

QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR TELECOM INDUSTRY

What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

Contact Us:

2nd Floor, PLOT:
105, Sector-44,
GURGAON-122003
T:0124-4148029
E-mail:
tssc@tsscindia.com



Contents

1. Introduction and Contacts.....	1
2. Qualifications Pack.....	2
3. Glossary of Key Terms.....	3
4. OS Units.....	6
5. Annexure: Nomenclature for QP & OS.....	29
6. Assessment Criteria	31

Introduction

Qualifications Pack - Drive Test Engineer

SECTOR: TELECOM

SUB-SECTOR: Network Managed

OCCUPATION: Network Operation & Maintenance

REFERENCE ID: TEL/Q6211

ALIGNED TO: NCO-2015/Nil

Brief Job Description: Drive Test engineer is responsible for checking the network performance of the cell site by measuring the parameters using fixed/ portable test/ measuring equipment. He is also expected to record and analyse the measured data, which can be further used for improving the cell site performance.

Personal Attributes: This job requires a person who is having willingness of doing field job and having good patience level, dedicated towards goal, technically qualified, team player, action oriented. He should be able to analyze, interpret data and apply professional judgement to carry out assigned responsibilities.

Job Details	Qualifications Pack Code	TEL/Q6211		
	Job Role	Drive Test Engineer		
	Credits(NSQF)	TBD	Version number	1.0
	Sector	Telecom	Drafted on	14/06/2017
	Sub-sector	Network Managed	Last reviewed on	10/11/2017
	Occupation	Network Operation & Maintenance	Next review date	10/11/2021
	NSQC Clearance on	DD/MM/YYYY		

Job Role	Drive Test Engineer
Role Description	DT engineer is responsible for checking the network performance of the cell site by measuring the parameters using fixed/portable test/measuring equipment. He is also expected to record and analyse the measured data, which can be further used for improving the cell-site performance.
NSQF level	5
Minimum Educational Qualifications*	ITI/Diploma
Maximum Educational Qualifications*	NA
Minimum Entry Job Age	18 Years
Experience	NIL
Applicable National Occupational Standards (NOS)	Compulsory: <ol style="list-style-type: none"> 1. TEL/N6237 (Tower site verification and preparation for drive test) 2. TEL/N6238 (Tower site performance measurement and parameter recording) 3. TEL/N6239 (Tower site data analysis and reporting) 4. TEL/N6240 (Tower site optimization and troubleshooting) 5. TEL/N2509 (Health & Safety)
Performance Criteria	As described in the relevant OS units

Definitions

Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Job Role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
OS	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
NOS	NOS are Occupational Standards which apply uniquely in the Indian context.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Unit Code	Unit Code is a unique identifier for an Occupational Standard, which is denoted by an 'N'.
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
Organizational Context	Organizational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills or Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.

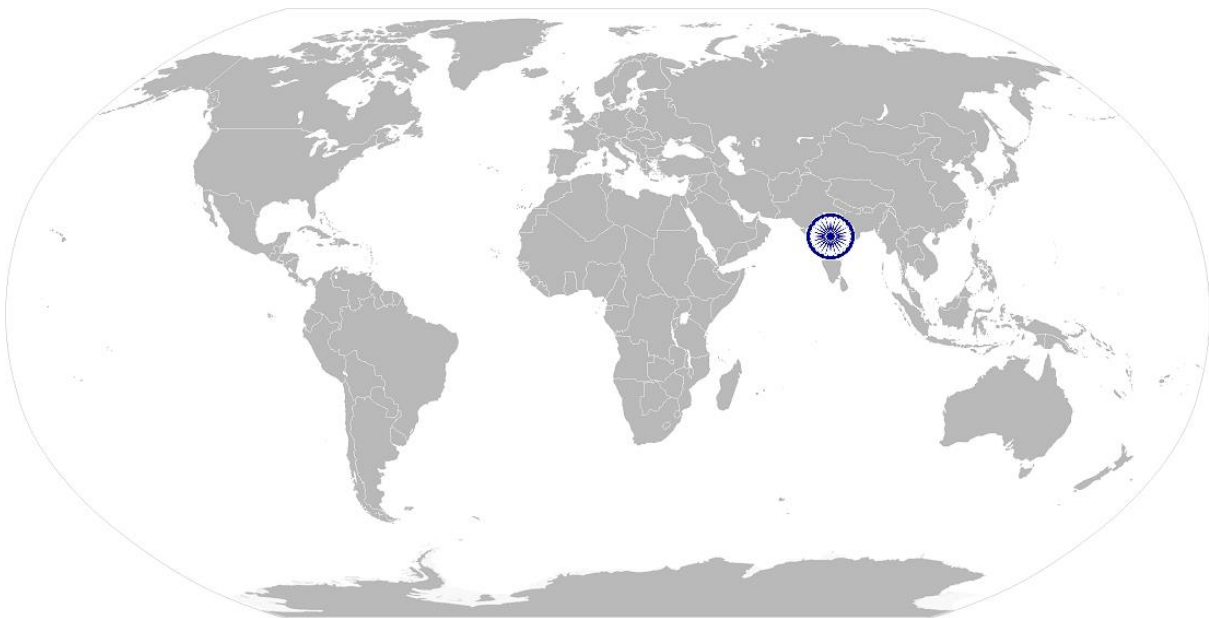
Acronym	Keywords /Terms	Description
	TEMS	Test equipment for mobile system
	EHS	Environmental health & safety
	PPE	Personal protection equipments
	OHS	Organizational Health & Safety
	SHE	Safety, Health & Environment
	E/M	Electrical/mechanical
	GSM	Global system for mobile communication
	UMTS	Universal mobile telecommunication system
	LTE	Long term evolution
	GPS	Global positioning system
	BTS	Base transceiver system
	SQI	Speech quality index
	QoS	Quality of service
	SCFT	Single cell functioning test
	NOC	Network and Operation Centre
	KPI	Key Performance Indicator
	SINR	Single to noise and interference ratio
	C/I	Carrier to interference
	Rxlevel	Receiving Level
	RxQuality	Receiving Quality
	E	Electrical
	M	Mechanical
	BTS	Base Transceiver Station
	GBT	Ground Based Tower
	RTT	Roof Top Tower
	PCI	Physical cell identity
	Ec/No	Energy per chip to the total noise power density
	RSRP	Reference Signal receiving Power
	RSSI	Received Signal Strength Indicator
	ARFCN	Absolute radio frequency channel number.

TA	Time Advance
TCH	Traffic Channel
BCCH	Broadcast control Channel
SDCCH	Standalone dedicated channel
AMT	Amplifier Mount Transceiver
VoLTE	Voice over LTE
RET	Remote Electrical Tilt

TEL/N6237

Tower site verification and preparation for drive test

National Occupational Standard



Overview

This unit is about the verification and preparation of the tower site and associated tools/equipment for performing the drive test.

