

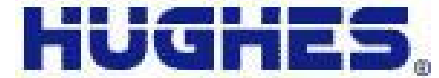
**VTU**

**Training Programme**

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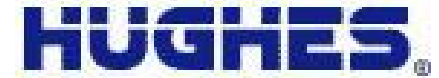
## Introduction



Edusat, a satellite specially designed for facilitating distance education in India has been launched in September 2004. This satellite has 5 spot beams, each having 36 MHz bandwidth in Ku band; together, they cover the whole country. In addition, there is a National beam in Ku band having 36 MHz bandwidth and covering main land India. Apart from Ku band there are 6 Extended C band channels each of 36 MHz bandwidth covering India including the Lakshadweep and Andaman and Nicobar islands.

ISRO has setup high capacity satellite based interactive network, to meet the requirements of various users in education sector, across the country and to run it as an application project for implementing distance education. To begin with it is proposed to have a few Hubs in each beam. Each Hub that meets the needs of a teaching-end will support many Remote student end classrooms, each having a Satellite Interactive Terminal (SIT). Eventually, the SIT population per beam is expected to grow beyond 1000. In addition, initially few Hubs will have few Receive Only Terminals (ROTs) and later up to 500 ROTs are expected to be in each beam. As such there will be no restriction as far as expansion of the network for ROTs.

Cont.....



The teaching end facility collocated with the Hub will be established in the premises of each user agency. The teacher at the teaching end uses PC based multimedia system for delivering a lecture. He can also use teaching aids like black/green board, touch screen, DVD player etc.

The live lecture will be telecast using suitable cameras or recorded programme will be transmitted as an option. Recording system to record the session, a server and the Learning Management System will be in a place at the teaching end. Two types of teaching ends are possible and appropriate configuration will be selected as decided by the User.

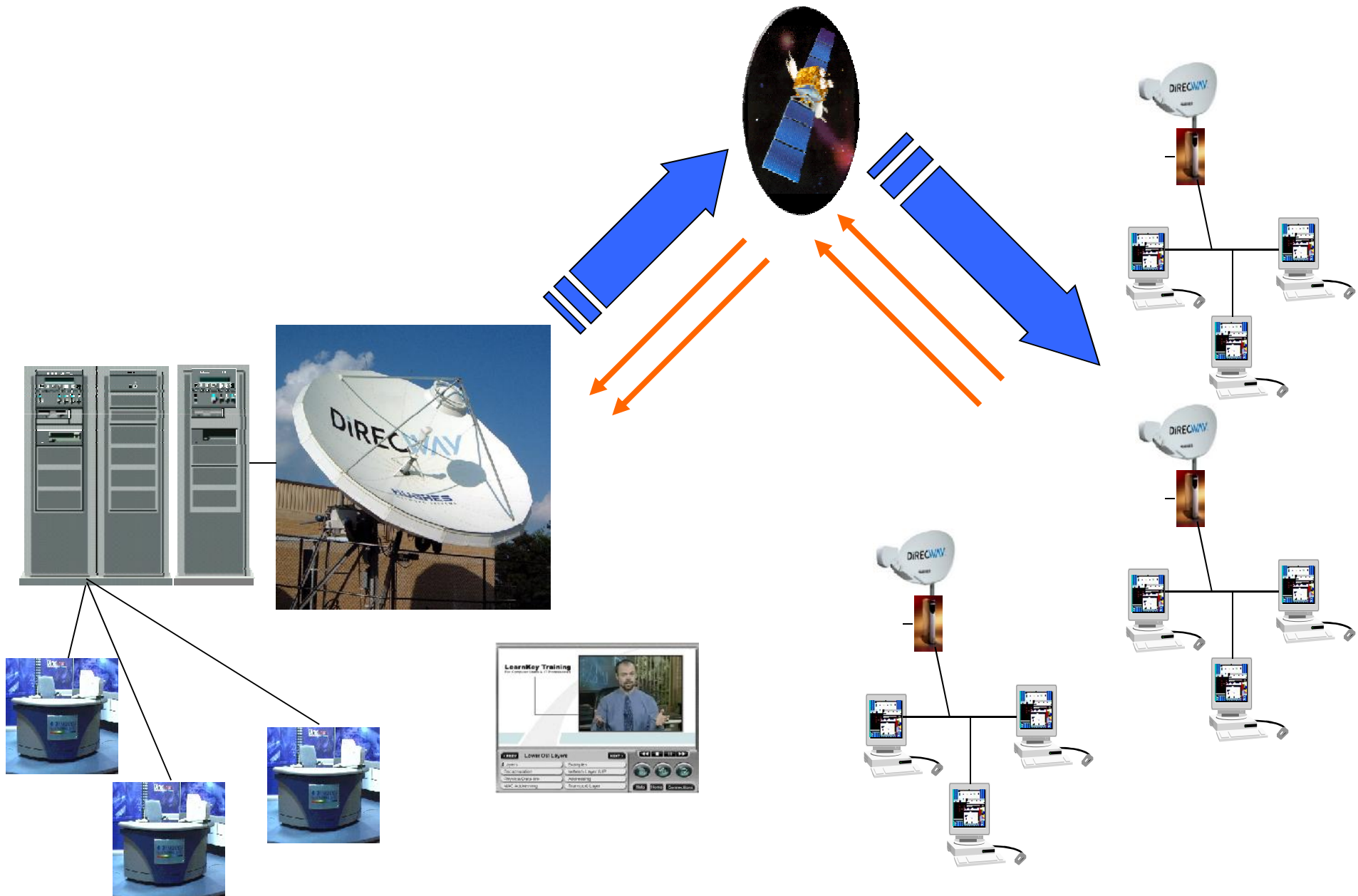
The virtual classroom configuration captures a live classroom using cameras and multimedia PC and transmits it to the remote student- end. The teacher delivers his lecture in a normal classroom but with significant reorientation in delivery mode to include multimedia based approach like power point slides, animated movies, electronic white board etc.

Studio based teaching-end configuration will require all necessary studio set up and the teacher will be delivering the lecture from a studio. The student end is provided with multimedia PC, projection system and learning management system for Audio-Video interaction.

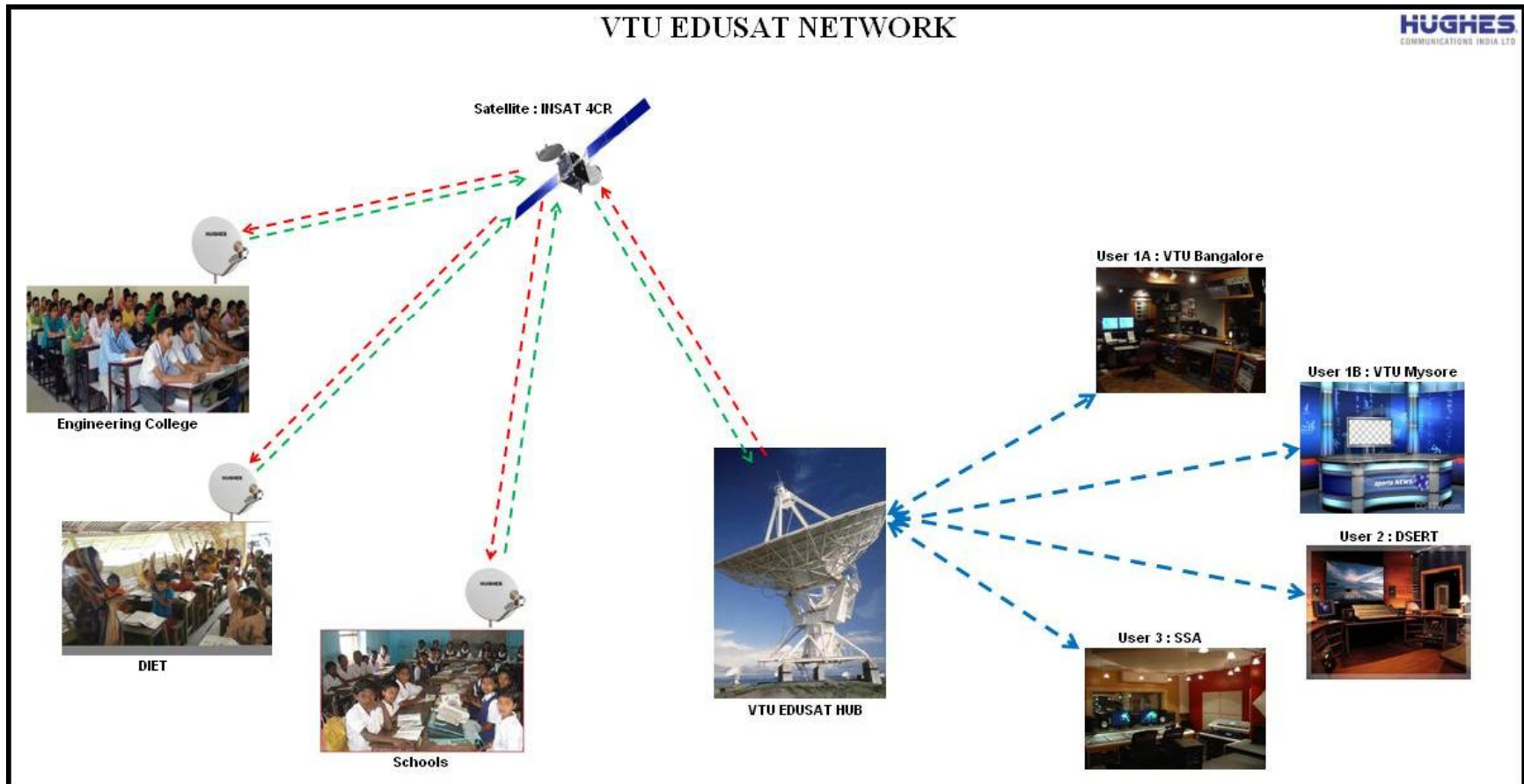
The network will be so configured as to have communication between the teaching end and the remote classroom end, with one satellite hop, in each direction.

# Edusat Network Layout

**HUGHES**



# VTU Network



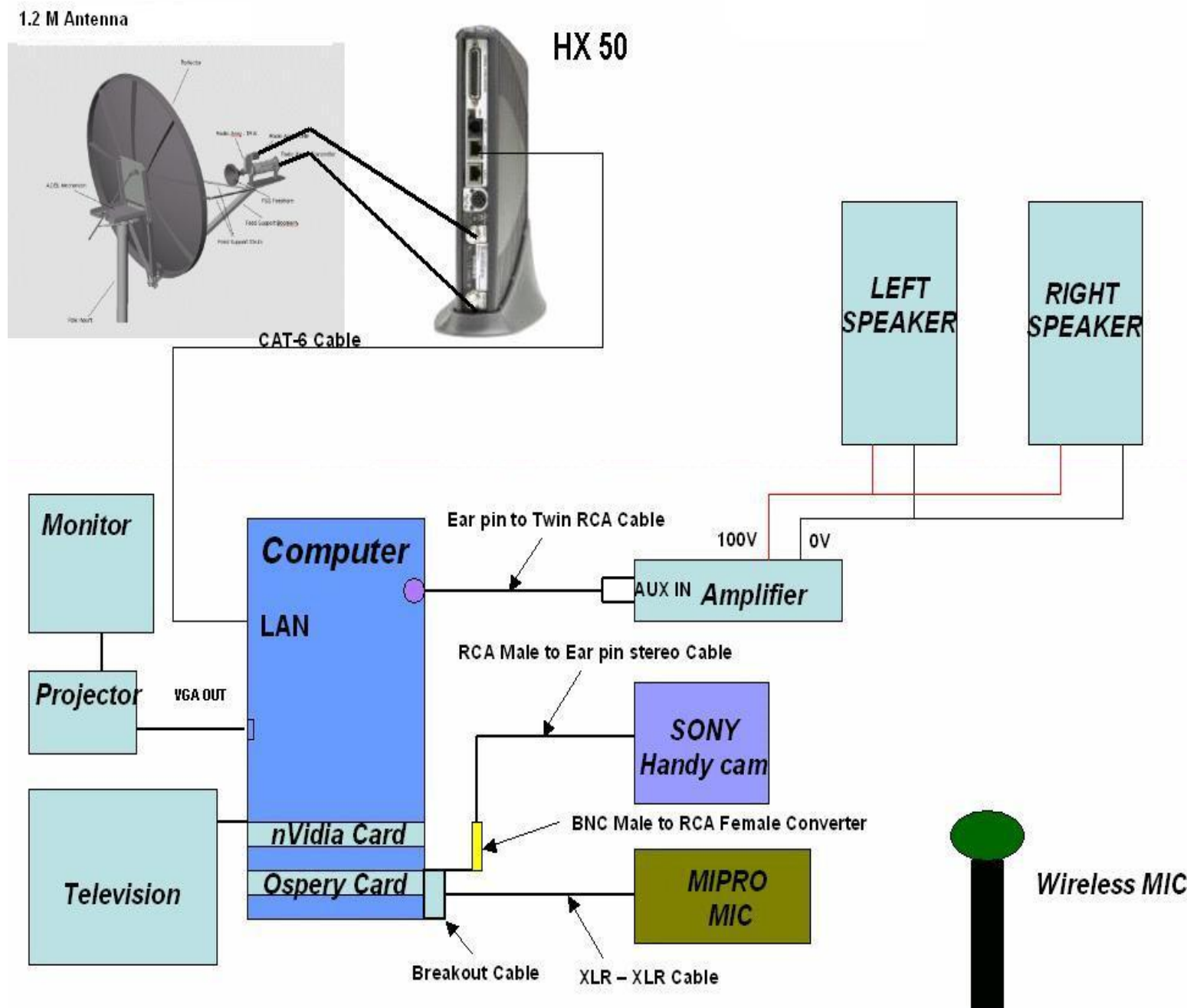
# Network Layout Contd..



- Central Up-linking Station – Also called Hub at DESRT
- 6.3 Mtr antenna
  
- One Studio – Co-located
- All minimum required Studio End Audio Video Equipments
- Learning management system
  - LMS software for student
  - LMS software for teacher
  - Return audio capability with option to transmit audio clips
  - Return video – Webcam, PTZ and Handycam options using MPEG-4
- Remotes (SITs)

# Block Diagram of SIT

**HUGHES**





# SIT EQUIPMENTS/ Site Deliverables

The major equipments of the SIT (Satellite Interactive Terminal) are as follows:

- 1). UPS
- 2). ODU
- 3). IDU
- 4). Student End Equipments

## **1 UPS Systems:**

The UPS System is E& C or equivalent on line 1 KVA Single Phase system with battery bank. This would normally give two to three hours battery back up depending on applications in use.

