Republic of Rwanda
Ministry of Education

RTB | RWANDA TVET BOARD

# TELECOMMUNICATION RECEPTION SYSTEM INSTALLATION

## ETETS302 Install Telecommunication Reception System

## Competence

**RQF Level:** 3

**Learning Hours** 40

**Credits:** 4

**Sector:** Technical Services

**Trade:** Electronics and Telecommunication

**Module Type:** Specific

**Curriculum:** TSVETE301 – TVET Level 3 in Electronics and Telecommunication



**Issue Date: April 2022**

<table>
<tr><td>Purpose statement</td><td colspan="5">At the end of this module, the trainees will be able to conduct site survey, identifying tools, materials and equipment required, choosing placement of antenna, taking necessary measurements and estimating the installation budget<br><br>They will also be able to install TV receiver, perform antenna positioning for maximum signal reception and configure the TV receiver and Decoder.</td></tr>
<tr><td>Learning to be assumed in place</td><td colspan="5">Basics of telecommunication fundamental, Basics of electronic, SHE</td></tr>
<tr><td rowspan="6">Delivery modality</td><td colspan="2">Training delivery</td><td>100%</td><td colspan="2">Assessment</td><td>Total 100%</td></tr>
<tr><td colspan="2">Theoretical content</td><td>30%</td><td rowspan="4">Formative assessment</td><td>30%</td><td rowspan="4">50%</td></tr>
<tr><td colspan="2">Practical work:</td><td rowspan="3">70%</td><td rowspan="3">70%</td></tr>
<tr><td>● Group project and presentation</td><td>20%</td></tr>
<tr><td>● Individual project /Work</td><td>50%</td></tr>
<tr><td colspan="3"></td><td colspan="2">Summative Assessment</td><td>50%</td></tr>
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## Elements of Competency and Performance Criteria

| Elements of competence | Performance criteria |
|---|---|
| **1. Conduct Site Survey** | 1.1. The antenna placement is properly determined considering the environmental aspect and the house setting. |
| | 1.2. The position of the decoder and TV set is appropriately selected according to the placement of the antenna and house setting. |
| | 1.3. The cable routes are methodically planned considering the position of the Decoder/TV set and antenna position |
| | 1.4. Required equipment, tools and materials are correctly identified according to the job to be done. |
| | 1.5. The budget is accurately estimated according to the work to be done. |
| **2. Install TV Reception Antenna** | 2.1. The antenna is properly placed according to the nature of the site. |
| | 2.2. The cable route is safely prepared in line with the position of the antenna and the TV set. |

| | | |
|---|---|---|
| | 2.3. | The coaxial cable is correctly placed and fixed in its route in accordance with the TV set position. |
| | 2.4. | The coaxial cable terminal is firmly connected to the antenna for maximum signal reception testing |
| | 2.5. | The antenna is precisely Positioned considering Azimuth and Elevation principles |
| **3. Configure The Tv Receiver And Decoder** | 3.1. | The audio and video cables are correctly identified according to their types and utilizations. |
| | 3.2. | The TV and the decoder are adequately connected respecting their appropriate ports. |
| | 3.3. | TV set and decoder are carefully configured according to the service provider guidelines |
| | 3.4. | The TV receiving system is successfully tested in the line with normal functionality. |

# Course content

| | |
|---|---|
| **Learning outcomes** | **At the end of the module the learner will be able to:**<br>1. Conduct site survey<br>2. Install TV reception antenna<br>3. Configure the TV receiver and Decoder |
| **Learning outcome 1: Conduct site survey** | **Learning hours: 5** |

**Indicative content**

- **Conducting site survey**
  - ✓ Environment analysis
  - ✓ Distance measurements
  - ✓ Cost estimation
  - ✓ Types of tools, materials and equipment used in site survey
- **The antenna placement, environmental aspect and house setting.**
- **Positioning of the decoder and TV set**
- **The cable routes planning**

**Resources required for the learning outcome**

| | |
|---|---|
| **Equipment** | Digital Multimeter, Electronic distance meter, calculator |
| **Materials** | Pencils, Markers, notebook |
| **Tools** | Ladder, Measuring tape |
| **Facilitation techniques /learning activities** | • Lectures<br>• Demonstration and simulation<br>• Individual and group work<br>• Practical exercise<br>• Individualized<br>• Trainer guided |

| | |
|---|---|
| | • Group discussion |
| **Formative assessment methods** | • Written assessment<br>• Oral presentation<br>• Performance assessment |

| **Learning outcome 2: Install TV reception antenna** | **Learning hours: 25** |
|---|---|
| **Indicative content** | |
| • **Description of Antenna Technology**<br>✓ Description of antenna terminology<br>✓ Types of antenna and their application<br>✓ Description of different parts of antenna<br>• **Installation of TV Reception antenna**<br>✓ Assembling different parts of the antenna<br>✓ Fixing antenna to the support<br>✓ Perform antenna Positioning<br>✓ Link the antenna to the satellite<br>• **Joining coaxial cables for extension**<br>✓ Attaching connectors on coaxial cable<br>✓ Using antenna splitters<br>• **Description of satellite communication system**<br>✓ Types of satellites and their application<br>✓ Types of Satellite tuners and their applications<br>✓ Using Satellite tuner/Finder settings | |
| **Resources required for the indicative content** | |

