RADIO NETWORK TECHNICIAN

Details of standard

Occupation summary

This occupation is found in Telecommunications operators, Ministry of Defence and their vendors and suppliers responsible for broadcasting digital voice and data services via a mobile telecommunications network. This network will deliver these services to specific corporate, public, emergency services and military organisations. The broad purpose of the occupation is to ensure that digital data and voice networks operate at an optimal level. This is to provide the best possible service to their customers, working as part of a national or regional radio network team. The individual will set up, configure, maintain and monitor radio networks to deliver data services and operate processes for the design, installation, test, implementation, fault finding and optimisation of radio telecoms networks. In their daily work, an employee in this occupation interacts with internal and external customers, owners of potential new cell site locations, equipment suppliers, internal teams, and cross functional leaders. The occupation is a mix of office work, on site work and field-based work. An employee in this occupation will be responsible for managing radio network equipment to achieve network performance objectives in terms of service, coverage, quality and availability. They will initiate, own and complete processes, tasks and procedures, supporting wider team to deliver long-term and short-term project priorities. They will use their own initiative, work with minimal supervision, and report into a manager.

Typical job titles include:

Communications radio engineer   Radio network engineer

Radio network technician   Radio optimisation engineer   Wireless systems engineer

Occupation duties

DUTY	CRITERIA FOR MEASURING PERFORMANCE	KSBS
Duty 1 Select new cell site locations and design new cell sites in relation to network planning which is required to meet site specific targets including containment of coverage. This should also include consideration of Health & Safety procedures and applicable national and international legislation and regulations. This may include sites to be permanently part of the network or for a temporary purpose.	Meets specific geographic coverage and quality targetsCell sites successfully implemented Complies with Health & Safety procedures, and applicable national and international legislation and regulations.	K1 K3 K5 K7 K9 K11 K12 K17 K20 S1 S2 S5 S15 S17 S22 B1 B2 B6
Duty 2 Perform user level maintenance and testing on the digital radio and data network using associated test equipment e.g. TEMS (testing mobile systems tool) or CW (constant carrier wave testing) or other testing systems such as built in test facilities for digital radios and user data terminals. Test and monitor the network performance and signal, analyse log files to identify faults and key issues. Inspect and test internal and external distribution systems of static sites and mobile network platforms.	Effective testing and monitoring of network performance carried out within set timescales Proficient use of proprietary generic log file tools to correctly identify, locate, rectify or report issue/faults is demonstrated within timescales to ensure optimisation. Faults are correctly analysed using all available tools including network applications and on line support in compliance with equipment care directives and policy. After action review has taken place to analyse and identify trends or common factors affecting network performance. Log files shared with support teams others who need them in accordance to defined timescales; Insight gathered and signed off for quality to specifications.	K2 K3 K13 K14 K15 K17 S4 S7 S8 S9 S10 S14 S15 B1 B2 B4 B5 B6
Duty 3 Report on the information contained in generic log files or system generated fault codes and how this information provides insight into the performance of their own network and that	Reports any areas of concern and raises any	K2 K10 K12 K13 K22 K24

of their competitors. React and correct issues within their control. Identify issues that require support from other people or teams and request network support at the correct level following process.	potential hazards/risks to the relevant people	S7 S11 S14 S15 S16 S22 B1 B2 B6
Duty 4 Follow security policies relating to people security, information and process security, physical security and computer and network security policies, current data protection regulations and non-disclosure agreements	Faults correctly identified and managed. Meets targets for service availability and consistent and reliable network provided for customers use.	K18 K19 K20 K21 S17 S18 B1 B2 B6
Duty 5 Manage faults using fault management systems and state the responsibilities of the team to support this.	Reacts appropriately to triggers in the required timescale.Takes action or makes recommendations following process. Records recommendations accurately.network services meets company objectives for area under this employees control.	K13 K15 K16 K22 K24 S8 S10 S11 S16 S17 S22 B1 B2 B6
Duty 6 Monitor network statistics, identify where changes can be made and make adjustments or corrections to improve the network. Complete any further changes based on reviews which could include reversal of changes. Escalate any adjustments or corrections outside of their control to the appropriate areas.	Records and reports recommendations or requests made to others where the fix is outside of employee's direct control.Takes action or makes adjustments and recommendations following process.Network Key Performance Indicators (KPIs) meet minimum standard for area under employee's direct control.	K2 K6 K12 K13 K14 K16 K22 K24 S8 S11 S12 S14 S15 S16 S17 B2 B5 B6
Duty 7 Review customers' feedback and make adjustments to improve the network by monitoring sources of input (including customer complaints via customer care, social media, customer satisfaction surveys) and recognise which issues can and should be addressed.	Network equipment built to plan specification within timescales required.Once complete, work signed off by technical lead.	K2 K13 K15 K16 K19 K21 S8 S11 S12 S14 S15 S16 S17 S21 B2 B5 B6
Duty 8 Install and commission radio network	Deliver level of capacity	K4 K5 K6 K10 K17

equipment and systems.	required to meet customer expectations.Optimisation efforts agreed and signed off by technical expert.	S1 S2 S4 S13 S17 S19 S22 B1 B5 B6
Duty 9 Support frequency and Code Division Multiple Access (CDMA) code planning for radio networks to ensure optimisation of network capacity available to customers.	Deadlines of work activity and duties met Priorities are achieved	K1 K3 K7 K8 K9 K10 K11 K12 S5 S7 S17 B2 B6
Duty 10 Independently create and implement a prioritised plan of own workload to meet deadlines and company priorities	Technical expert signs off that area under employees control following any guidance set in place.	K17 S6 S20 S22 B1 B2 B4 B6
Duty 11 Recognise the purpose of networking settings and parameters and ensures that the network continues to adhere to any controls for these parameters.		K2 K24 S12 S13 S16 S17 B1 B6
Duty 12 Practice continuous self-learning to keep up to date with technological developments to enhance relevant skills and take responsibility for own professional development.		K25 S23 S24 B3 B4
Duty 13 Collaborate with people both internally and externally at all levels with a view to deliver a network that meets customer's needs.		K22 K23 S6 S9 S20 S22 B6

KSBs

Knowledge

K1: The basics of radio propagation including path profile analysis and the behaviour of radio waves as they travel from one point to another covering line of sight and different band frequencies

K2: The characteristics of digital communication including differences to how analogue networks behave.