TEL/N6237

Tower site verification and preparation for drive test

National Occupational Standard	Unit Code	TEL/N6237
	Unit Title (Task)	Tower site verification and preparation for drive test
	Description	This unit is about the verification and preparation of the tower site and associated tools/ equipment for performing the drive test
	Scope	<p>This unit/ task covers the following:</p> <ul style="list-style-type: none"> Verify the site and site parameters Arrange the tools and equipment required for performing site audit and drive test
	Performance Criteria (PC) w.r.t. the Scope	
	Element	Performance Criteria
	Verify the site and site parameters	<p>The user / individual on the job should be able to:</p> <p>PC1. verify tower ID (all three sectors) and latitude & longitude of the site</p> <p>PC2. ascertain antenna height, antenna tilt (E/M) and antenna orientation of the site as per the given parameters</p> <p>PC3. ascertain sector swap as per the defined parameters</p> <p>PC4. perform EMF survey as per the company norms</p>
	Arrange the tools and equipment required for performing site audit and drive test	<p>The user/ individual on the job should be able to:</p> <p>PC5. ascertain availability of all test and measuring equipment (magnetic compass, hand GPS, tilt meter, digital camera, safety kit and measuring tape)</p> <p>PC6. ascertain availability of all tools for performing drive test (laptop, charger, portable charges, data cables, TEMS dongle, mobile phone)</p> <p>PC7. ascertain availability and proper installation/ configuration of drive test measurement and recording software (TEMS, MAPINFO, MCOM)</p>
	Knowledge and Understanding (K)	
	A. Organizational Context (Knowledge of the company /organization & its process relevant to area of responsibilities)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. risk and impact of not following defined procedures/ work instructions</p> <p>KA2. records to be maintained and implications of non-maintenance of the same</p> <p>KA3. importance of record keeping</p> <p>KA4. knowledge of spare management and repair & return process for faulty equipment</p> <p>KA5. SHE and OHS guidelines and regulations as per company's norms</p> <p>KA6. first aid requirements in case of electrical shocks, cuts, fall from height and other common injuries</p> <p>KA7. use of safety kit for climbing towers while optimizing the site</p> <p>KA8. use of fire extinguisher in the car should be mandatory</p>

TEL/N6237

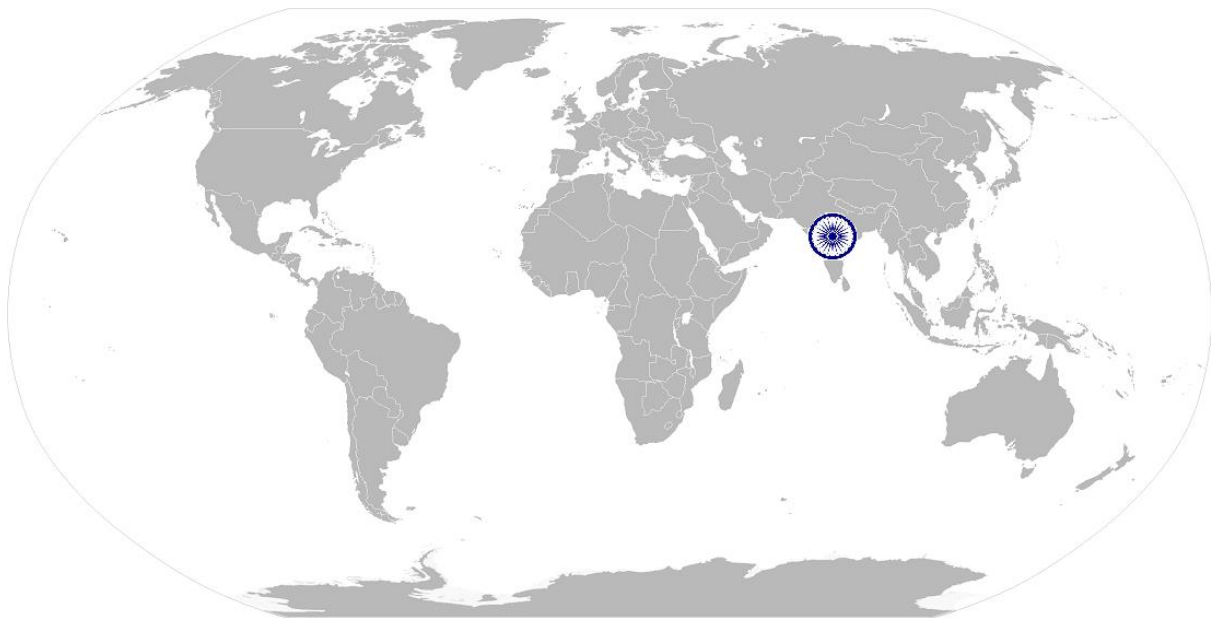
Tower site verification and preparation for drive test

B. Technical Knowledge	<p>The user/ individual on the job needs to know and understand:</p> <p>KB1. functionality of tools like GPS, Magnetic compass, laptop, MapInfo software, MCOM software, PowerPoint software, Google earth</p> <p>KB2. principle of directional antennas, sectorization , tilting (E/M), frequency bands, GSM architecture</p> <p>KB3. types of telecom towers (GBT, RTT, Pole)</p> <p>KB4. knowledge of AMT (Amplifier Mount Transceiver)</p> <p>KB5. knowledge of passive infrastructure on site. (DG, PIU, SMPS, Tower, Cables , shelter etc.</p>
Skill (s) [Optional]	
A. Core Skills/ Generic Skills	Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. fill up appropriate technical forms, maintain proper records as per given format</p>
	Reading Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA2. read and understand manuals, work orders, health and safety instructions, reports etc.</p> <p>SA3. interpret reports and numerical data</p>
	Oral Communication (Listening and speaking skills)
B. Professional Skills	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA4. communicate with supervisor and peers</p>
	Decision Making
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SB1. evaluate the site and take necessary action, prioritize and execute tasks in a high pressure environment</p> <p>SB2. multi task and completing task successfully within due timelines</p> <p>SB3. use and maintain resources efficiently and effectively</p>
	Plan and Organize
	<p>The user/individual on the job needs to know and understand how to :</p> <p>SB4. handle site equipment like laptop, magnetic mouse GPS, mobile phones charger etc.</p> <p>SB5. interpret numerical data and other results from DT Software</p>
	Customer Centricity
	Not applicable
	Problem Solving
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB6. effectively resolve disputes and manage disagreements</p>

TEL/N6237

Tower site verification and preparation for drive test

	Analytical Thinking
	The user/individual on the job needs to know and understand how to:
	SB7. take initiatives and progressively assume increased responsibilities
	SB8. create and maintain effective working relationships with rigger and team
	Critical Thinking
	Not applicable

