

Domain**ELECTRONICS****Title:****Apply knowledge of communication systems****Level: 3****Credits: 10****Purpose**

This unit standard specifies the competencies required to apply knowledge of communication systems. It includes demonstrating knowledge of communication system components and applying knowledge of different communication systems. This unit standard is intended for those who work in electronics industry.

Special Notes

1. Entry information

Prerequisite

- *Unit 1157 - Demonstrate basic knowledge of workplace health and safety*

2. Assessment evidence may be collected from a real or a simulated workplace in which electronics operations are carried out..

3. To demonstrate competence, minimum evidence of knowledge of communication system components and knowledge of different communication systems (at least 50 percent of all areas in each element) is required

4. Components of a communication system refers to functional block, e.g. Transmitter (Oscillator, modulator, mixer, amplifier and filter), Receiver (filter, mixer, demodulator/detector, amplifier), and Transmission Media (Copper wire, optical fibre, radio, microwave).

5. Glossary of terms and abbreviations:

- TDM – Time division Multiplexing, FDM – Frequency Division Multiplexing, CDM – Code Division Multiplexing, WDM – Wavelength Division Multiplexing, SDM – Space/Spatial Division Multiplexing.
- AM – Amplitude Modulation, FM – Frequency Modulation, PM – Phase Modulation, ASK - Amplitude Shift Keying, FSK - Frequency Shift Keying, PSK – Phase Shift Keying and PCM – Pulse Code Modulation
- GSM – Global System for Mobile communication, CDMA – Code Division Multiple Access, UMTS – Universal Mobile Telecommunications System, LTE – Long Term Evolution, HSPA – High Speed Packet Access, ADSL – Asymmetric Digital Subscriber Line
- PCBs – Printed Circuit Boards

6. Performance of all elements in this unit standard must comply with industry standards.

7. Regulations and legislation relevant to this unit standard include the following:

- Labour Act, No. 11, 2007.

- Occupational Health and Safety Regulations No. 18, 1997 and all subsequent amendments.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority and the Namibia Training Authority on www.nta.com.na

Elements and Performance Criteria

Element 1: Demonstrate knowledge of communication system components

Range

Communication systems components include transmitters, receivers, transmission medium etc.

Performance Criteria

- 1.1 Components of communication systems are identified from schematics or PCBs.
- 1.2 Measurements and/or calculation are performed to determine the performance of the communication system components.
- 1.3 Generic communication system functional block diagrams are sketched.
- 1.4 Functions of each generic communication system block are explained.
- 1.5 Transmission media are categorized.

Element 2: Apply knowledge of different communication systems

Range

Communication systems media include but not limited to radio waves, microwave, optic-fibre and wired media.

Communication system technologies include but not limited to GSM, CDMA, UMTS, LTE, HSPA, Ethernet, WI-FI, WiMAX, two way radio, TV white space, Bluetooth, broadcast technology (television and radio), microwave, satellite and ADSL.

Application of communication systems include but not limited to communication of voice, visual, data and control signals.

Performance Criteria

- 2.1 Communication systems are categorised according to media, technology and application.
- 2.2 Communication system technologies are identified.
- 2.3 Data communication system resources are configured for system functionality.

- 2.4 Measurements and/or calculations are performed, recorded and interpreted to determine functionality of communication systems.
- 2.5 Conformity of communication system`s operational parameters to regulatory bodies is verified.
- 2.6 Communication system`s operation parameter are adjusted to conform with the relevant regulatory body`s standards.

Registration Data

Subfield:	Electrical Engineering
Date first registered:	
Date this version registered:	
Anticipated review:	
Body responsible for review:	Namibia Training Authority