## **2 OUT DOOR UNIT:**

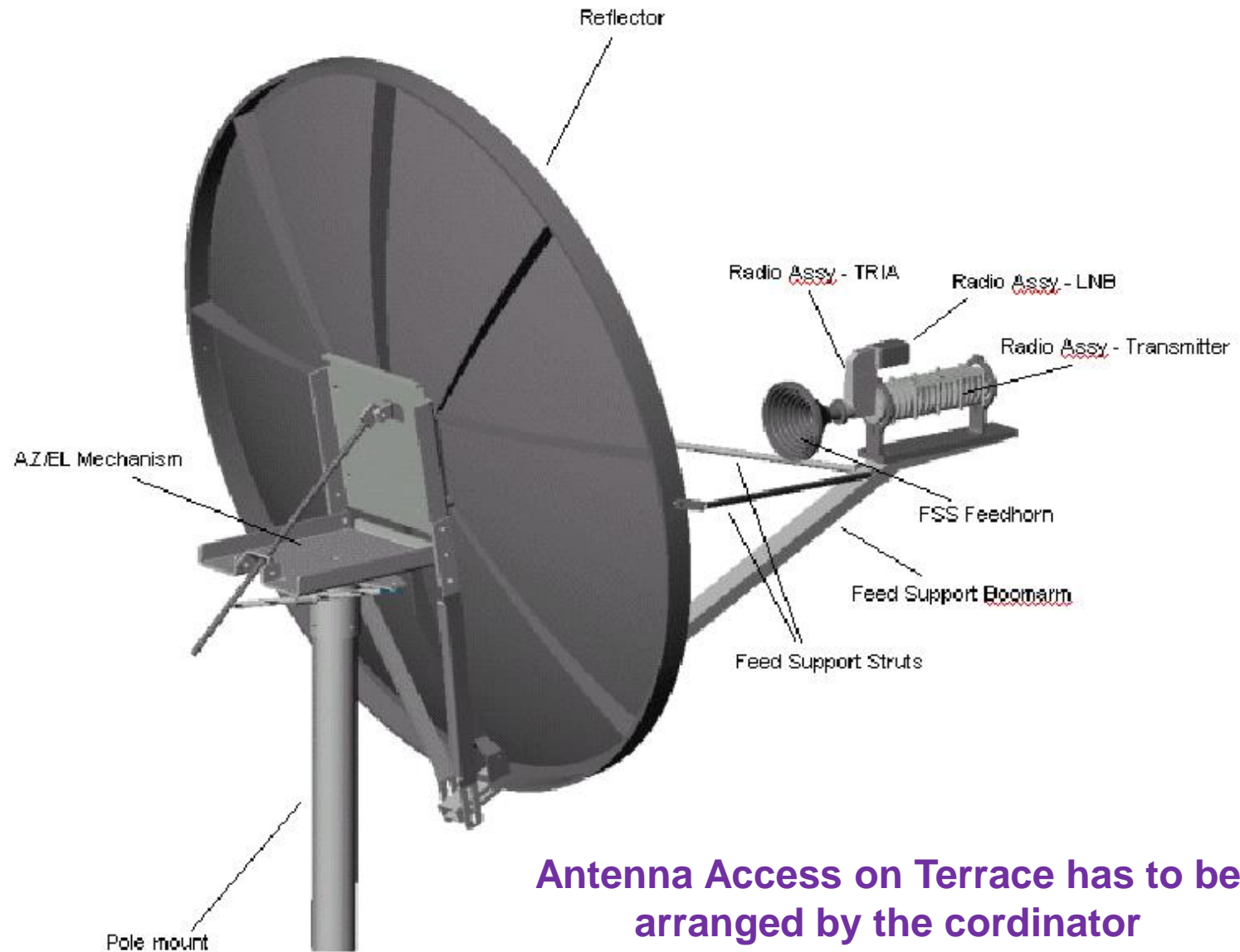
The Hughes HN/HX remote terminals are equipped with the following outdoor equipment:

- Antenna size – 1.2 M circular or bigger is depending on the geographic location where the remote is installed.
- Single Low Noise Block (LNB) that receives data from the satellite.
- A radio to transmit data to the satellite (in satellite return configurations).
- Two RG-11 coaxial cables to interconnect the indoor and outdoor equipment:

The Receive IFL interface on the indoor unit is connected to the LNB via one coaxial cable and receives the modulated satellite signal from the HN NOC.

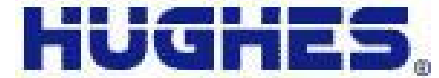
The Transmit IFL interface on the indoor unit is connected to the Radio (RFT i.e Radio Frequency Terminal) via the other coaxial cable and transmits the modulated satellite signal to the HN NOC.

# Satellite Interactive Terminal (SIT Antenna)



**Antenna Access on Terrace has to be arranged by the coordinator**

### 3 IN DOOR UNIT:



The Hughes HN remote terminal is the primary interface point for all remote traffic and therefore embodies all the features and functionality of the Hughes HN System. The optional appliances may be connected to the remote terminal through the LAN interface.

The HN9400 is a high performance broadband satellite router designed for large enterprise, government, and small/medium enterprise (SME) markets. With support for two simultaneous LAN subnets.

#### **The HN9400 has the following physical interfaces:**

Two high-speed 10/100BaseT Ethernet LAN interfaces (RJ-45)

Two IFL connections - Transmit and Receive

LED appearance and there meaning:

- 1) LAN-** The LAN indicator shows whether the LAN is connected and usable, and whether there is receive or transmit activity.
- 2) Transmit -** The Transmit indicator shows whether the remote terminal can transmit or is transmitting, or if some condition is preventing transmission.
- 3) Receive -** The Receive indicator shows whether the remote terminal has acquired the correct outroute, is receiving, or if some condition is preventing reception.
- 4) System -** The System indicator shows whether the remote terminal is operational or not.
- 5) Power -** The Power indicator shows if the remote terminal is powered on and operating normally.

## **4 STUDENT END EQUIPMENTS:**

The followings are the Student end equipments

- Computer
- Video Handy Cam
- Wireless Microphone
- Amplifier & Speakers
- Osprey Card (Installed in the Computer)
- NVidia Card (Installed in the computer)
- Projector & Screen

### **4.4.1 COMPUTER:**

It is used for converting Audio and Video signals in to IP packets. This computer is loaded with Windows X-P Operating system and Trainnet Client License software. It also has a Video Computer card with a VGA Pal converter card fixed in it.

### **4.4.2 VIDEO HANDY CAM:**

The Sony Video handy cam captures the movements & provides the digital video output. It also has the battery back up for a hour. It is used to capture video signals and connected to the Osprey card.

.

#### **4.4.3 WIRELESS MICROPHONE:**

The Mipro wireless microphone gives Balanced (XLR) and Unbalanced (RCA) output. It is for capturing the audio signals.

#### **4.4.4 AMPLIFIERS & SPEAKERS:**

The Bosch amplifier with a set of speakers is used as PA system in room

#### **4.4.5 OSPERY CARD:**

The Osprey Card is used for Video & Audio enhancement.

#### **4.4.6 NVIDIA CARD:**

The nVidia Card converts the VGA output to PAL, so we can connect the TV to view .

#### **4.4.7 Projector:**

It is used to project the monitor on wide screen

## 5.0 SIT SWITCH ON/OFF PROCEDURE



### STEP-1

Press the On/OFF switch to Power ON the UPS, as shown in *figure 1*



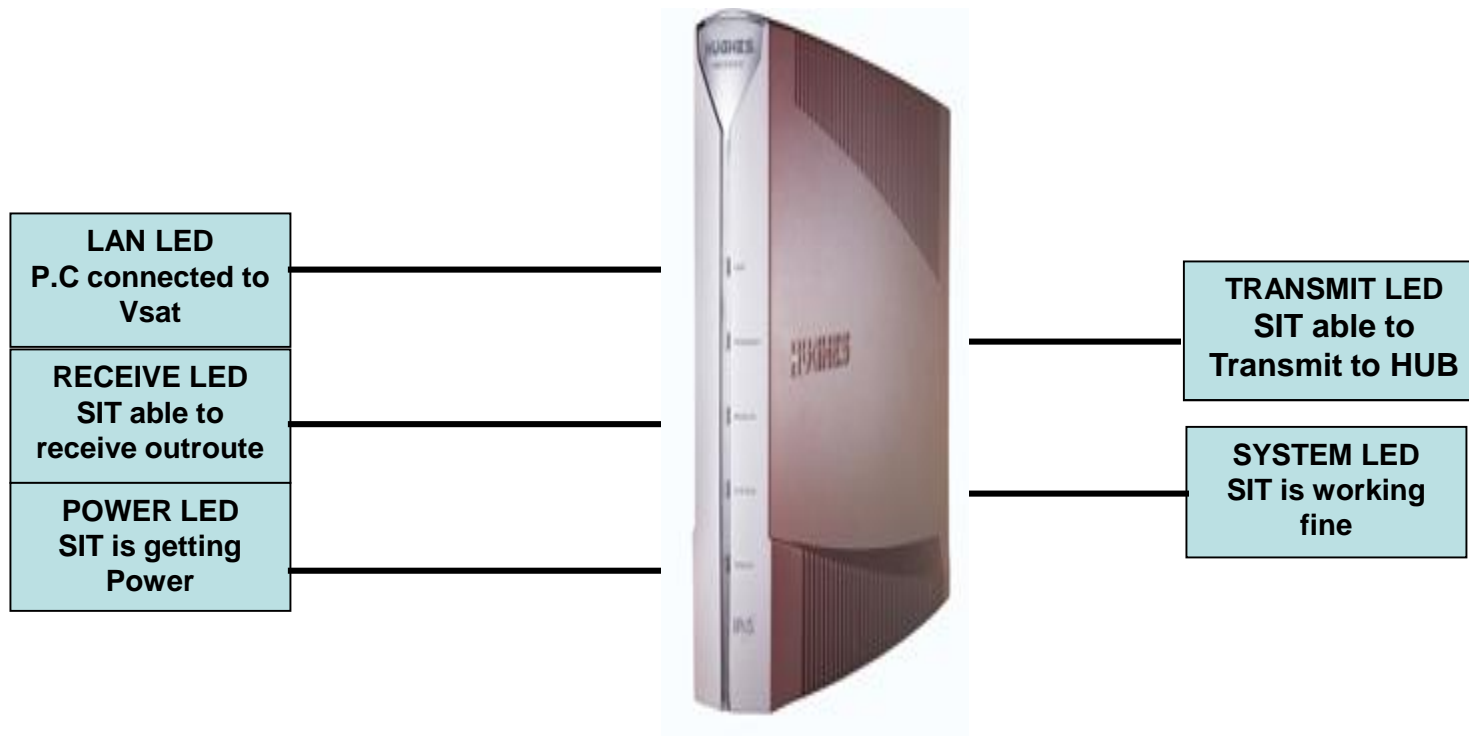
UPS Battery will not covered under AMC

***Figure-1***

## STEP-2

Switch ON the HN9400 modem, wait for 2 minutes & check whether Power, System, Receive & Transmit LEDs are glowing as shown in *figure 2*

**LEDs Should always be blue**



## STEP-3



Press the ON/OFF Switch in CPU & Monitor and check for the Power Indicator glowing as shown in *figure-3&4*. Wait till the computer boots and monitor shows the desktop as per the *figure-4*. Now check for LAN LED in HX50 as shown in *figure-2*.

**Figure-3**



**POWER INDICATOR  
SHOULD BE SWITCHED ON**

**Figure-4**



**POWER INDICATOR  
SHOULD BE SWITCHED ON**

**Don't use this system for any other purpose & Don't use any external connections like Pen Drive /etc**



## STEP-4

Press the ON/OFF Switch & pull down the switch to power on the Video Handy Cam as shown in *figure-5* & check for the Power indicator glowing. Also check the capture of picture as directed in the display as shown in *figure-5*