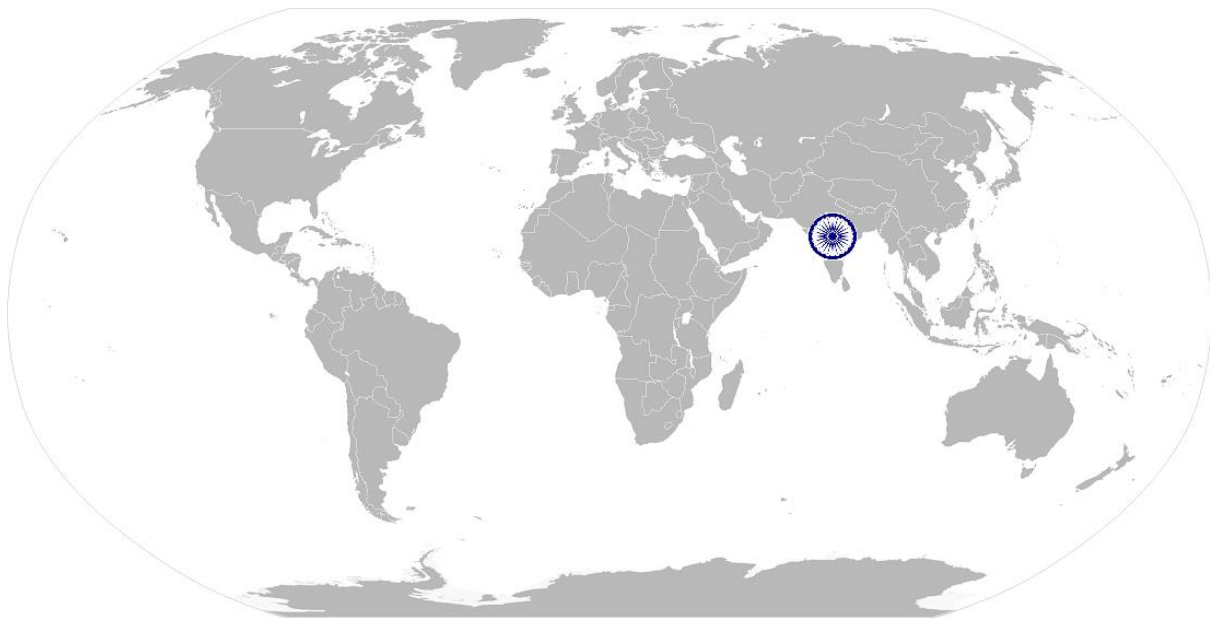


TEL/N6237

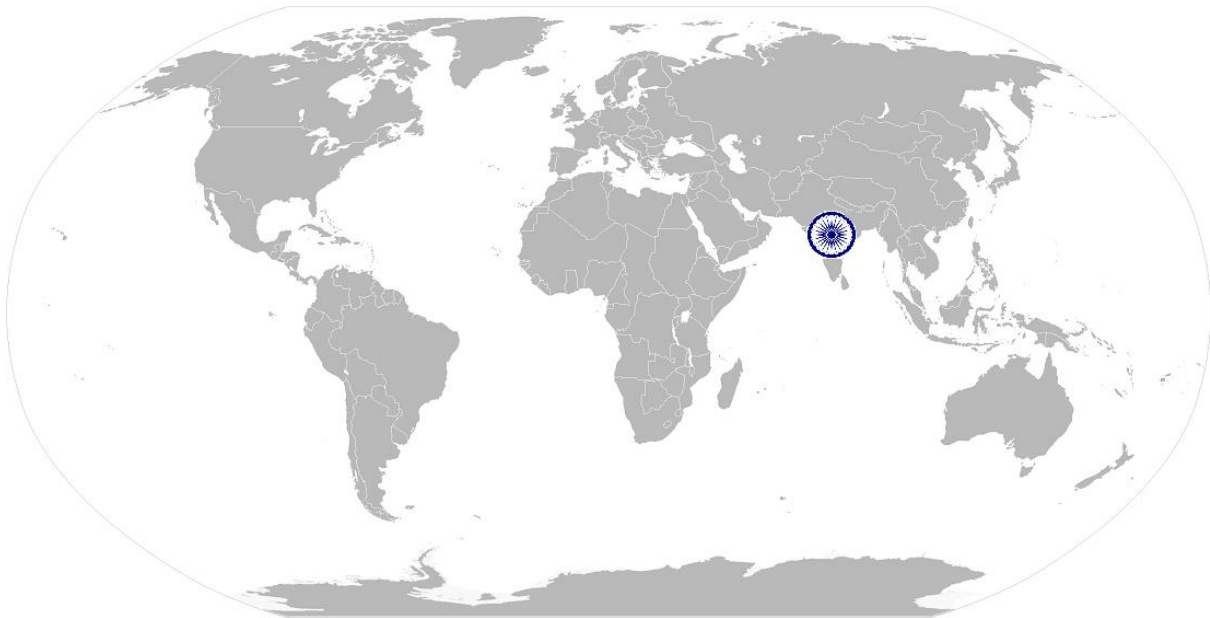
Tower site verification and preparation for drive test

NOS Version Control

NOS Code	TEL/N6237		
Credits (NSQF)	TBD	Version number	1.0
Industry	Telecom	Drafted on	14/06/2017
Industry Sub-sector	Network Managed	Last reviewed on	10/11/2017
Occupation	Network Operation & Maintenance	Next review date	10/11/2021



National Occupational Standard



Overview

This unit is about the on-site activities for measuring tower performance and recording parameters for analysis.

TEL/N6238

Tower site performance measurement and parameter recording

National Occupational Standard	Unit Code	TEL/N6238
	Unit Title (Task)	Tower site performance measurement and parameter recording
	Description	This unit is about the on-site activities for measuring tower performance and recording parameters for analysis
	Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Plan area, routes & schedule for conducting drive test Onsite activity Fault identification and rectification
	Performance Criteria (PC) w.r.t. the Scope	
	Element	Performance Criteria
	Plan area, routes & schedule for conducting drive test	<p>The user/ individual on the job should be able to:</p> <p>PC1. trace a given path on the google earth software, mapinfo to identify the site location</p> <p>PC2. co-ordinate with the support teams for scheduling the drive test</p> <p>PC3. plan the drive test route</p> <p>PC4. check/ rectify the fault, site alarm (if any) before performing the drive test</p>
	Onsite activity	<p>The user / individual on the job should be able to:</p> <p>PC5. demonstrate test compliances (no swap in the sector, all neighboring cells parameters are defined and all RF frequencies given are correct as per company norms)</p> <p>PC7. demonstrate recording of drive test log (dropped calls, blocked calls, handover failures, TA, clock-wise , anti-clockwise handover and inter-connectivity between GSM/ UMTS/ LTE/ VoLTE)</p> <p>PC8. undertake basic analysis of the report generated by Layer 2 and 3 during the drive test /post drive test</p> <p>PC9. demonstrate the process of creating log files (short call and long call per sector of a site)</p> <p>PC10. recheck the logfiles before leaving the site</p>
	Fault identification and rectification	<p>The user / individual on the job should be able to:</p> <p>PC11. identify the nature of fault (due to active or passive components at the tower site)</p> <p>PC12. coordinate with infra engineer/ technicians for rectification and cater overall site performance</p> <p>PC13. undertake/ coordinate root cause analysis (with backend team) is done for</p> <p>PC14. dropped/ blocked calls/ handover failure</p>
	Knowledge and Understanding (K)	