K3: The causes and impact of radio interference and noise in a network

K4: Basic electricity theory for antenna

K5: The different types of cabling and connectivity and their relative merits

K6: Network architectures, the specification of a network's physical components and their functional organisation and configuration; its operational principles, procedures, protocols and related management tools.

K7: The need for and the principles of spectrum re-use in networks and an understanding of manual and automated methods of frequency planning for narrow band networks

K8: The existence of uplink and downlink channels in networks and their uses

K9: Constraints to spectrum which can be used on a given radio site based on information about spectrum already in use on it and nearby

K10: Impact of harmonics in radio frequency and how to reduce this

K11: The relationship between capacity demands and spectral usage in networks and to frequency re-use requirements

K12: The differences between wide-band and narrow band networks, the use of simplex and duplex techniques in networks, methods of frequency hopping and their benefits in narrow band networks and manual and automated methods of code planning in Code Division Multiple Access (CDMA) networks.

K13: Techniques and systems used in testing to identify the location and cause of faults in complex and/or non-standard radio telecommunications networks; including observation, simulation, measurement, identification of function loss comparison, and previous fault data. Previous fault data includes frequency of occurrence, manufacturers' documentation including user guides and diagnostic data, maintenance records, trending, built-in diagnostics, alarm priority, comparison with commissioning results.

K14: What equates to good voice and data network performance

K15: The fault finding process and how to measure performance against targets, including an awareness of service level agreements

K16: The types of fault which may occur, the main factors affecting network performance including typical faults, and approaches to error control

K17: The importance of following relevant health and safety requirements

K18: Basic security principles, policies and procedures including general relevant data protection, software, access, encryption and regulation and how to report security breaches and an awareness of digital infrastructure

K19: Existence of network vulnerabilities and how they are assessed

K20: The security process for accessing field based sites

K21: How to use data ethically and the implications for wider society, with respect to the use of data and automation.

K22: The need for accessibility for all users and diversity of user needs

K23: Roles within a multidisciplinary team and the interfaces with other areas of an organisation

K24: Information available in data sources, how to access these and commonality and difference between them

K25: How their occupation fits into the wider digital landscape and any current or future regulatory requirements

Skills

S1: Operate the planning process including selection of appropriate equipment

S2: Select appropriate location as part the planning process

S3: Install or support installation of equipment and termination of cabling

S4: Install, or support the installation, positioning equipment according to manufacturer's specifications, design detail and perform administrative tasks including installation reports and test results

S5: Identify the causes of issues relating to frequency re-use and other noise sources

S6: Prioritise, plan and organise work activity using a methodical approach

S7: Select the right frequency or code planning method for Code Division Multiple Access (CDMA) in a given scenario

S8: Access and use the appropriate test system

S9: Report faults and use the appropriate escalation process

S10: Collate and input fault data and statements into the fault management system

S11: Rectify faults within own area of control or escalate as appropriate

S12: Utilise tools to review, audit and modify network element parameters

S13: Configure and maintain Internet Protocol (IP) based Radio Frequency (RF) telecommunications network

S14: Gather network performance information and user insight through feedback or user experience

S15: Implement procedures to enhance the performance of the network

S16: Analyse complex data, draw meaningful conclusions and understand commercial impact

S17: Use equipment and technology responsibly and effectively

S18: Locate and apply organisational security polices

S19: Arrange access to sites according to required procedure

S20: Create a written work plan & communicate plan to team members

S21: Use customer feedback to process, prioritise and resolve issues effectively

S22: Work in agile, multi-disciplinary delivery teams, taking a flexible, collaborative and pragmatic approach to delivering tasks

S23: Keep up to date with developments in technologies, trends and innovation using a range of sources

S24: Review own development needs

Behaviours

B1: Adheres to required work practices and conducts all work in a manner which is safe

B2: Aligns work activities and priorities to organisational objectives

B3: Is responsible for own continued professional development

B4: Uses initiative to take ownership and responsibility for their work

B5: Demonstrates a pragmatic and logical approach to problem solving

B6: Is a positive role model to others in attitude to work and how it is undertaken

Qualifications

English & Maths

Apprentices without level 2 English and maths will need to achieve this level prior to taking the End-Point Assessment. For those with an education, health and care plan or a legacy statement, the apprenticeship's English and maths minimum requirement is Entry Level 3. A British Sign Language (BSL) qualification is an alternative to the English qualification for those whose primary language is BSL.

Professional recognition

This standard aligns with the following professional recognition:

- This apprenticeship is recognised for entry onto the BCS, The Chartered Institute for IT, Register of IT Technicians. for Confirms level 3 professional competence
- The Institute of Telecommunications Professionals. for Those completing the apprenticeship are eligible for recognition at full membership

Additional details

Occupational Level:

3

Duration (months):

24

Review

This apprenticeship standard will be reviewed after three years

Find an apprenticeship

Postcode (optional)

Version log

VERSION	CHANGE DETAIL	EARLIEST START DATE	LATEST START DATE	LATEST END DATE
1.0	Approved for delivery	11/12/2020	Not set	Not set