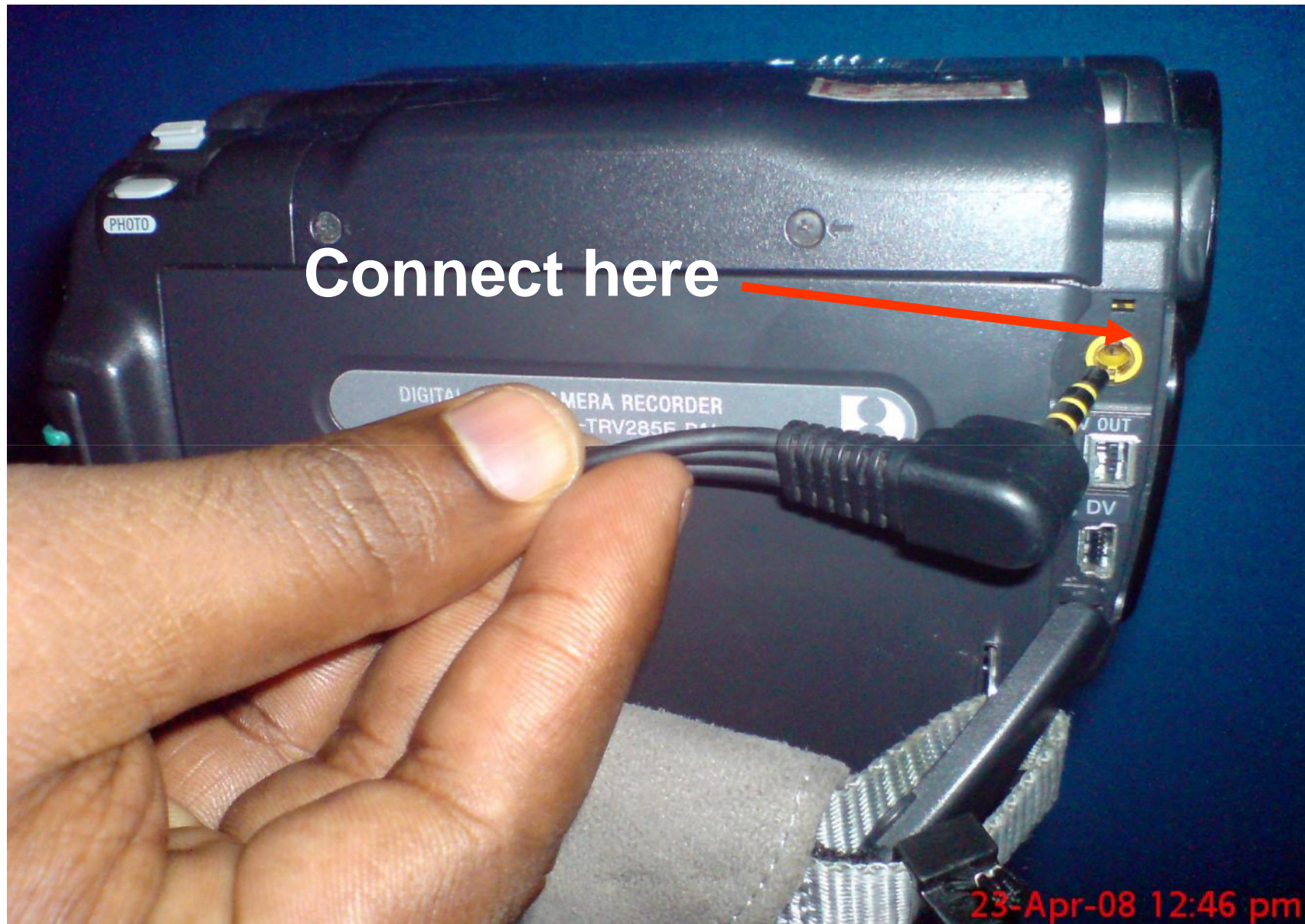


**Figure-5**

***Next slides follows Camera connections***

# Sony camera

HUGHES®





# Sony camera

HUGHES®



Press the Jack  
to connect

23-Apr-08 12:47 pm



**Sony  
Camera  
Backside  
view**

**Power Supply**

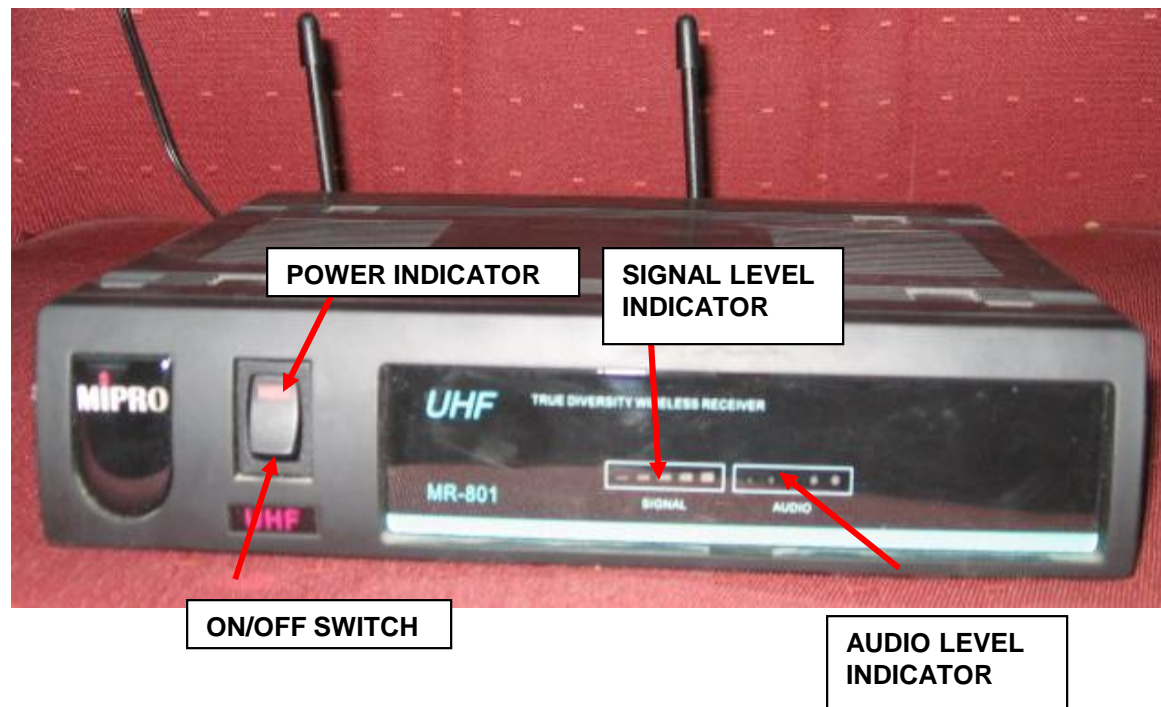


23-Apr-08 12:48 pm

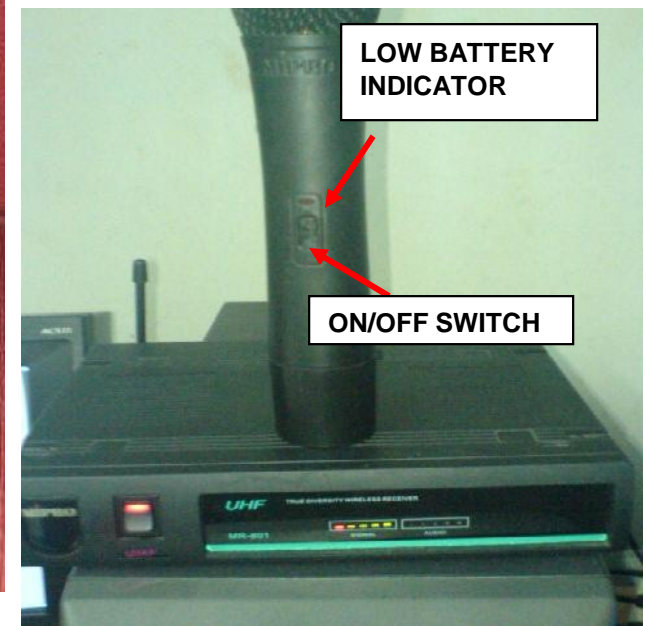
## STEP-5

Press the ON/OFF Switch in the MIPRO base unit as shown in *figure-6* & check for Power indicator glowing. Now switch on the cordless Microphone as shown in figure-7. When switched on the Cordless microphone, the RED LED glows for 3 seconds & drops automatically as shown in *figure-7*.

Now check the Mipro base unit whether all SIGNAL LEVEL LEDs are glowing as shown in *figure-7*. Then speak in cordless microphone & check in the Mipro Base Unit, the variation of AUDIO LEVEL INDICATOR glowing according to your Vocal as shown in figure –7.

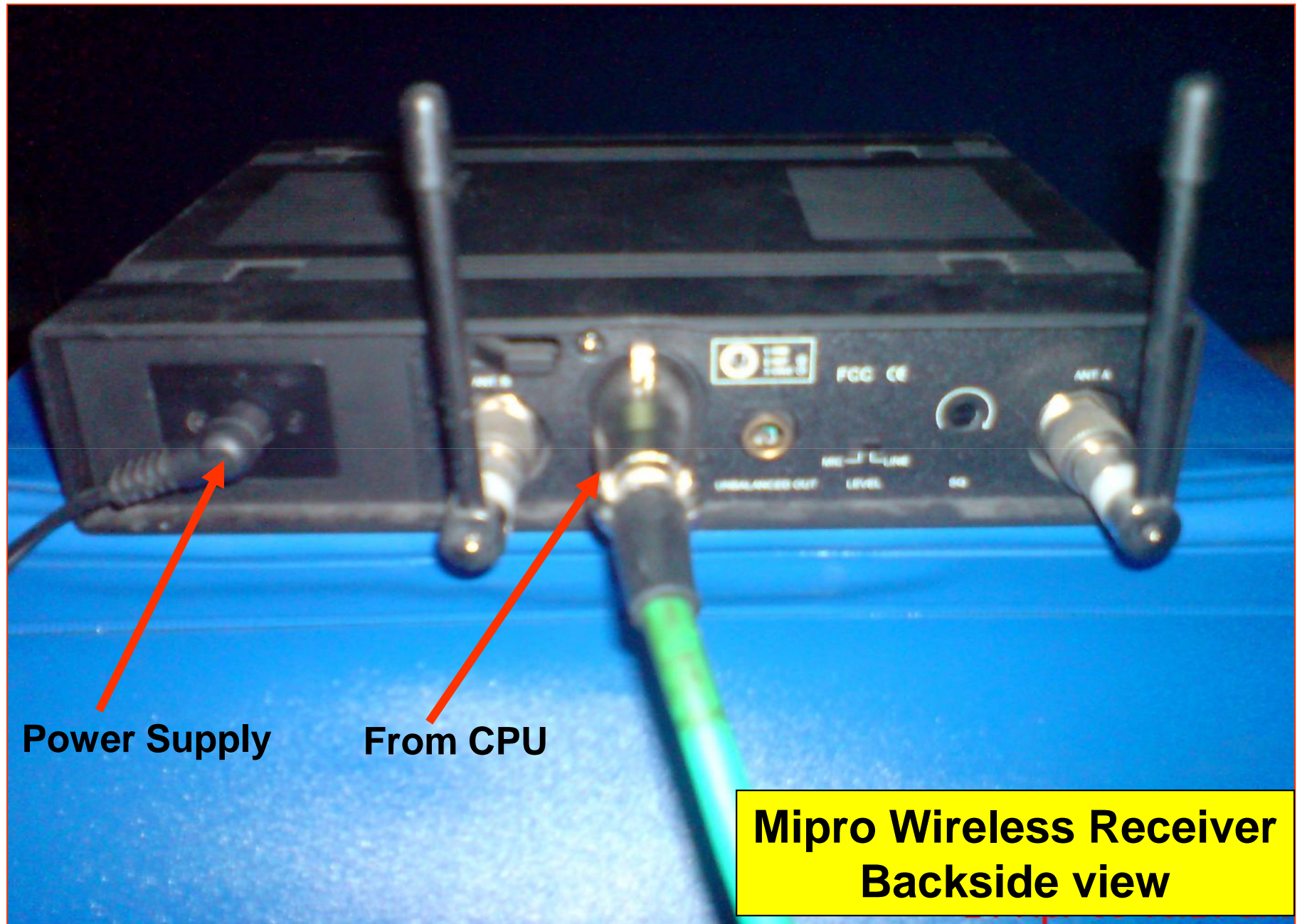


**Figure-6**



**Figure-7**





**Power Supply**

**From CPU**

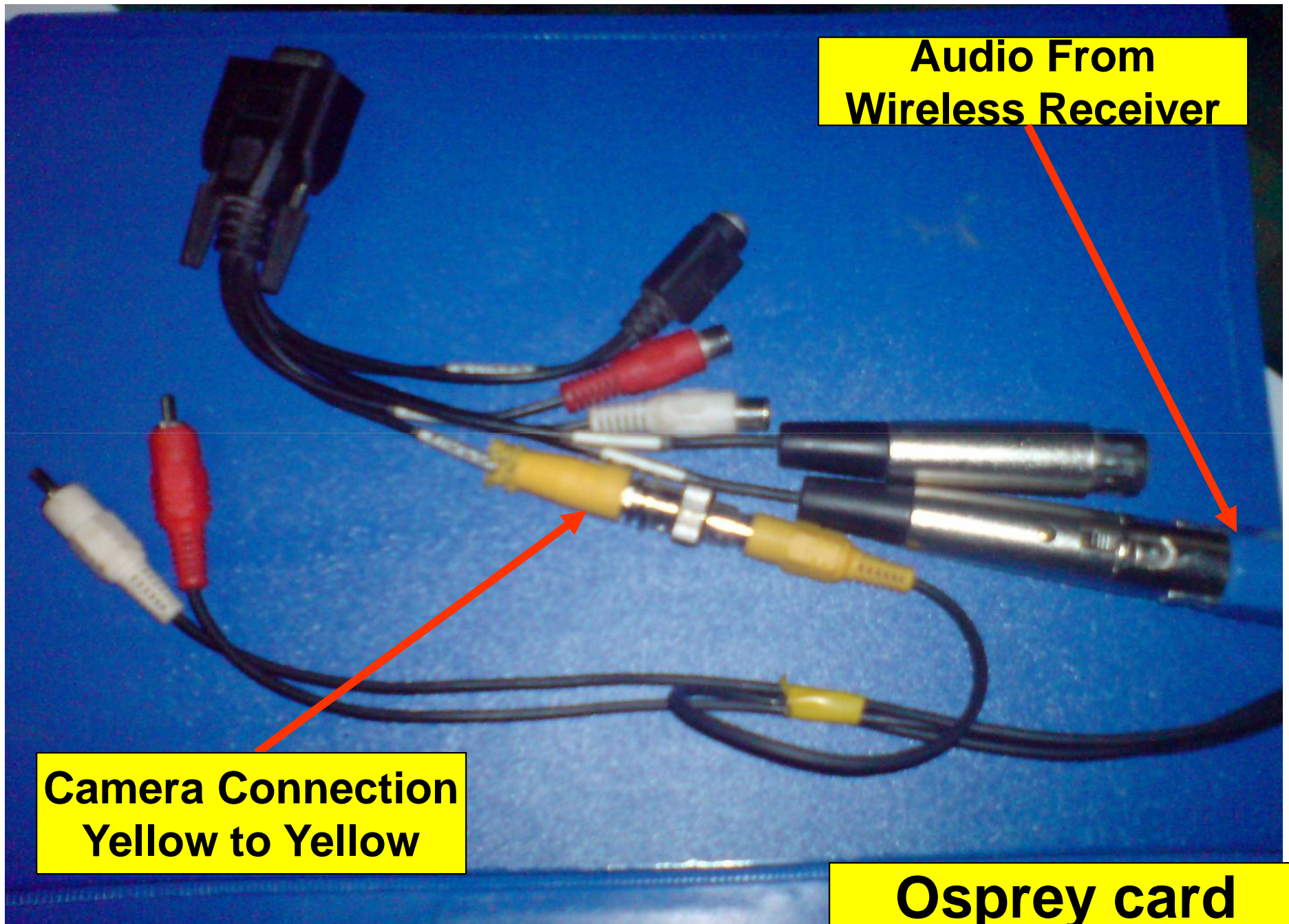
**Mipro Wireless Receiver  
Backside view**