TEL/N6238

Tower site performance measurement and parameter recording

A.Organizational Context (Knowledge of the company/ organization and its processes)	The user/individual on the job needs to know and understand: KA1. risk and impact of not following defined procedures/work instructions KA2. relevance of records to be maintained and implications of non-maintenance of the same KA3. spare management process and repair & return procedure for faulty equipment KA4. relevance of RET (Remote Electrical Tilt) KA5. SHE and OHS guidelines and regulations as per company's norms KA6. first aid requirements in case of electrical shocks, cuts, fall from height and other common injuries KA7. use of safety kit for climbing towers while optimizing the site KA8. use of fire extinguisher in the car should be mandatory
B.Technical Knowledge	The user /individual on the job needs to know and understand: KB1. troubleshooting technique for laptop, GPS, Mobile phone, software, dongle KB2. principle of directional antennas, sectorization , tilting (E/M), frequency bands, GSM architecture KB3. basic fundamentals of GSM, UMTS, LTE network elements. KB4. functionality and operations of BTS KB5. types of antennas and its radiation pattern KB6. basic concepts of handovers, frequency reuse, scrambling codes, PCI, GSM channels, UMTS & LTE channels, interference , types of interferences, Signal strength, power, units conversion KB7. call drop reasons, handover failure reasons, poor coverage problem, swapping
Skill (s) [Optional]	
A. Core Skills/ Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. fill up appropriate technical forms, maintain proper records as per given format
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA2. read and understand manuals, work orders and reports etc SA3. interpret reports and numerical data
	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: SA4. communicate with supervisor and peers
B. Professional Skills	Decision Making
	The user/individual on the job needs to know and understand how to: SB1. evaluate the site and take necessary action prioritize and execute tasks in a high pressure environment SB2. multi-task by handling multiple tasks and completing them successfully within due timelines SB3. use and maintain resources efficiently and effectively

TEL/N6238

Tower site performance measurement and parameter recording

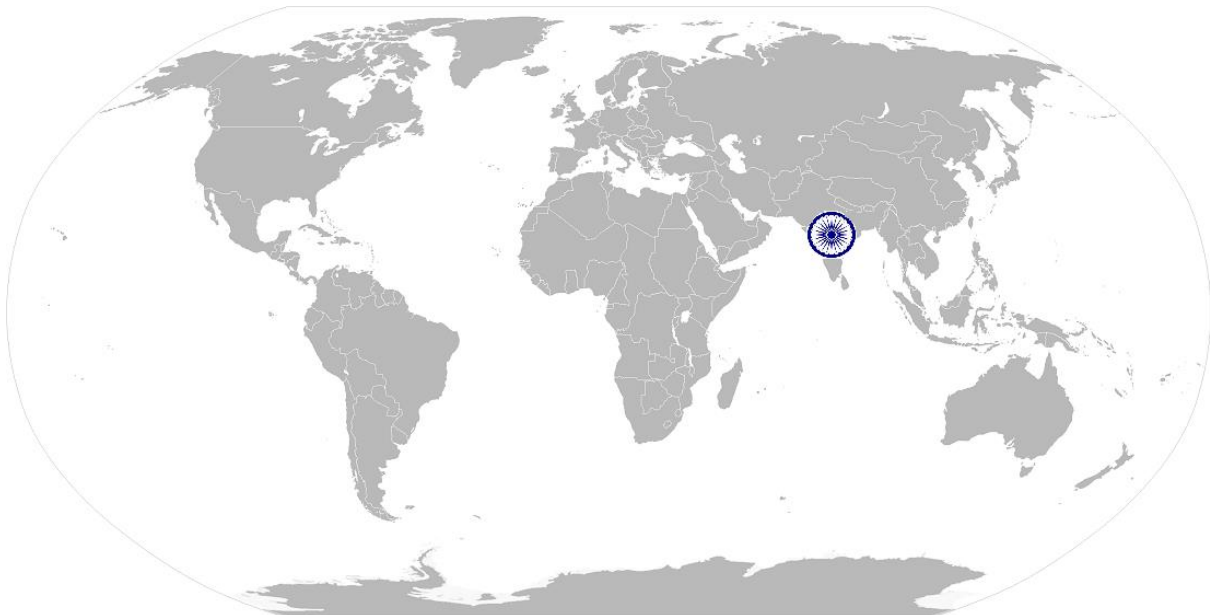
	Plan and Organize
	The user/individual on the job needs to know and understand how to :
	SB4. equipment handling skills – like laptop, magnetic mouse GPS, mobile phones charger, dongle, mobile cables etc
	SB5. interpretation skills – interpret numerical data and other results from DT Software
	Customer Centricity
	Not applicable
	Problem Solving
	The user/individual on the job needs to know and understand how to:
	SB6. effectively resolve disputes and manage disagreements
	Analytical Thinking
	The user/ individual on the job needs to know and understand how to:
	SB7. take initiatives and progressively assume increased responsibilities
	SB8. create and maintain effective working relationships with rigger and team environment
	Critical Thinking
	Not applicable



