your 3 (Three) months, salary.

09 You will not divulge to any person or a corporate body, any confidential information or trade secret acquired as a result of your employment or in the course of your employment with us.

10 Any disclosure of such information to third parties (including other employees of the Company) constitutes a breach of your employment. In case you are found guilty of any such misconduct, then the Management will have full rights to initiate criminal and legal proceedings against you.

11 You may be terminated without notice in the event as a result of misconduct, misappropriation and negligence of work or poor-performance.

কালের কণ্ঠ | daily sun | বাংলাদেশ প্রতিদিন | [illegible] | NEWS24 |
Bashundhara Residential Area, Plot-371/A, Block-D, Dhaka-1229, Bangladesh
Phone: +88 09212120000 Fax: +88 02 8402368-9, E-mail: info@eastwestmediagroup.com
www.eastwestmediagroup.com