**Audio From  
Wireless Receiver**

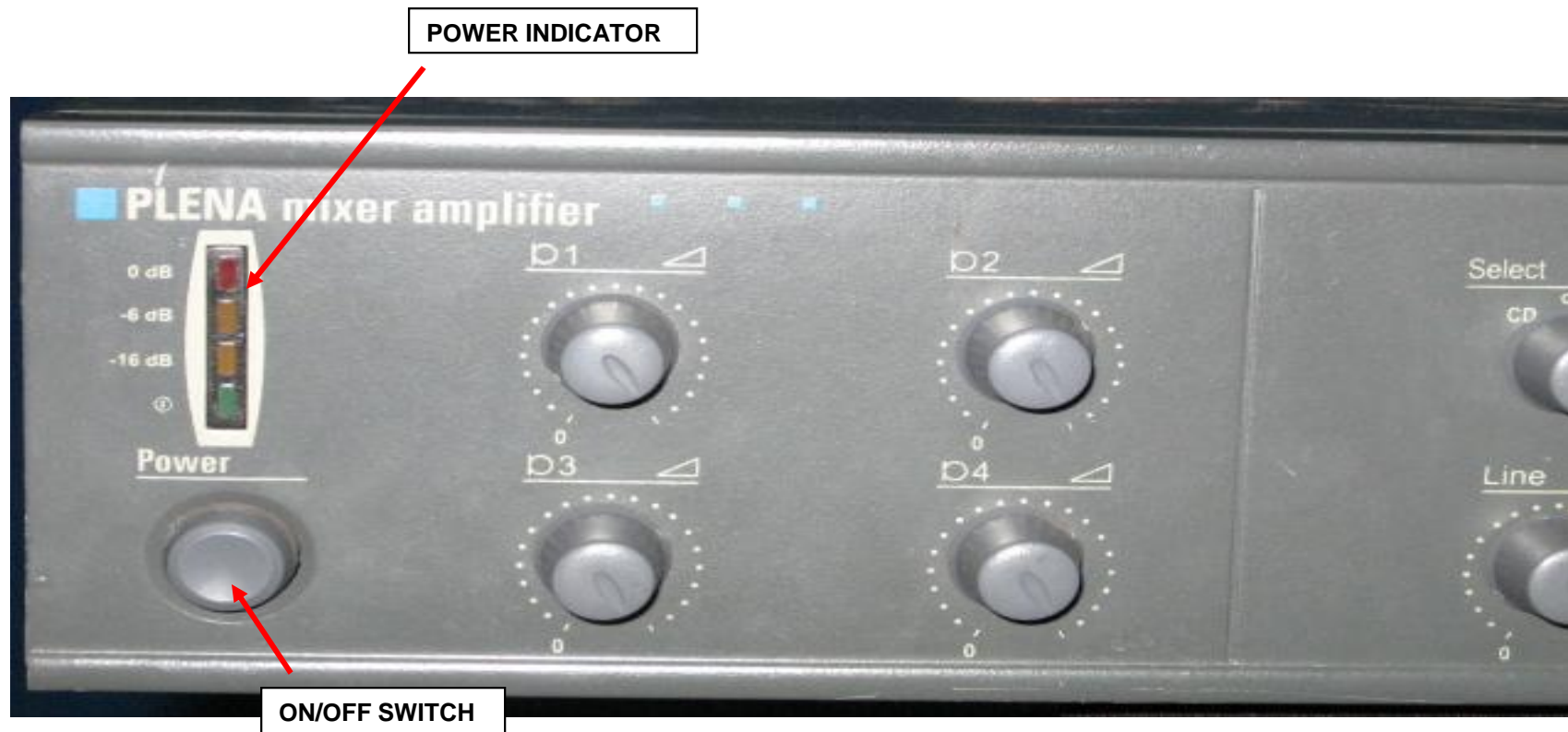
**Camera Connection  
Yellow to Yellow**

**Osprey card**



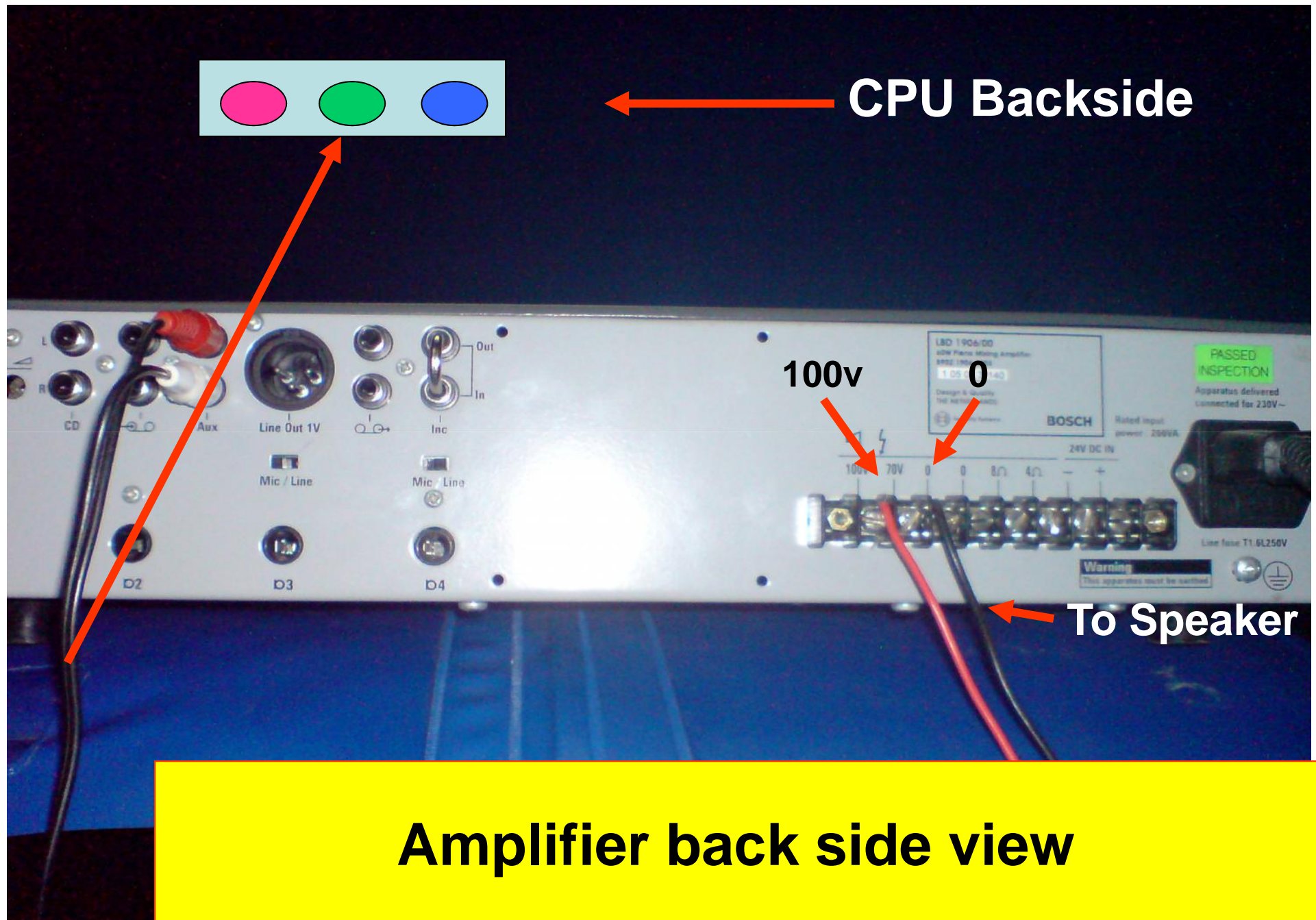
## STEP- 6

Switch on the Amplifier by pressing the ON/OFF switch & check whether the Power LED is glowing in the front panel as shown in *figure-8*



**Figure-8**





## STEP-7

Switch On the Projector by pressing ON/OFF switch at the backside.



ON/OFF Switch

*Figure-9*

## STEP-8

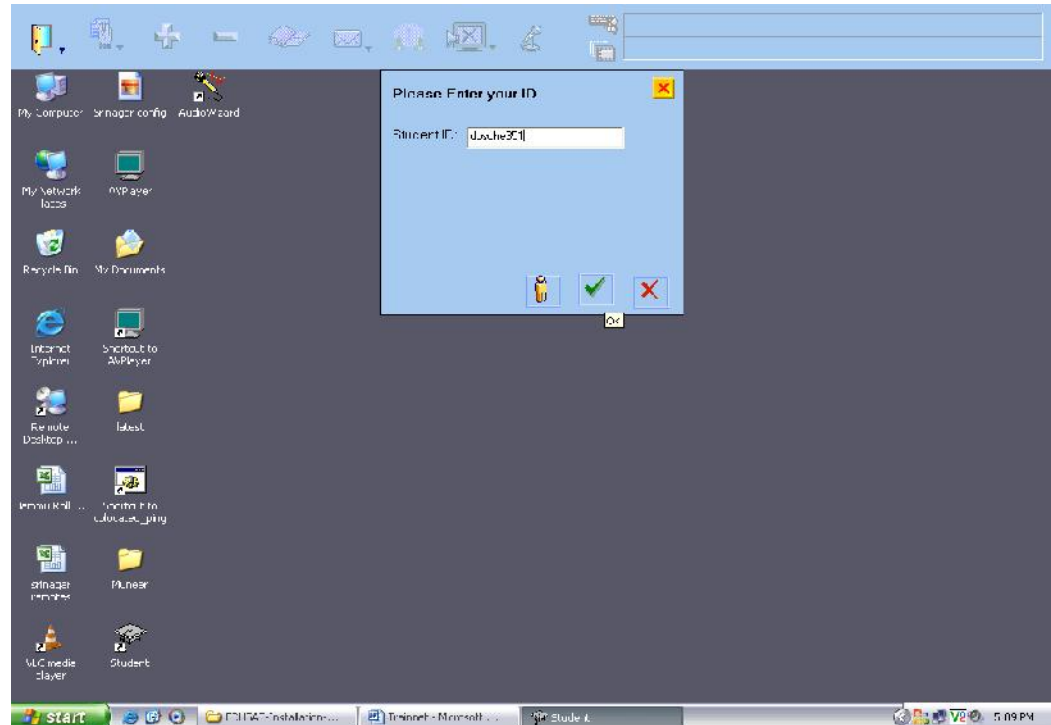
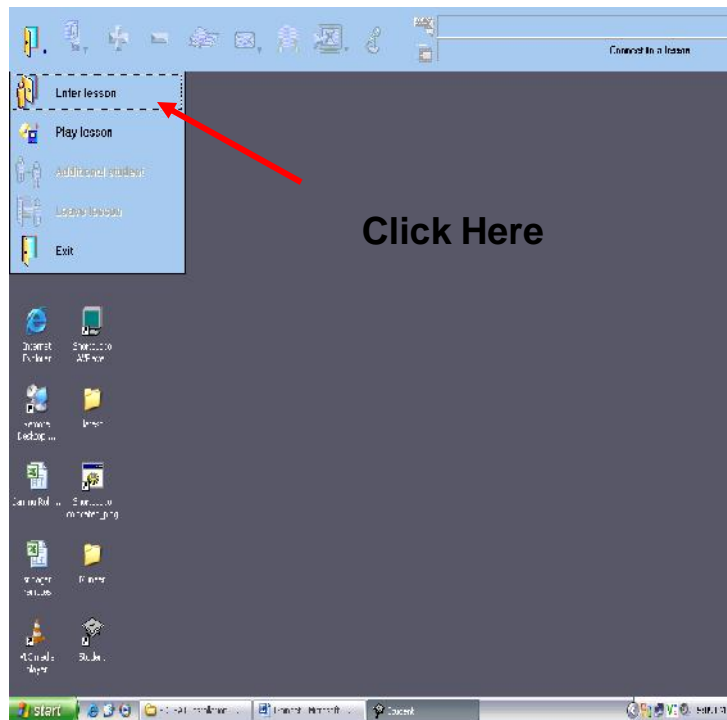
### Launching the student application

For launching the student application double click on the STUDENT icon on the desktop as shown in *figure-10*.



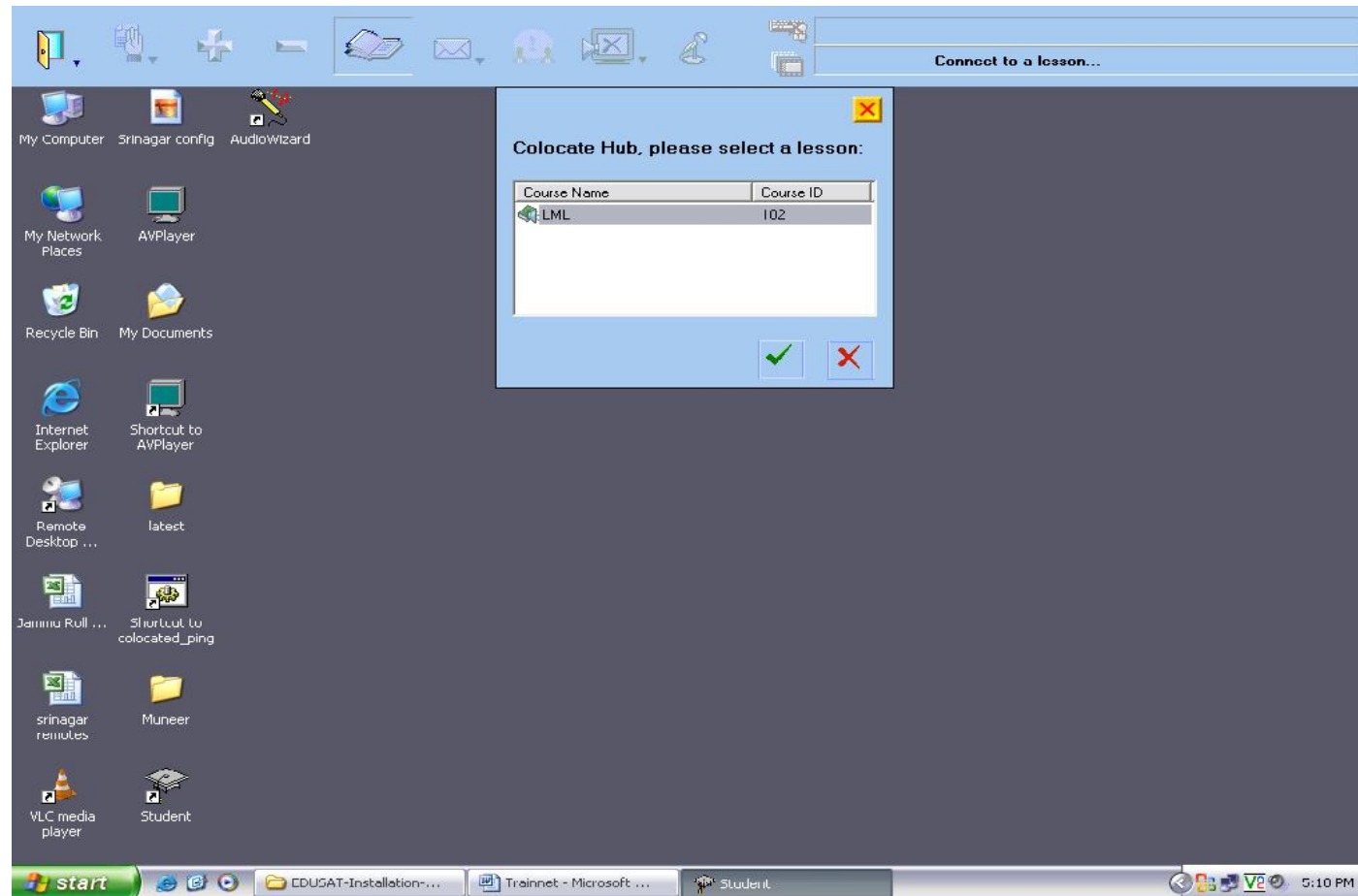
**Figure-10**

## 9. Login with Student ID





# 10. Enter Into Course



## Main Screen

**HUGHES**

The screenshot displays the main interface of the Edusat State Hub. At the top, a blue header bar contains a series of icons for various functions: a folder, a hand, a green plus sign, a red minus sign, a document, an envelope, a speech bubble, a computer monitor, a satellite dish, a printer, and a group of people. To the right of these icons, a text box displays the name "Colocator Mohali attends Hughes". Below the header bar, a white address bar shows the URL "http://192.168.12.10/Courses/LML/EN/welcome.jpg". The main content area is divided into two sections. On the left, a video feed shows a person's face, with a yellow arrow pointing down and a blue arrow pointing up below it. Below the video feed, a chat window displays the name "Abhishek" and a message: "\*\*\* Nickname Colocato is already in use, trying Colocato1 instead! \* Chat room joined". On the right, a large image of a tropical beach with turquoise water and white sand is displayed. Overlaid on this image is the text "WELCOME TO EDUSAT STATE HUB" in a red, serif font.