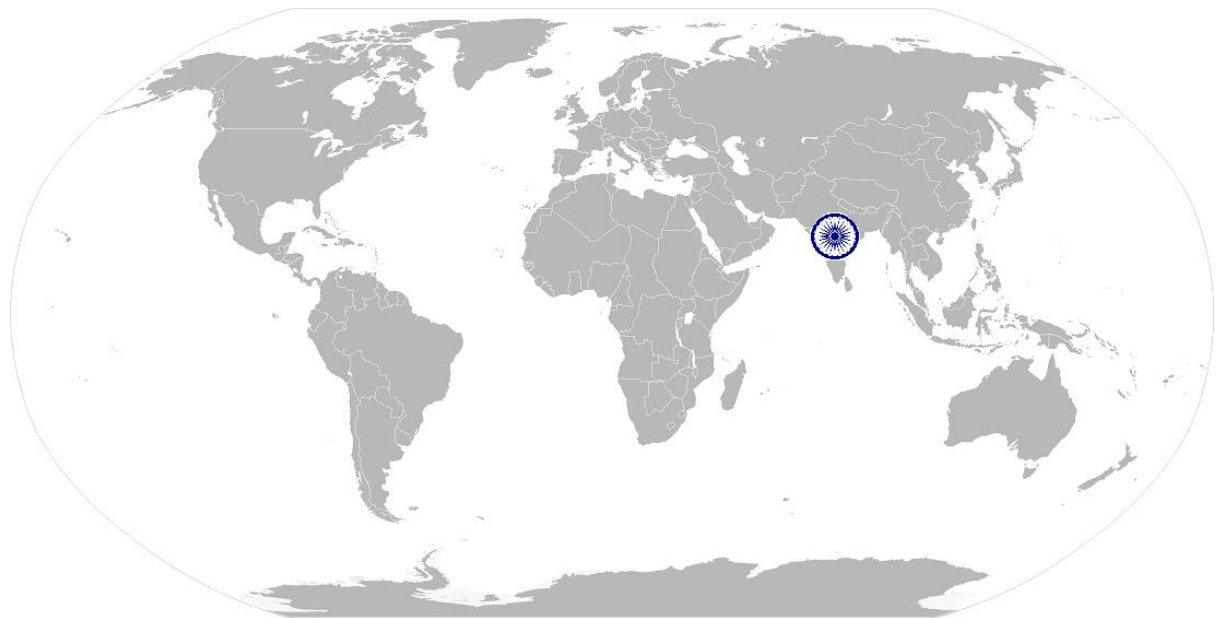
TEL/N6238 Tower site performance measurement and parameter recording

NOS Version Control

NOS Code	TEL/N6238		
Credits (NSQF)	TBD	Version number	1.0
Industry	Telecom	Drafted on	14/06/2017
Industry Sub-sector	Network Managed	Last reviewed on	10/11/2017
Occupation	Network Operation & Maintenance	Next review date	10/11/2021



National Occupational Standard



Overview

This unit is about analyzing various parameters of the site with the help of recorded logs and reports, recording results and documentation.

TEL/N6239

Tower site data analysis and reporting

National Occupational Standard

Unit Code	TEL/N6239
Unit Title (Task)	Tower site data analysis and reporting
Description	This unit is about analyzing various parameters of the site with the help of recorded logs and reports.
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Analyze drive test report Reporting and documenting the status
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Analyze drive test report	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. analyse all the parameters related to 2G drive test (Rx level, Rxquality, C/I, SQI, UL/DL throughput)</p> <p>PC2. analyse all the parameters related to 3G drive test (RSCP, Ec/No, RSSI, SC, CQI, UL/DL throughput)</p> <p>PC3. analyse all the parameters related to 4G/VoLTE drive test (RSRP, RSRQ, PCI, SINR, UL/DL throughput, MO/MT, AT/DT, ping testing)</p> <p>PC4. analyse key site parameters (coverage analysis, overshooting analysis, pollution analysis, neighbouring site analysis, call drop analysis, delay analysis and network KPI analysis)</p>
Reporting and documenting the status	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC5. record faults and take corrective actions</p> <p>PC6. filling all the required details in drive test report template</p> <p>PC7. generate performance report (covering vector map, cell site details, export of recorded log files)</p>
Knowledge and Understanding (K)	
A. Organizational context (Knowledge of the company/organization & its process relevant to area of responsibilities)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. risk and impact of not following defined procedures/ work instructions</p> <p>KA2. data analysis and corrective action policy and procedures</p> <p>KA3. record keeping policy</p> <p>KA4. work safety policy</p>
B. Technical knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. telecom technology (2G, 3G and 4G/LTE/VoLTE)</p> <p>KB2. types of antennas and coverage pattern</p> <p>KB3. effect of various parameters on antenna coverage</p> <p>KB4. types and reasons for faults and corrective measures</p> <p>KB5. technical documentation</p>

TEL/N6239

Tower site data analysis and reporting

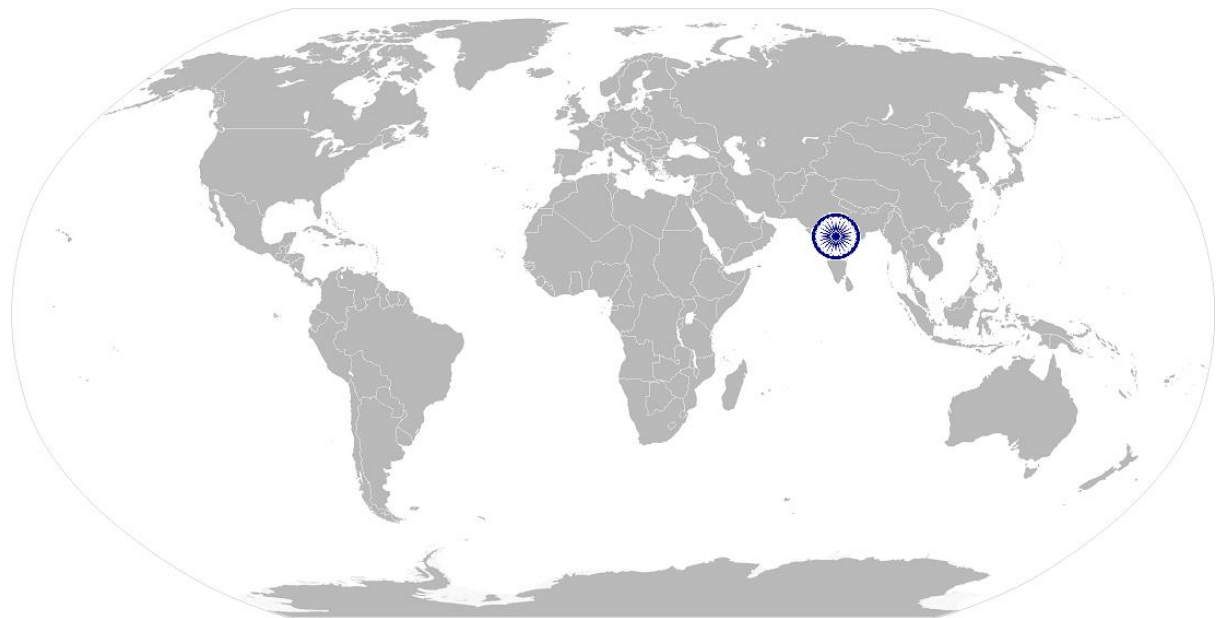
Skill (s) [Optional]	
A. Core Skills/ Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. fill up appropriate technical forms, maintain proper records as per given format
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA2. read and understand manuals, work orders, health and safety instructions, reports etc SA3. interpret reports and numerical data
	Oral Communication (Listening and speaking skills)
	The user/ individual on the job needs to know and understand how to: SA4. communicate with supervisor and peers
B. Professional skills	Decision Making
	The user/individual on the job needs to know and understand how to: SB1. evaluate the site and take necessary action prioritize and execute tasks in a high-pressure environment SB2. multi-task and complete them successfully within due timelines SB3. use and maintain resources efficiently and effectively
	Plan and Organize
	The user/individual on the job needs to know and understand how to : SB4. equipment handling skills – laptop, magnetic mouse GPS, mobile phones charger etc SB5. interpretation skills – Interpret numerical data and other results from DT software
	Customer Centricity
	Not applicable
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB6. analyse data and undertake basic calculations on measured parameters
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB7. take initiatives and progressively assume increased responsibilities SB8. create and maintain effective working relationships with rigger and team environment
	Critical Thinking
	Not applicable