| | |
|---|---|
| **Equipment** | Antenna, Satellite signal finder meter |
| **Materials** | Coaxial Cables, Coaxial Connectors, |
| **Tools** | Screw driver set, Pliers, spanners, Mobile Satfinder app |
| **Facilitation techniques and learning activities** | • Lectures<br>• Demonstration<br>• Individual and group work<br>• Practical exercise<br>• Individualized<br>• Trainer guided |
| **Formative assessment methods** | • Written assessment<br>• Oral presentation<br>• Performance assessment |

| **Learning outcome 3: Configure the TV receiver and Decoder** | **Learning hours: 10** |
|---|---|
| **Indicative content** | |
| • **Identification of audio and video cables**<br>✓ Types of audio and video cables and their use<br>✓ Description of video ports<br>✓ Connecting the TV and the decoder<br>• **Configuration of the TV settings**<br>• **Configuration of the decoder settings** | |
| **Resources required for the indicative content** | |
| **Equipment** | Display devices (TV, Projector) Decoder, Remote control |

| | |
|---|---|
| **Materials** | Video/Audio Cables (VGA, HDMI, RCA), Cable connectors |
| **Tools** | Screw driver set, Pliers, |
| **Facilitation techniques and learning activities** | • Demonstration and simulation<br>• Individual and group work<br>• Practical exercise<br>• Trainer guided<br>• Group discussion |
| **Formative assessment methods** | • Written assessment<br>• Oral presentation<br>• Performance assessment |

## Integrated/Summative assessment

**Integrated situation**

Kosha Apartments LTD, a company offering hospitality services, located in Nyamata sector, needs to install a TV reception system. It will serve a two-floor building, and each floor has five rooms.

As a Television Reception system installer, you are required to install that TV reception system at minimum cost. Among other tasks you must:

- ✓ Conduct site survey
- ✓ Install the TV reception system
- ✓ Configure the system devices

**Resources**

| | |
|---|---|
| **Tools** | Screw driver set, Pliers, Hammers, Ladders, Chiseling tools, Hacksaw, Allen Keys, Spanners. |
| **Equipment** | Television sets, Decoders, Antenna splitters, Reception Antennas, Remote control, Multimeter, Screw driver machine, Soldering Machine, Soldering Stand. |
| **Materials/ Consumables** | Coaxial cables, coaxial connectors, Video/Audio Cables (VGA, HDMI, RCA), Soldering Rod. |

| Assessable outcomes | Assessment criteria (Based on performance criteria) | Indicator | Observation | | Marks allocation |
|---|---|---|---|---|---|
| | | | Yes | No | |
| **Learning outcome 1:** **Conduct site survey** **(30%)** | 1.1. Determining the antenna placement | Environmental aspects are considered | | | **5** |
| | | Measurements are taken | | | **5** |
| | 1.2. Identification of required tools, materials and Equipment | Number of TV sets and decoder is identified | | | **3** |
| | | Number of Antenna and antenna Splitters is identified | | | **3** |
| | | Tools, materials are identified | | | **5** |
| | 1.3. Estimation of the budget | Cost of equipment is | | | **3** |

| | | | | | |
|---|---|---|---|---|---|
| | | estimated | | | |
| | | Cost of materials is estimated | | | **3** |
| | | Cost of Labor is estimated | | | **3** |
| **Learning outcome 2:**<br>**Install TV reception antenna**<br>**(50%)** | 2.1. Placement and fixation of Antenna | Antenna parts are assembled | | | **10** |
| | | Antenna is fixed on the support | | | **5** |
| | 2.2. Placement and fixation of the coaxial cable is | Coaxial cable routes are Prepared | | | **5** |
| | | Connectors are fixed on Coaxial cable | | | **5** |
| | | Coaxial cables are connected | | | **5** |
| | | Antenna splitters are used | | | **10** |
| | 2.3. Positioning of the antenna | Satellite finder is used to find appropriate satellite | | | **10** |
| **Learning outcome 3:**<br>**configure the TV receiver and Decoder**<br>**(20%)** | 3.1. Selection of appropriate video cables | HDMI/RCA/VGA cable is used | | | **5** |
| | 3.2. Connecting Decoder to the TV set | Channels list is available | | | **5** |
| | | TV Images are displayed | | | **5** |
| | | Sound is heard | | | **5** |
| **Total marks** | | | | | **100** |
| **Percentage Weightage** | | | | | **100%** |
| **Minimum Passing line % (Aggregate): 70%** | | | | | |

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