Colocator Mohali attends Hughes

<http://192.168.12.10/Courses/LML/EN/welcome.jpg>

**WELCOME  
TO  
EDUSAT STATE HUB**

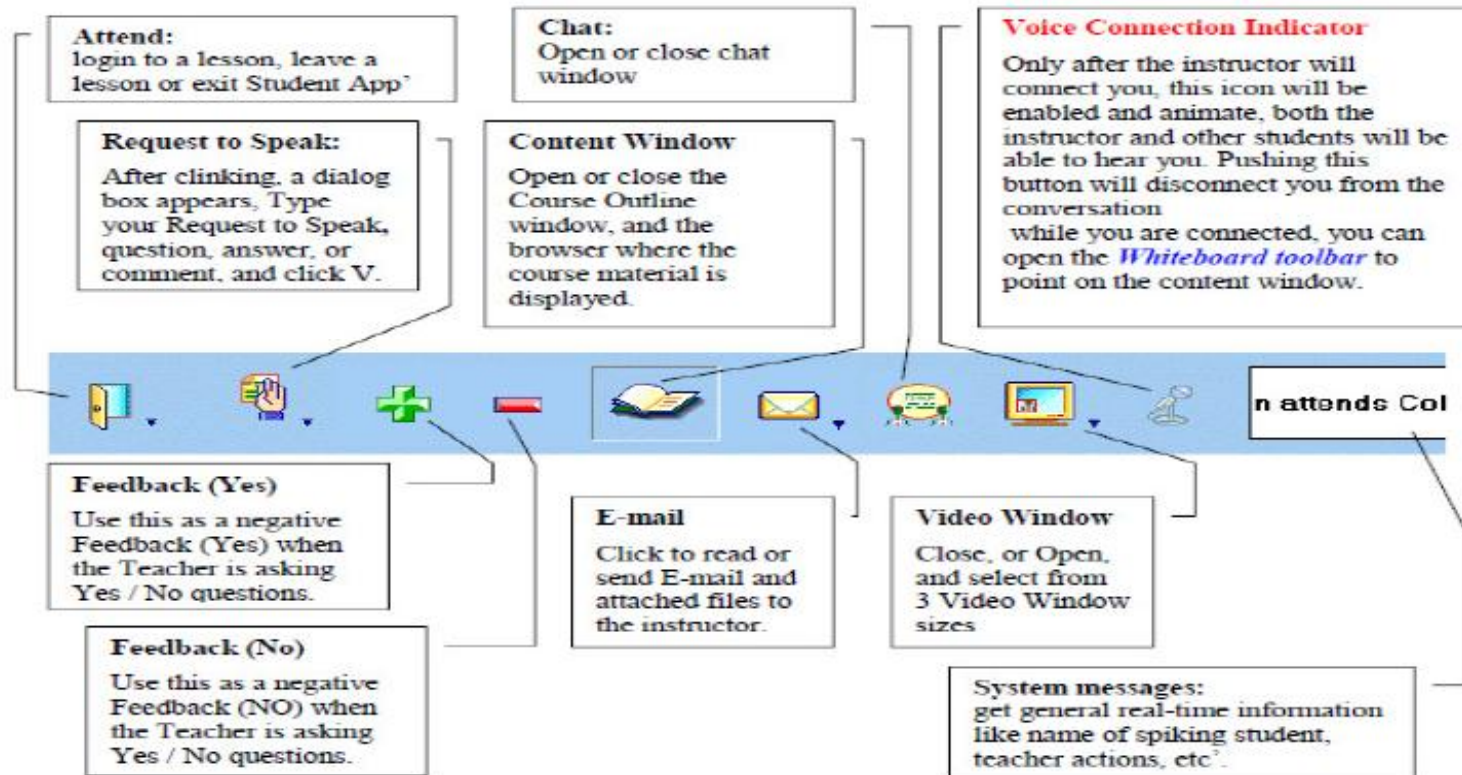
Abhishek

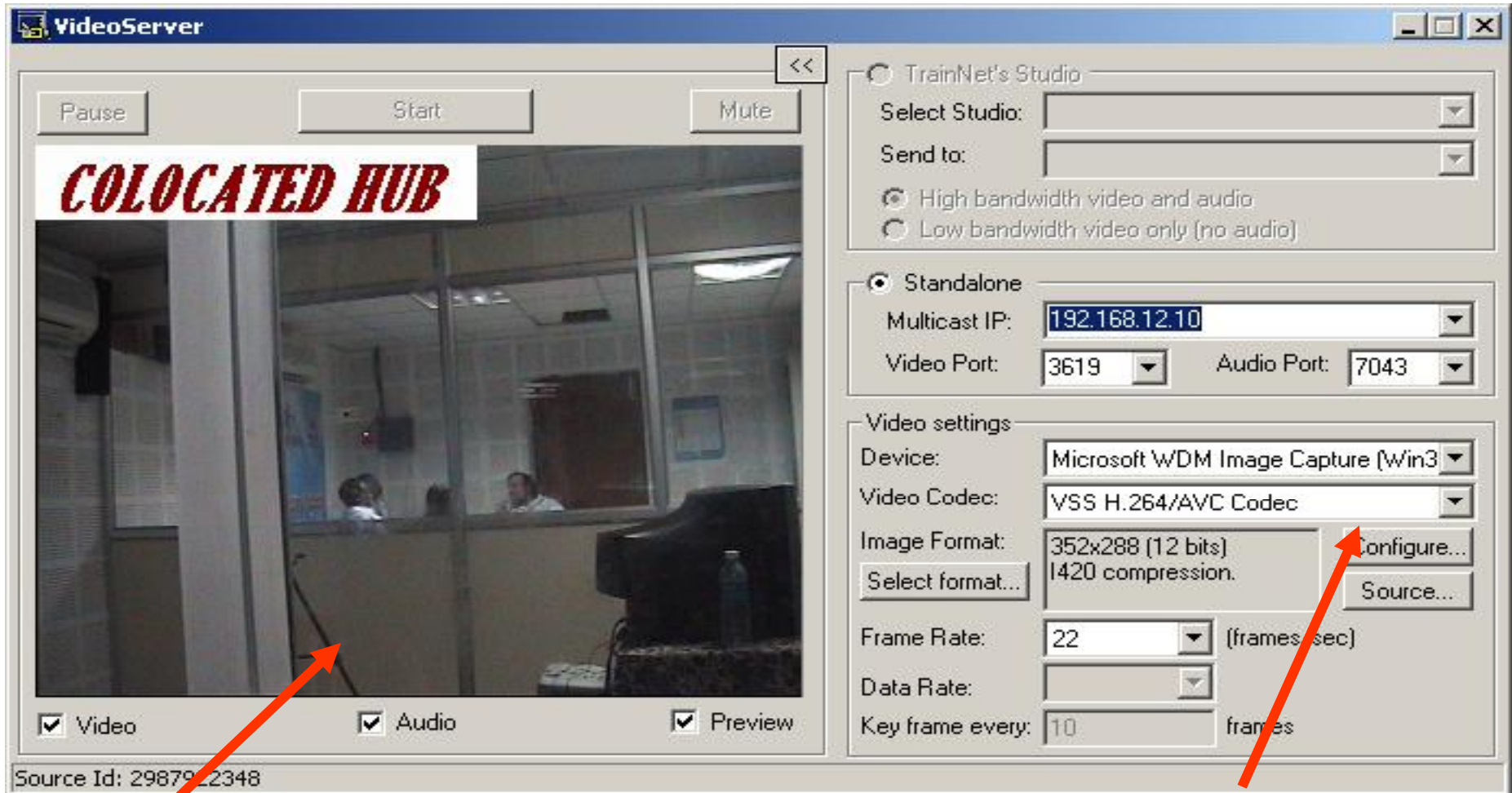
\*\*\* Nickname Colocato is already in use, trying Colocato1 instead!  
\* Chat room joined