TEL/N6239

Tower site data analysis and reporting

NOS Version Control

NOS Code	TEL/N6239		
Credits (NSQF)	TBD	Version number	1.0
Industry	Telecom	Drafted on	14/06/2017
Industry Sub-sector	Network Managed	Last reviewed on	10/11/2017
Occupation	Network Operation & Maintenance	Next review date	10/11/2021



National Occupational Standard



Overview

This unit covers tower site optimization and troubleshooting to resolve local issues and achieve performance improvement.

TEL/N6240

Tower site optimization and troubleshooting

National Occupational Standard

Unit Code	TEL/N6240
Unit Title (Task)	Tower site optimization and troubleshooting
Description	This unit covers tower site optimization and troubleshooting to resolve local issues and achieve performance improvement.
Scope	This unit/task covers the following: Coordinating activities for performing physical optimization and troubleshooting
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Coordinating activities for performing physical optimization and troubleshooting	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. co-ordinate with the helper for site antenna adjustment (azimuths, antenna tilts (E/M), antenna height and orientation)</p> <p>PC2. undertake parameter checks (BTS, NodeB, eNodeB, transmit power, feature algorithms, frequency hopping)</p> <p>PC3. capture GPS direction and latitude/longitude of any immediate obstructions (tall building, chimney, water tank etc)</p> <p>PC4. identify the swap and know how to prepare connectors</p> <p>PC5. troubleshoot/undertake corrective actions (based on analysis of the local site parameters)</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. risk and impact of not following defined procedures/work instructions</p> <p>KA2. relevance of records to be maintained and implications of non-maintenance of the same</p> <p>KA3. spare management and repair & return process</p> <p>KA4. SHE and OHS guidelines and regulations as per company's norms</p> <p>KA5. first aid requirements in case of electrical shocks, cuts, fall from height and other common injuries</p> <p>KA6. use of safety kit for climbing towers while optimizing the site</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. effect of antenna tilt, direction, azimuth and height on performance (BTS, NodeB, eNodeB)</p> <p>KB2. site performance parameters and their optimal values</p> <p>KB3. effect of obstructions on tower site performance</p> <p>KB4. corrective and mitigating actions to improve site performance</p> <p>KB5. operation and troubleshooting of site equipment (GPS, Handset, car charger, dongle, mouse GPS, Data Card)</p>
Skill (s) [Optional]	
A. Core Skills/ Generic Skills	<p>Writing Skills</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. fill up appropriate technical forms, maintain proper records as per given format</p>

TEL/N6240

Tower site optimization and troubleshooting

	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA2. read and understand manuals, work orders, health and safety instructions, reports etc SA3. interpret reports, readings and numerical data
	Oral Communication (Listening and Speaking Skills)
	The user/ individual on the job needs to know and understand how to: SA4. communicate with supervisor and peers
B. Professional Skills	Decision Making
	The user/individual on the job needs to know and understand how to: SB1. evaluate the site and take necessary action prioritize and execute tasks in a high-pressure environment SB2. multi-task by handling multiple tasks and completing them successfully within due timelines SB3. use and maintain resources efficiently and effectively
	Plan and Organize
	The user/individual on the job needs to know and understand how to : SB4. equipments handling skills – like laptop, magnetic mouse GPS, mobile phones charger etc SB5. interpretation skills – Interpret numerical data and other results from DT Software
	Customer Centricity
	Not applicable
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB6. effectively resolve disputes and manage disagreements
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB7. take initiatives and progressively assume increased responsibilities SB8. create and maintain effective working relationships with rigger and team environment
	Critical Thinking
	NA

TEL/N6240

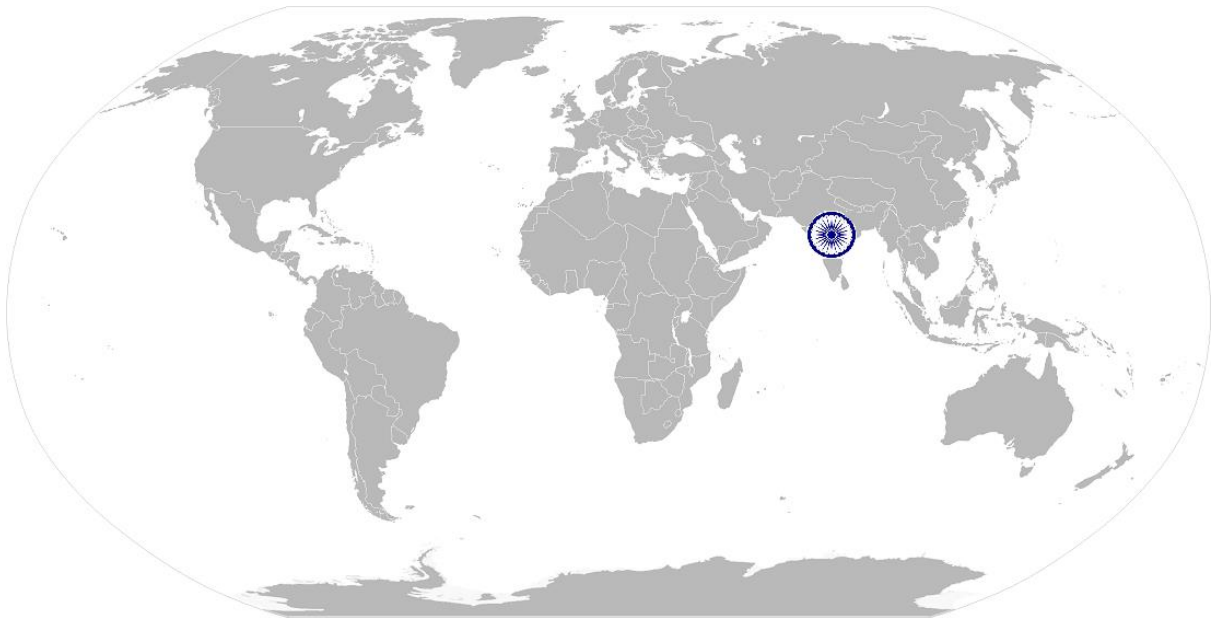
Tower site optimization and troubleshooting

NOS Version Control

NOS Code	TEL/N6240		
Credits (NSQF)	TBD	Version number	1.0
Industry	Telecom	Drafted on	14/06/2017
Industry Sub-sector	Network Managed	Last reviewed on	10/11/2017
Occupation	Network Operation & Maintenance	Next review date	10/11/2021



National Occupational Standard



Overview

This unit is about monitoring the working environment and making sure it meets requirements for health, safety and security.

