Australian Government

Assessment Requirements for ICTRFN806 Analyse satellite communications systems

Release: 1

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Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 7.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- analyse at least two satellite communications system architectures.

In the course of the above, the candidate must:

- produce a satellite link budget and calculate link margins for a range of digital modulation types
- calculate the look angles for a geostationary satellite from any receiving location
- analyse and specify the major features of very small aperture terminal (VSAT) systems.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- types of antenna calculations, including:
  - gain
  - beamwidth
  - polarisation
  - effective isotropic radiated power (EIRP)
- definition of bit error rate (BER) and how it affects satellite communications
- carrier and noise ratio calculations
- construction of constellation and eye diagrams
- methods to calculate distance to satellite and typical delays
- features of frequency spectrum (satellite bands)
- methods to calculate gain-to-noise-temperature G/T ratio
- features of geostationary orbits
- methods to calculate link budgets

- look angle calculations
- features of low earth orbiting (LEO) satellites
- modulation types that are suitable for satellite communications:
  - n-FSK:
    - 2FSK
    - 4FSK
  - n-PSK:
    - 2PSK
    - 4PSK
    - 8PSK
    - 16PSK
  - n-QAM:
    - 16 QAM
    - 256QAM
- spread spectrum techniques, including:
  - direct sequence
  - frequency hopping.

Assessment Conditions

Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.

This includes access to:

- a site on which satellite analysis may be conducted
- data, calculators and appropriate software tools.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2