Student toolbar options are mentioned in *figure*



## Student Toolbar buttons








**VSS H.264 Codec Settings** [?] [X]

General | Preprocessing | Advanced



**VANGUARD  
SOFTWARE  
SOLUTIONS**

**H.264**

input

material: ☐ progressive ☒ interlaced

☐ disable multi-threading

output

target: ☐ playback ☒ streaming

bitrate, kbps: 384

keyframe interval: 30

☒ scene change detect

codec

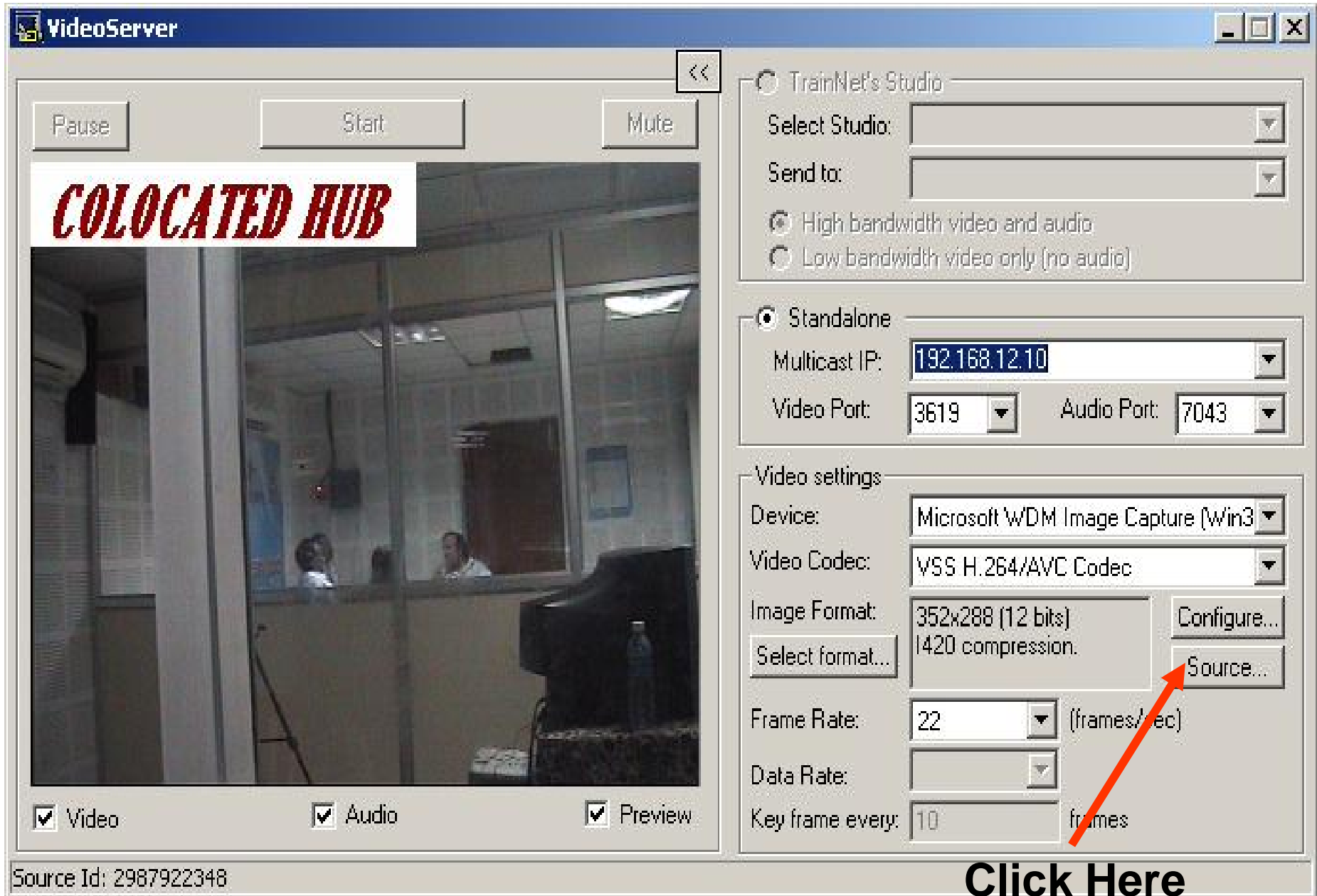
operation mode: 1:maximum speed

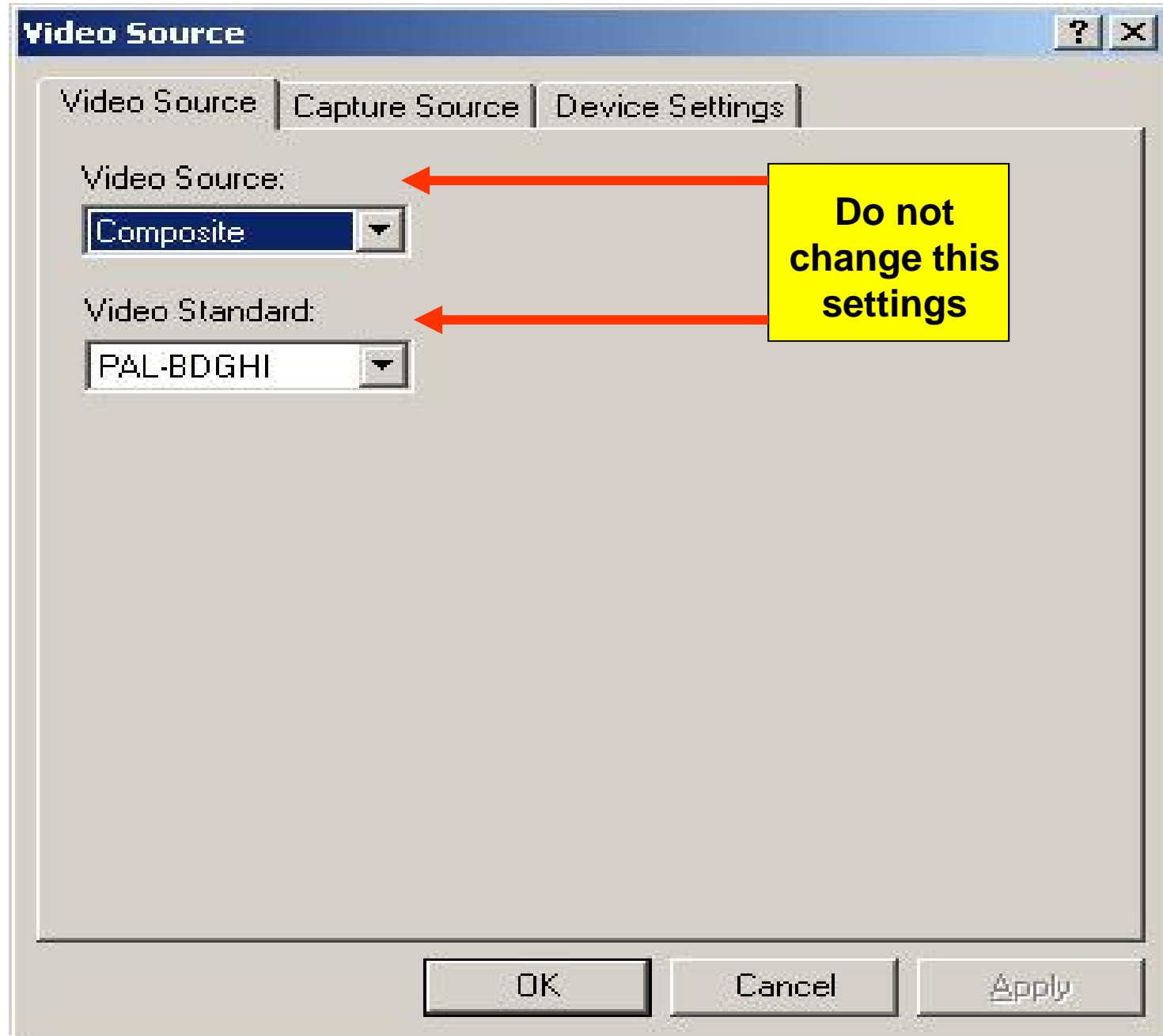
multipass: single pass

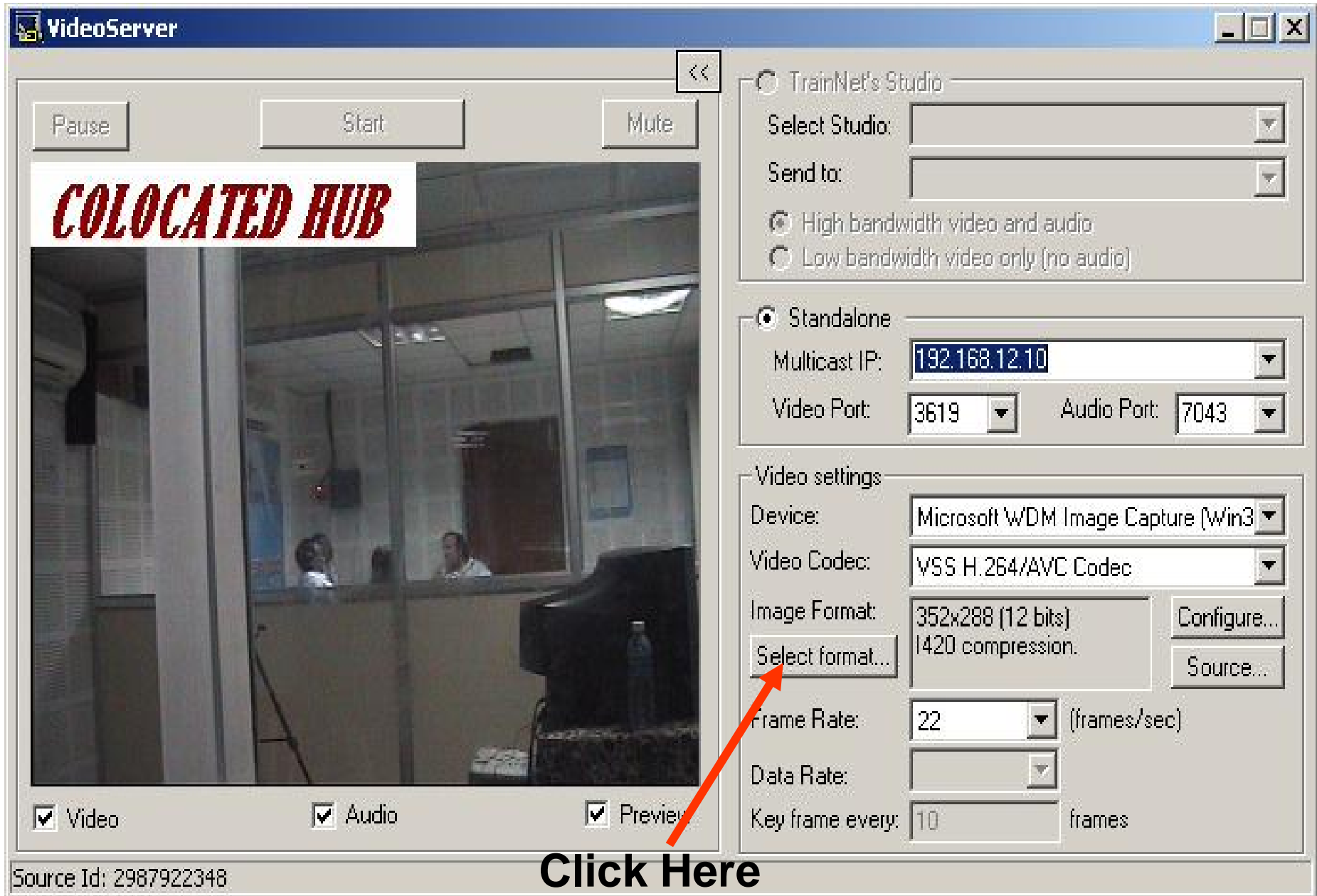
OK Cancel Help

**Do not change  
this settings**

**Do not change  
this settings**







**Video Format** [?] [X]

Stream Settings

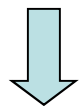
Digital Image Format

Resolution	Pixel Depth (bits) and Compression	Size (bytes)
▼ 352 x 288	▼ 1420	152064

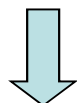
**Do not change this settings**

OK Cancel Apply

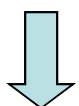
**START**



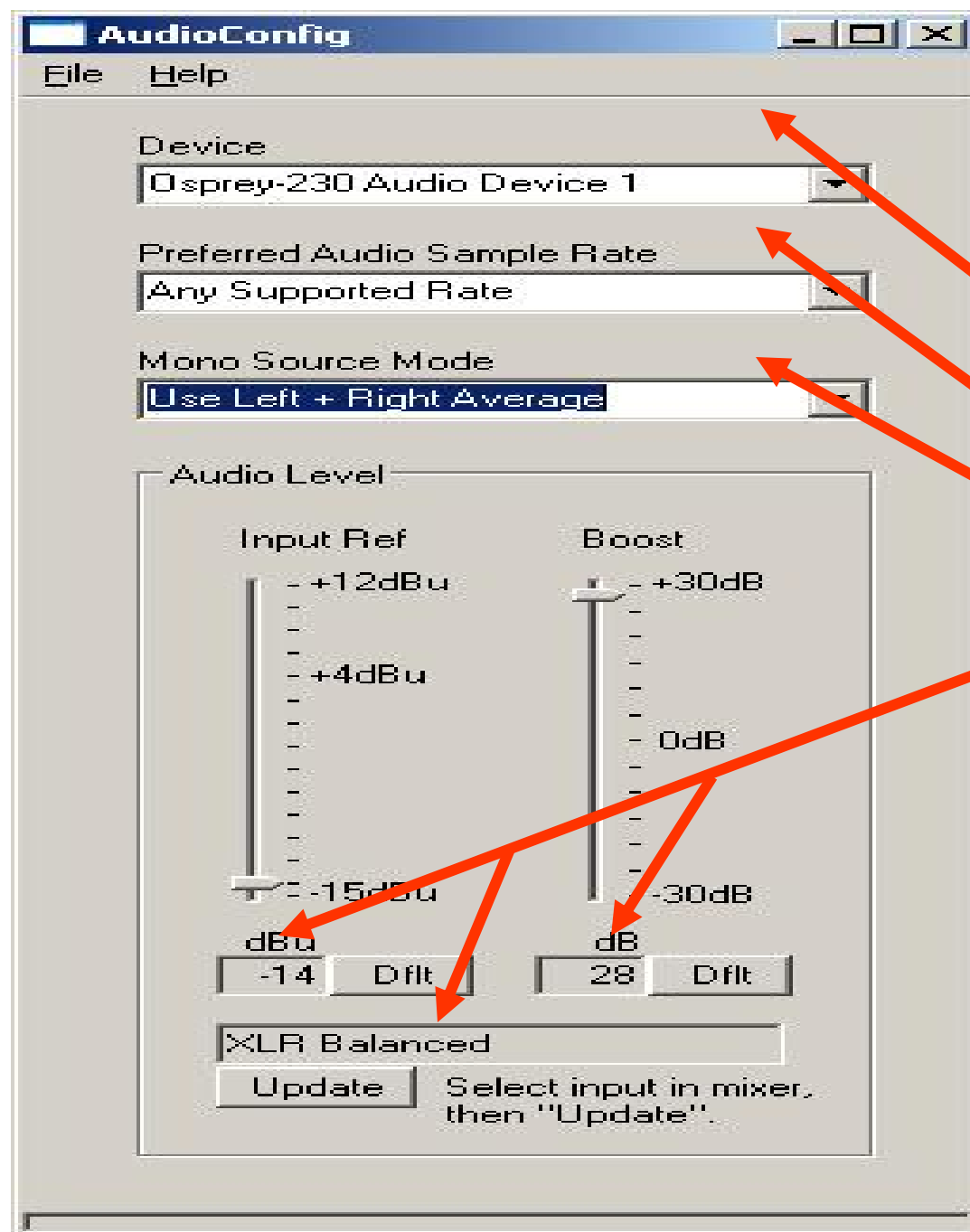
**ALL  
PROGRAMS**



**OSPREY  
MULTIMEDIA  
CAPTURE**



**AUDIO  
CONFIG**



**Do not  
change this  
settings**

To exit from the session see *figure*

**HUGHES**

The screenshot displays the Edusat State Hub interface. At the top, a blue header bar contains a row of icons for various functions: a folder, a hand, a green plus sign, a red minus sign, a book, an envelope, a speech bubble, a computer monitor, a microphone, and a group of people. To the right of these icons, the text "Colocator Mohali attends Hughes" is displayed. Below the header bar, a left sidebar contains a list of options: "Enter lesson", "Play lesson", "Additional student", "Leave lesson", and "Exit". A red arrow points to the "Exit" option. The main content area features a large image of a tropical beach with the text "WELCOME TO EDUSAT STATE HUB" overlaid. Below the image, a chat window shows the name "Abhishek" and a message: "\*\*\* Nickname Colocato is already in use, trying Colocato1 instead! \* Chat room joined."

Colocator Mohali attends Hughes

Enter lesson

Play lesson

Additional student

Leave lesson

Exit

Abhishek

\*\*\* Nickname Colocato is already in use, trying Colocato1 instead!  
\* Chat room joined.

**Click to exit from session.**

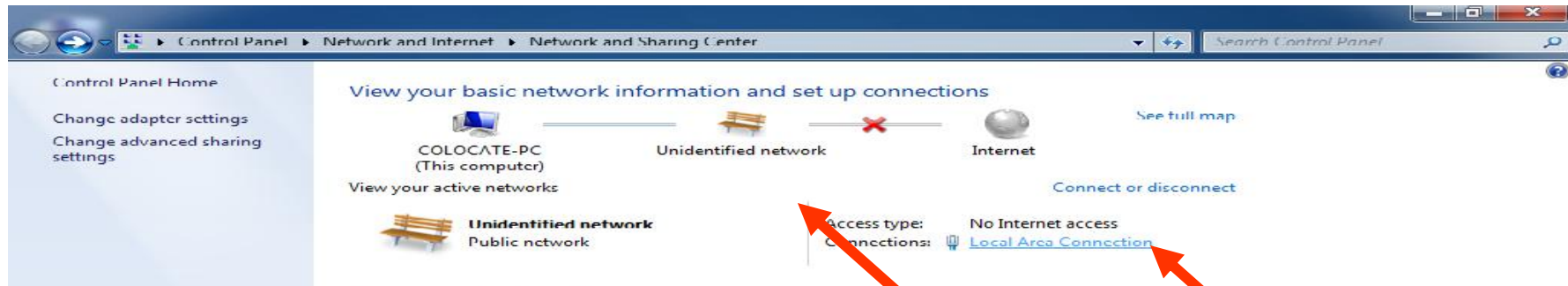
## 6. Troubleshooting Tips

### STEP-1

Using the remote terminal LEDs to troubleshoot:

#### STEP-1.1 LAN LED not glowing:

- i.> Check the LAN cable connected on the backside of the IDU and the PC.
- ii.> Check the LAN card properties of the PC as shown in figure 38.
- iii.> Go on DOS Prompt and check the ping to the gateway ip address by command <ping X.X.X.X> (Replace X with gateway ip address) if it works then check ping 192.168.14.100



LAN connection  
status in normal  
case

LAN details



**STEP-1.2** Receive Led not glowing:

- i.> After Switching ON wait for 20 sec for LED to Come UP.
- ii.> Check the Receive cable on the back side of the IDU.
- iii.> Reconnect the Satellite IN cable connector on the backside of IDU.