TEL2313

Health & Safety

National Occupational Standard


Unit Code	TEL/N2509
Unit Title(Task)	Health and safety
Description	This unit is about monitoring the working environment and making sure it meets requirements for health, safety and security.
Scope	<p>This unit/task covers the following:</p> <p>Health & safety compliance and emergency procedures</p> <ul style="list-style-type: none"> • hazards • fire • accident • site emergency
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Health & Safety compliance and emergency procedures	<p>To be competent, the user/ individual on the job must be able to</p> <p>PC1. ensure that work is carried out in accordance with the laid down safety, security policies and procedures of the organization</p> <p>PC2. ensure that site is assessed for safety and emergency readiness compliance as per company's guidelines</p> <p>PC3. ensure electrical safety compliances and EMI/EMC hygiene requirements are met as per the guidelines</p> <p>PC4. identify and correct any hazards that you can deal with safely, competently and within the limits of your authority</p> <p>PC5. report any hazards that you are not competent to deal with to the relevant person in line with organizational procedures and warn other people who may be affected</p> <p>PC6. follow your organizations's emergency procedures promptly, calmly and efficiently</p> <p>PC7. identify and recommend opportunities for improving health, safety, security to the designated person</p> <p>PC8. complete any health and safety records legibly and accurately</p>
Knowledge and Understanding (K)	
A.Organizational Context (Knowledge of the company / organization and its processes)	<p>The user/ individual on the job needs to know and understand:</p> <p>KA1. legislative requirements and organizations procedures for health, safety and security and role and responsibilities in relation to this</p> <p>KA2. what is meant by hazard, including the different types of health and safety hazards that can be found in the workplace</p> <p>KA3. how and when to report hazards</p> <p>KA4. limits of yours responsibility for dealing with hazards</p> <p>KA5. your organization's emergency procedures for different emergency situations</p>

Health & Safety

	<p>and the importance of following them</p> <p>KA6. the importance of maintaining high standards of health, safety and security</p> <p>KA7. implications that any non – compliance with health, safety and security may have on individuals and the organization</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. different types of breaches in health, safety and security and how and when to report these</p> <p>KB2. evacuation procedures for works and visitors</p> <p>KB3. how to summon medical assistance and the emergency services, where necessary</p> <p>KB4. how to use the health, safety and accident reporting procedures and the importance of these</p> <p>KB5. government agencies in the area of safety, health and security and their norms and services</p>
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Writing Skills
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA1. complete accurate well written work with attention to detail</p>
	Reading Skills
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA2. read instructions, guidelines, procedures rules and service level agreements</p>
	Oral Communication (Listening and Speaking Skills)
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA3. listen effectively and orally communicate information accurately</p>
B. Professional Skills	Decision Making
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. make decisions on suitable course location</p>
	Plan and Organize
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB2. plan and organize your work to meet health, safety and security requirements</p>
	Customer Centricity
	Not Applicable
	Problem Solving

Health & Safety

	The user/individual on the job needs to know and understand how to: SB3. apply problem solving approaches in different situations
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB4. analyze data and activities
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB5. apply balanced judgments to different situations SB6. apply, analyze and evaluate the information gathered from observation, experience, reasoning or communication, as guide to thought and action



NOS Version Control

NOS Code	TEL/N2509		
Credits (NSQF)	TBD	Version number	1.0
Industry	Telecom	Drafted on	14/06/2017
Industry Sub-sector	Network Managed	Last reviewed on	10/11/2017
Occupation	Operation & Maintenance	Next review date	10/11/2021

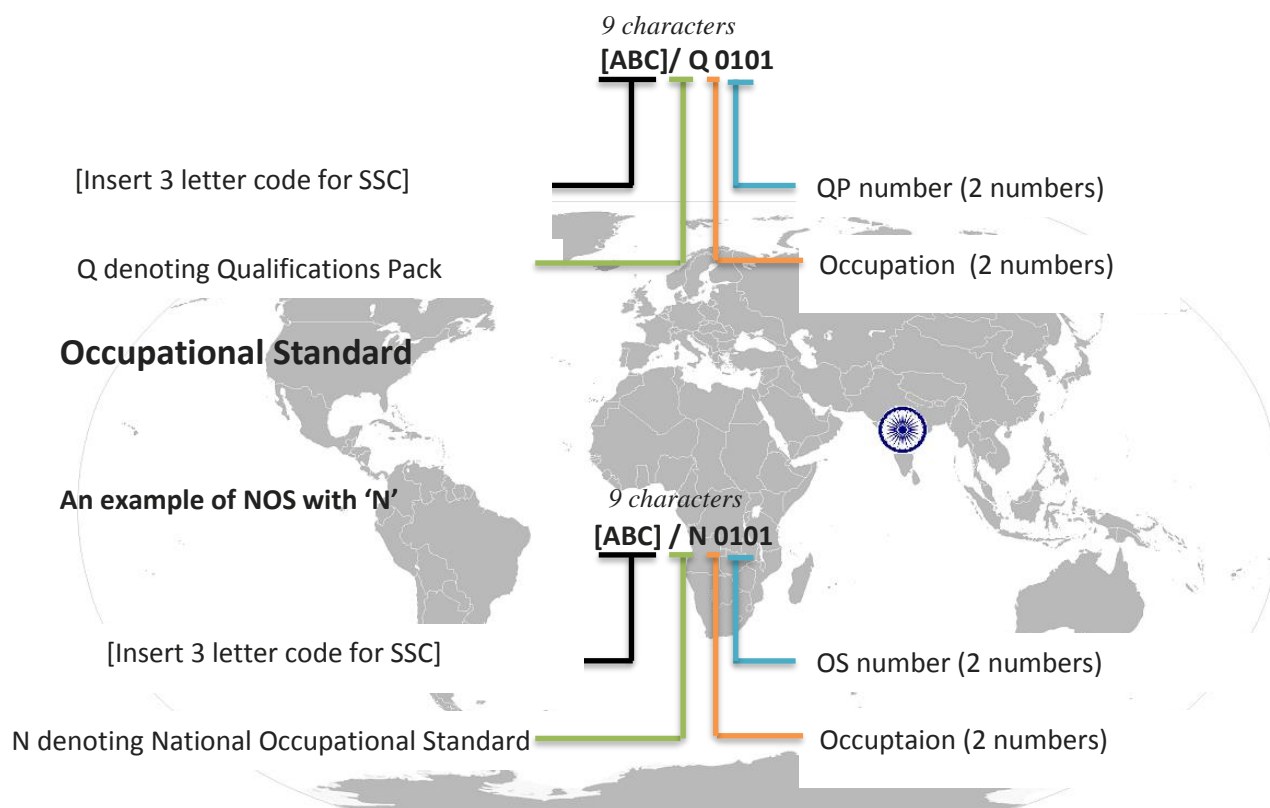


Qualification Pack for Drive Test Engineer

Annexure

Nomenclature for QP and NOS

Qualifications Pack: TEL/Q0101



Qualification Pack for Drive Test Engineer

The following acronyms/codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
Service	01- 20
Handset	21 – 40
Passive Infra	41 – 60
Network managed	61 – 80