**STEP-1.3** Transmit led not glowing:

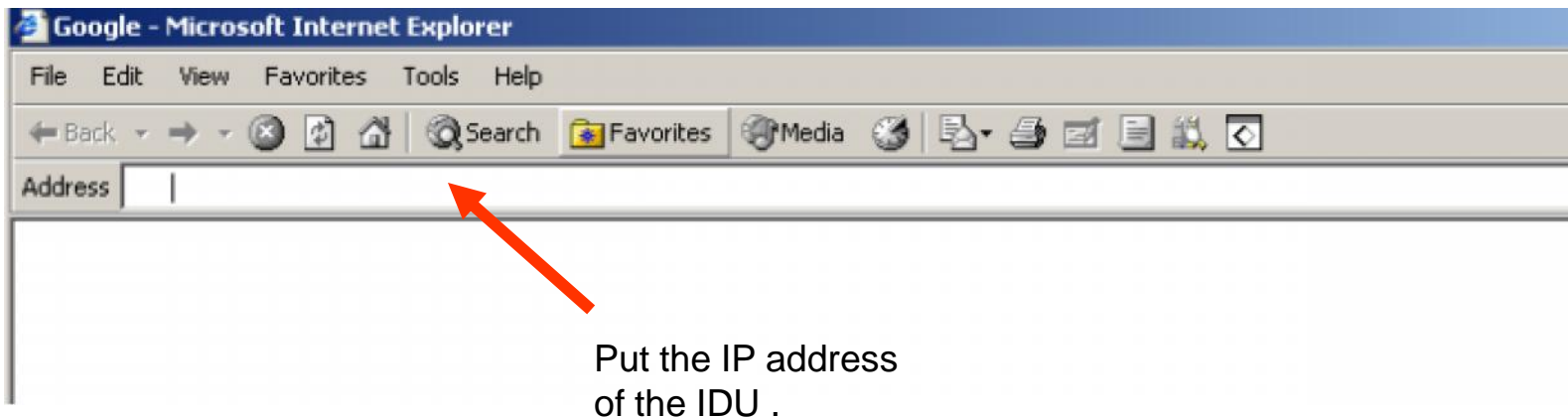
- i> After Switching ON wait for 30 sec for LED to Come UP.
- ii> Check the Transmit cable at the backside of the IDU.
- iii> Reconnect the Satellite OUT cable connector on the backside of IDU.

**STEP-1.4** Power Led not glowing:

- i> Check the Power cable.

**STEP-2**

Using the Web browser open the Internet Explorer and put the IP address of the HX 50 in the browser.



DW7000 System Control Center - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media

Address http://192.168.0.1 Go Links

**DIRECWAY**

System Status Reception Info Transmission Info System Info

OK

Home  
Connectivity Test  
Help

What do these controls mean?

### SYSTEM STATUS

Signal Strength	76
Note: Signal strength is not an indicator of browsing speed. Precipitation can affect Signal Strength. If you do not see a red flag next to any of the status messages on this page, you should be able to browse the Internet successfully.	
Transmit Status	Transmitter ready (TxCode 8)
Receive Status	Receiver operational (RxCode 5)
Software Download Status	All files are up-to-date.
Commission Status	Commissioned [Keys updated]
TCP Acceleration Status	Operational
Web Acceleration Status	Inactive

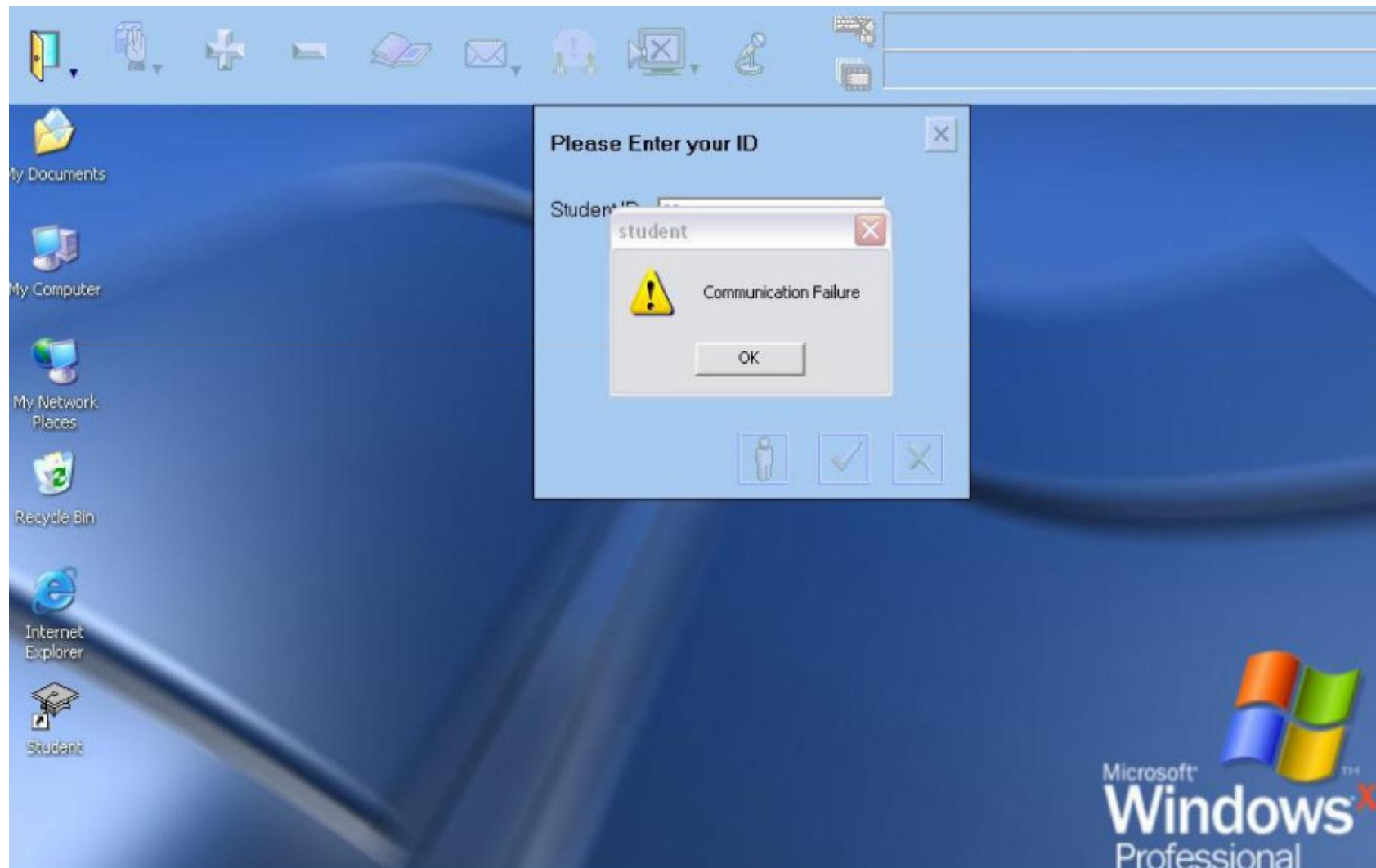
Done Internet

Click to chk the status

In Normal case:  
Signal Strength >  
TX code =8  
Rx code=5

### STEP-3

While logging in the student session if after putting the student ID we get the error as shown in figure the check STEP-1& 2.



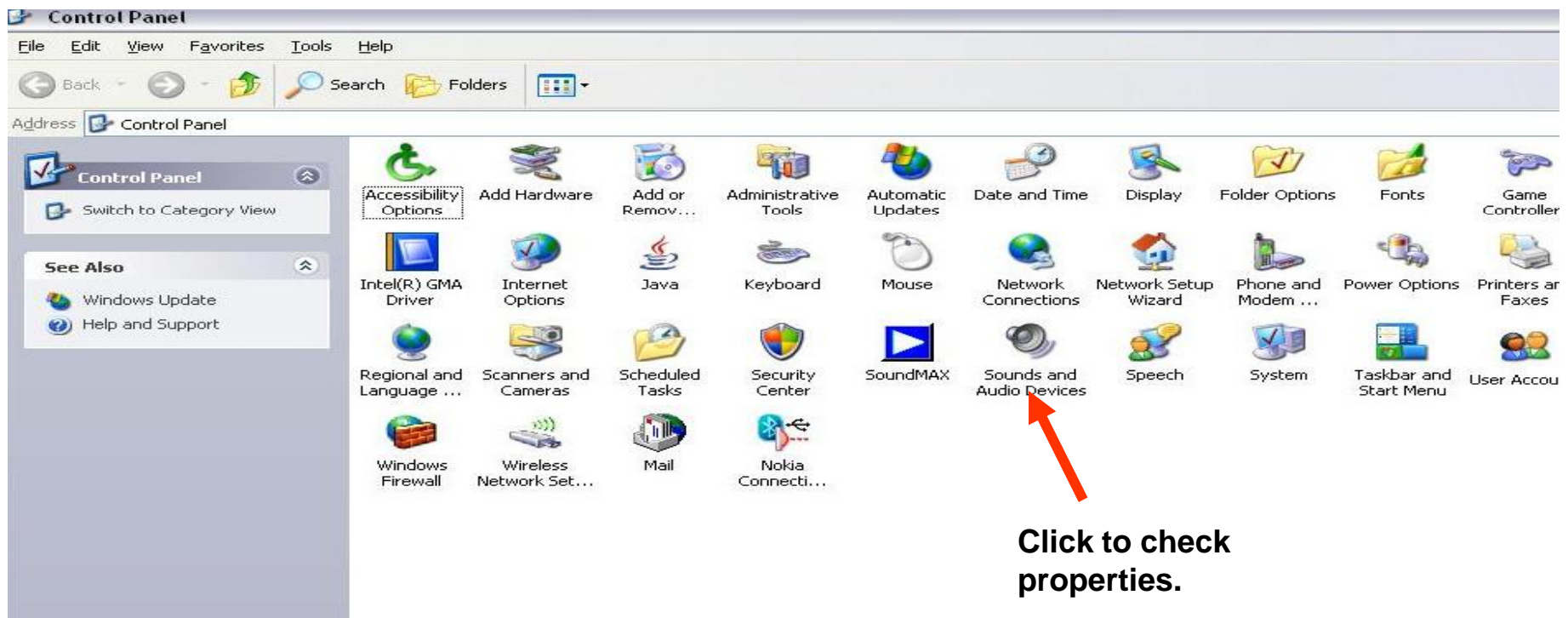
## STEP-4

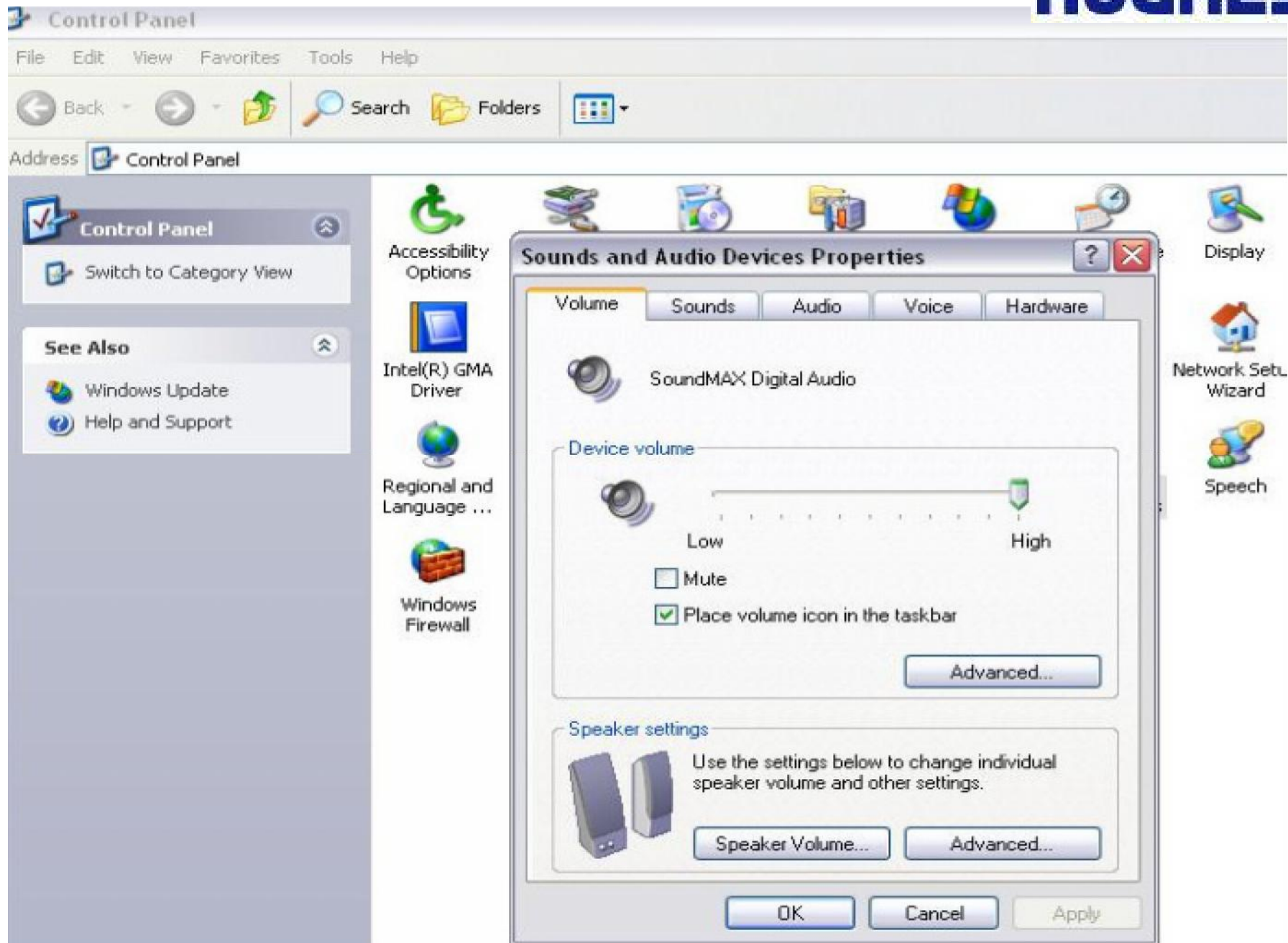
Audio problem:

4.1> Check the audio video connections, amplifier as per the connection details.

4.2> If the Signal level indicator light of the MIPRO base unit is not glowing and audio is not reaching the far site then change the battery of mic.

4.3> Open control panel screen and select as shown in below figure







## Control Panel

File Edit View Favorites Tools Help

Back Forward Stop Search Folders

Address Control Panel

**Control Panel**

Switch to Category View

**See Also**

- Windows Update
- Help and Support

Accessibility Options

Intel(R) GMA Driver

Regional and Language ...

Windows Firewall

### Sounds and Audio Devices Properties

Volume Sounds **Audio** Voice Hardware

**Sound playback**

Default device: SoundMAX Digital Audio

Volume... Advanced...

**Sound recording**

Default device: Osprey-230 Audio Device 1

Volume... Advanced...

**MIDI music playback**

Default device: SoundMAX Wavetable Synth

Volume... About...

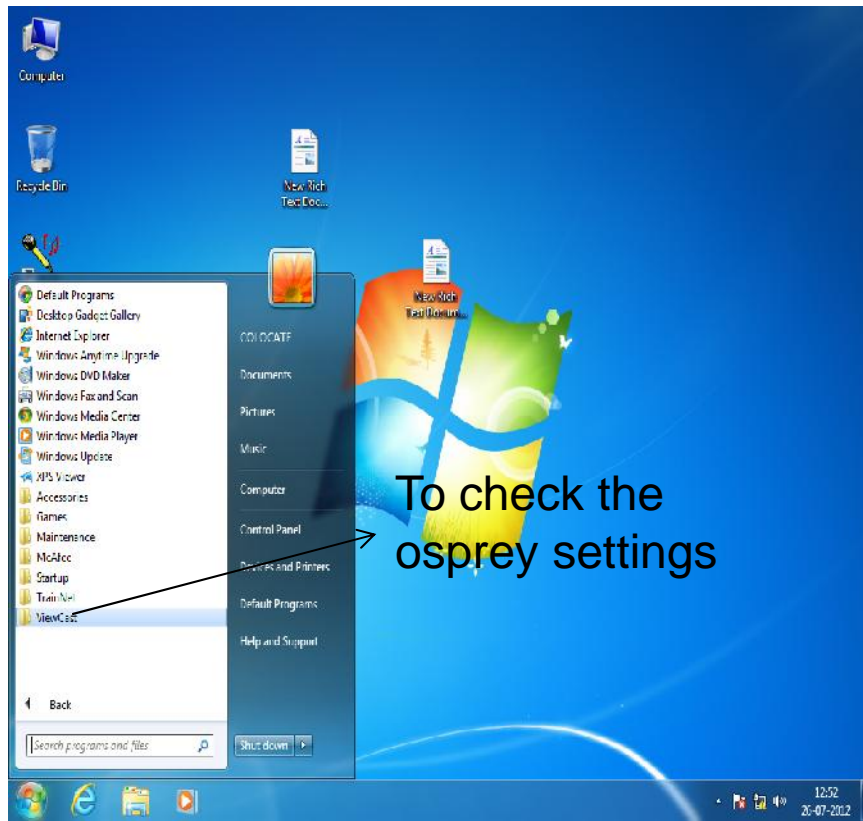
☐ Use only default devices

OK Cancel Apply

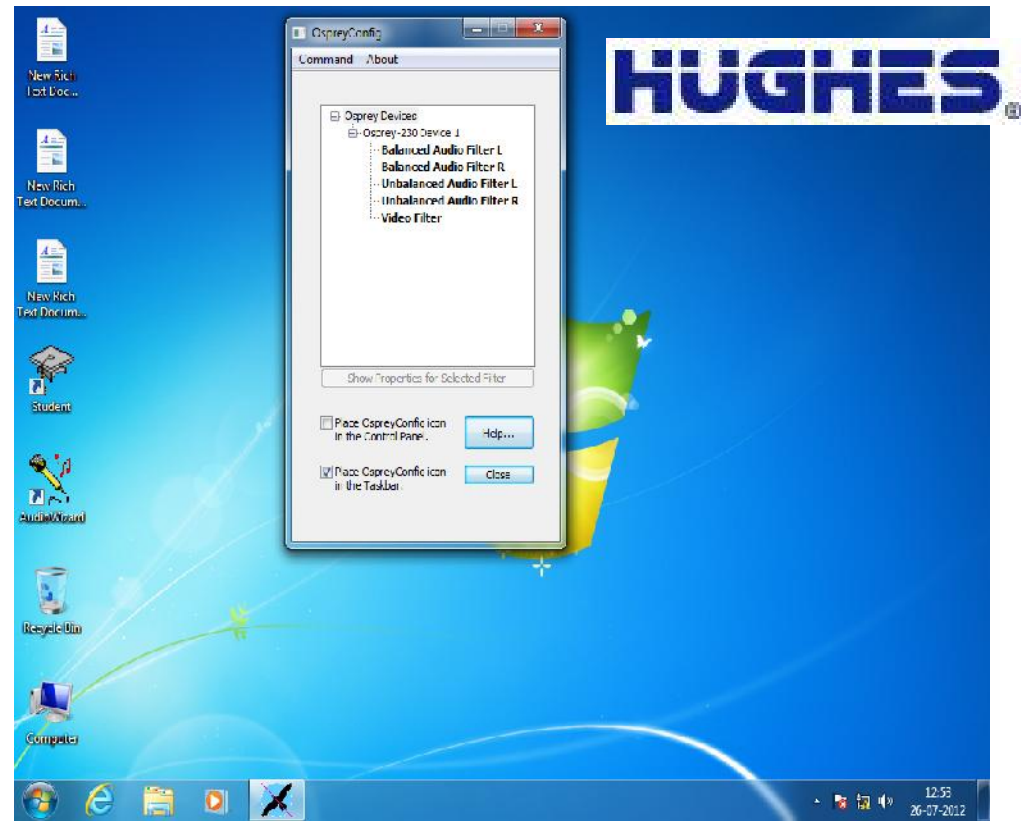
Displ.

Network Wiza

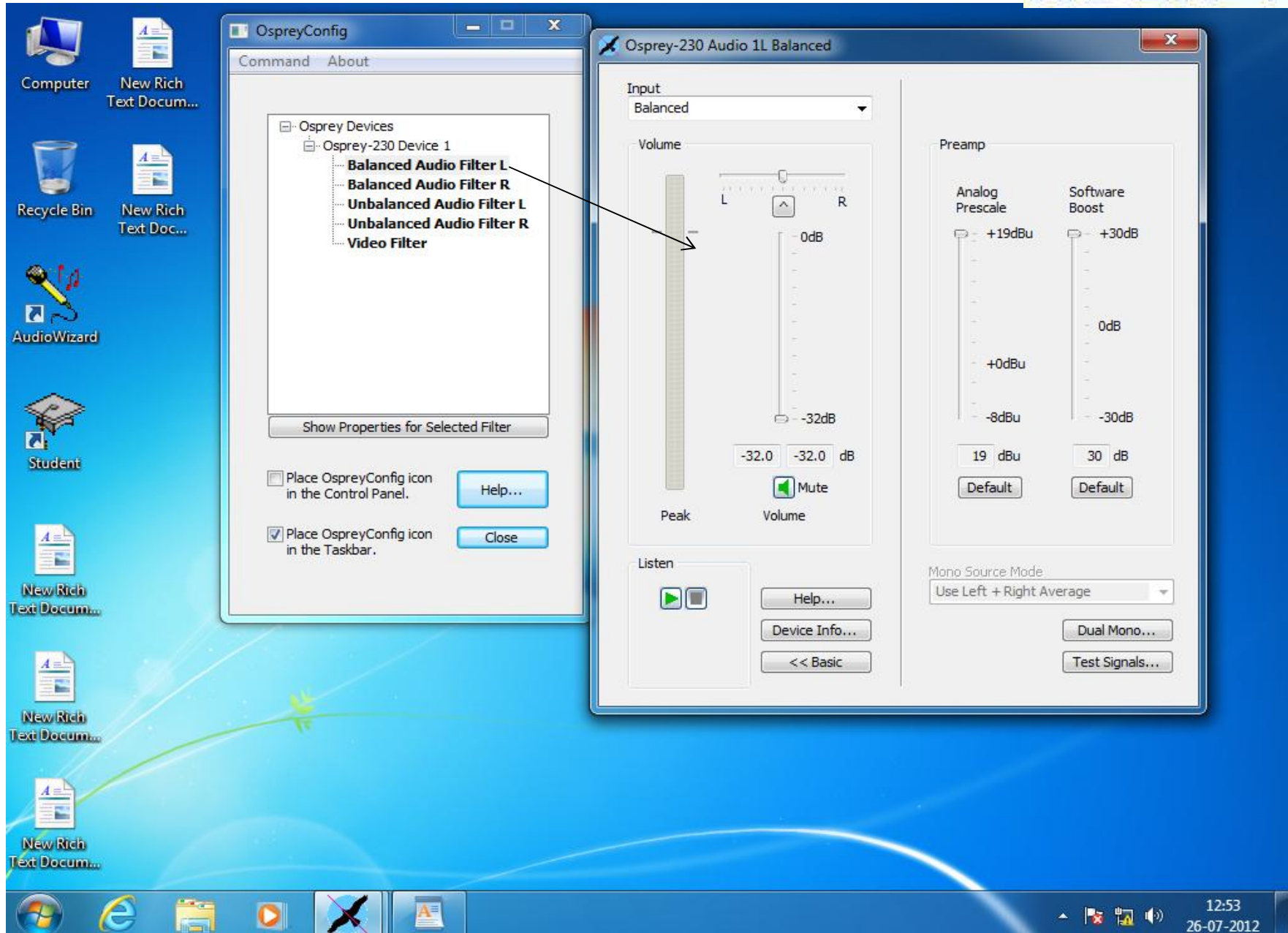
Spee



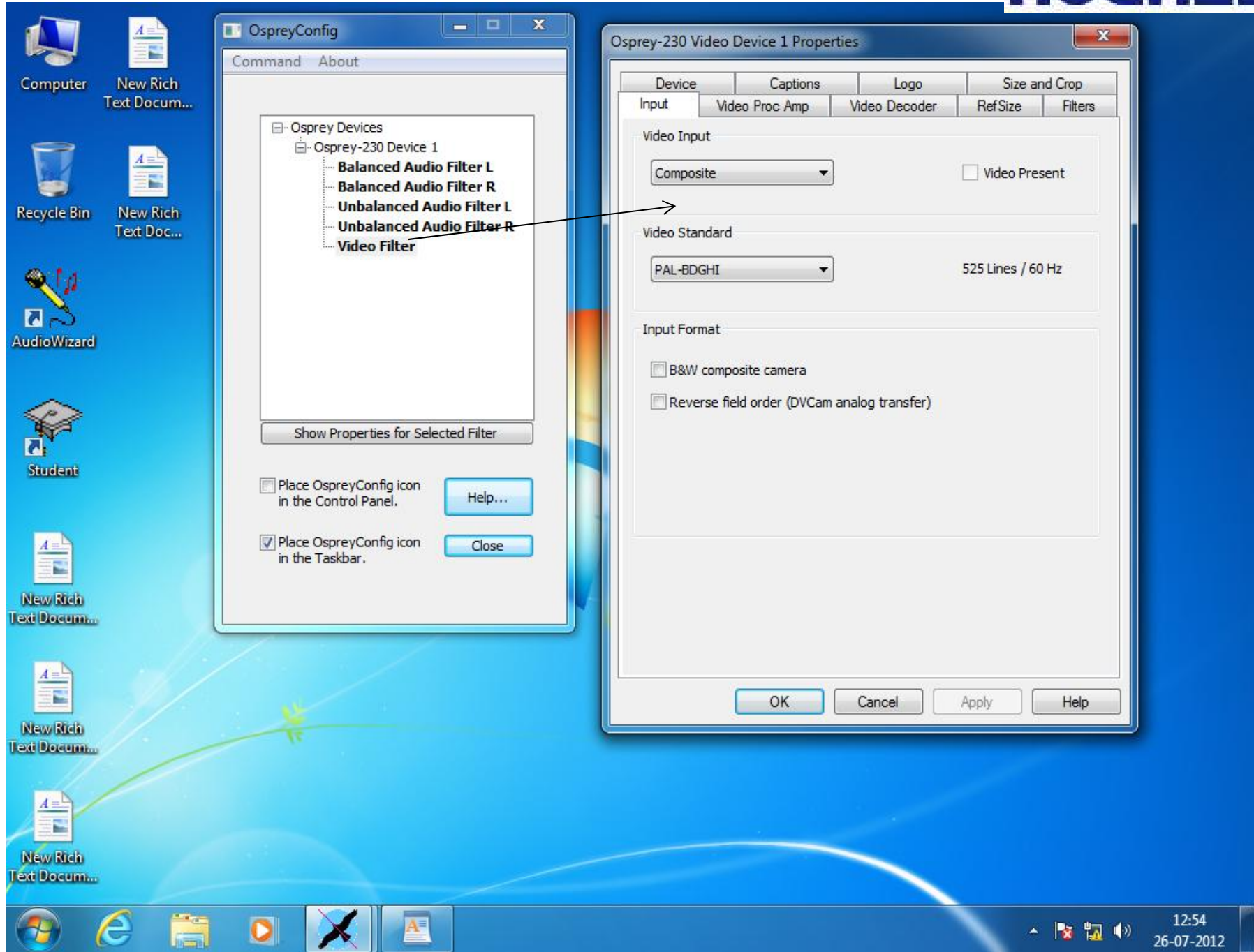
To check the osprey settings



**Check Osprey Card settings**







**HUGHES**



# DOs



- **Maintain the Room Temperature.**
- **Use On line UPS.**
- **Good Quality Earthing to be maintained.**
- **Dust free environment to be maintained**
- **Sufficient air circulation & access to IDU be there**
- **Switch on the VSAT first and switch on other accessories**
- **Follow the Switch on Sequence strictly**
- **Report any Problem related to any equipments to Hub**
- **While doing so report full Problems and complete observations to Hub**
- **Use the Computer only for VTU live interaction applications**
- **Illuminate the Class Room such that faces of the participants are clear visible**
- **Switch ON the Mic only when you want to speak**
- **Log all activities related to equipment failures & Engineer visits in a Log Book**
- **Sign all Site Visit Reports of HCIL Engineer visits to site after proepr understanding**
- **In case of External Power failure off the systems with in 20 minutes**
- **Allow authorized and Trained People only to operate the system.**
- **Remove batteries from mic when not in use for longer duration to avoid damage  
Due to leakage.**

# DON'Ts



- Do not Switch on the VSAT immediately after switch off.
- Do no Move the IDU after installation.
- Do not keep any article on IDU.
- Do not obstruct the air vents in front of the IDU.
- Do not Keep any copier / Printer in IDU room.
- Do not Use air cooler (water) for cooling.
- Do not Bend IFL cable
- Do not use the PC for any other application
- Do not do any local servicing of the equipments
- Do not make any direct sun light or reflection through the window to fall on the face of Students
- Do not shift the equipments from one place to another with out HCIL Eng
- Do not load any software programs on the PC
- Do not keep your Mic ON all the time. Switch off as soon as you Complete your question
- Do not abruptly switch off the Computer and Projector. Follow the Shut down sequence

## Call Escalation:

If you are facing any problems with your system or set up Kindly give a call to the hub engineer (Mr. Vamsi krishna –M +91 9241217092)  
Hub engineer will troubleshoot from hub end .  
If problem is not solved from Hub, he will log a call for the concerned part of system .  
Field Engineer will visit the site,

If there is any problem with the parts / equipments , it will be replaced in accordance with AMC regulations.

You have to check and verify the details before signing service report .

Any differences should be discussed with engineer and sorted out as this report will be used as documentary proof for commercial purposes if required for problems not covered under AMC.

If needed college has to approve the quotations for the items not covered under AMC .



THANK  
YOU