Sequence	Description	Example
Three letters	Industry name	TEL
Slash	/	/
Next letter	Whether QP or NOS	Q
Next two numbers	Occupation code	01
Next two numbers	OS number	01

Qualification Pack - Drive Test Engineer

Criteria for Assessment of Trainees

Job Role

: Drive Test Engineer

Qualification Pack

: TEL/Q6211

Sector Skill Council

: Telecom Sector Skill Council

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/ set of NOS.
4. Individual assessment agencies will create unique question papers for theory and skill practical part for each candidate at each examination/ training center.
5. To pass the Qualification Pack, every trainee should score a minimum 70% of aggregate marks to successfully clear the assessment.
6. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Compulsory NOS				Marks Allocation	
Total Marks: 400					
Assessment Outcome	Assessment Criteria	Total Marks	Out Of	Theory	Skills Practical
TEL/N6237 Verify the checklist	PC1. verify tower ID (all three sectors) and latitude & longitude of the site	100	10	5	5
	PC2. ascertain antenna height , antenna tilt (E/M) and antenna orientation of the site as per the given parameters		20	10	10
	PC3. ascertain sector swap as per the defined parameters		10	4	6
	PC4. perform EMF survey as per the company norms		5	0	5
Arrange the tools and equipment required for performing site audit	PC5. ascertain availability of all test and measuring equipment (magnetic compass, hand GPS, tilt meter, digital camera, safety kit and measuring tape)		20	10	10
	PC6. ascertain availability of all tools for performing drive test (laptop, charger, portable charges, data cables, TEMS dongle, mobile phone)		25	10	15
	PC7. ascertain availability and proper installation configuration of drive test measurement and recording software (TEMS , MAPINFO, MCOM)		10	5	5
	TOTAL	100	100	44	56
TEL/N6238 Plan area, routes & schedule for conducting Drive Test	PC1. trace a given path on the google earth software, mapinfo to identify the site locations	100	5	0	5
	PC2. co-ordinate with the support teams for scheduling the drive test		5	0	5
	PC3. plan the drive test route		10	4	6
	PC4. check/ rectify the fault, site alarm (if any) before performing the drive test.		20	5	15

Qualification Pack - Drive Test Engineer

On-site Activity	PC5. demonstrate test compliances (no swap in the sector, all neighboring cells parameters are defined and all RF frequencies given are correct as per company norms)		15	7	8
	PC6. demonstrate recording of drive test log (dropped calls, blocked calls, handover failures, TA, clockwise, anti-clockwise handover and inter-connectivity between GSM/ UMTS/ LTE/ VoLTE)		10	5	5
	PC7. undertake basic analysis of the report generated by Layer 2 and 3 during the drive test/ post drive test		10	4	6
	PC8. demonstrate the process of creating log files (short call and long call per sector of a site)		5	0	5
	PC9. recheck the log files before leaving the site		5	2	3
Fault identification and rectification	PC10. identify the nature of fault (due to passive or active components at the tower site)		5	5	0
	PC11. coordinate with infra engineer/ technicians for rectification and cater overall site performance		5	5	0
	PC12. undertake/ coordinate root cause analysis (with backend team) is done for dropped/ blocked calls/ handover failure		5	5	0
	TOTAL	100	100	42	58
TEL/N6239 Analyze drive test report	PC1. demonstrate and analyse all the parameters related to 2G drive test (Rx level, Rxquality, C/I, SQI, UL/DL throughput)	100	20	5	15
	PC2. demonstrate and analyse all the parameters related to 3G drive test (RSCP, Ec/No, RSSI, SC, CQI, UL/DL throughput)		15	5	10
	PC3. demonstrate and analyse all the parameters related to 4G/VoLTE drive test (RSRP, RSRQ, PCI, SINR, UL/DL throughput, MO/MT, AT/DT, ping testing)		15	5	10
	PC4. analyse key site parameters (coverage analysis, overshooting analysis, pollution analysis, neighbouring site analysis, call drop analysis, delay analysis, and network KPI analysis)		20	5	15
Reporting and documenting the status	PC5. record faults and take corrective actions		10	5	5
	PC6. filling all the required details in drive test report template		10	5	5
	PC7. generate performance report (covering vector map, cell site details, export of recorded log files)		10	5	5
	TOTAL	100	100	35	65
	PC1. co-ordinate with the helper for site antenna adjustment (azimuths, antenna tilts (E/M), antenna height and orientation)		20	10	10

Qualification Pack - Drive Test Engineer

TEL/N6240 Coordinating activities for performing physical optimization and troubleshooting	PC2. undertake parameter checks (BTS, NodeB, eNodeB, transmit power, feature algorithms, frequency hopping)	100	30	10	20
	PC3. capture GPS direction and latitude/ longitude of any immediate obstructions (tall building, chimney, water tank etc)		20	10	10
	PC4. identify the swap and know how to prepare connectors		20	5	15
	PC5. troubleshoot/ undertake corrective actions (based on analysis of the local site parameters)		10	4	6
	TOTAL	100	100	39	61
TEL/N2509 Health & Safety	PC1. ensure that work is carried out in accordance with the laid down safety, security policies and procedures of the organization	100	10	6	4
	PC2. ensure that site is assessed for safety and emergency readiness compliance as per company's guidelines		12	6	6
	PC3. ensure electrical safety compliances and EMI/EMC hygiene requirements are met as per the guidelines		15	9	6
	PC4. identify and correct any hazards that you can deal with safely, competently and within the limits of your authority		15	10	5
	PC5. report any hazards that you are not competent to deal with to the relevant person in line with organizational procedures and warn other people who may be affected		12	7	5
	PC6. follow your organizations's emergency procedures promptly, calmly and efficiently		12	6	6
	PC7. identify and recommend opportunities for improving health, safety, security to the designated person		14	8	6
	PC8. complete any health and safety records legibly and accurately		10	5	5
	Total	100	100	57	43