

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

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Introduction

Qualifications Pack-R F Site Surveyor

SECTOR: TELECOM

SUB-SECTOR: Passive Infrastructure

OCCUPATION: Operation & Maintenance

REFERENCE ID: TEL/Q4103

ALIGNED TO: NCO-2004/7241.20

Brief Job Description: Individual in this role is responsible for identification of site location, estimation of tower height and determination of antenna height and direction as per clutter.

Personal Attributes: This job requires a person to be technically qualified; self-disciplined; team player; action oriented; possess good communication, analytical skills and problem solving ability.

Qualifications Pack for R F Site Surveyor

Qualifications Pack Code	TEL/Q4103		
Job Role	R F Site Surveyor		
Credits(NSQF)	TBD	Version number	1.0
Sector	Telecom	Drafted on	19/09/2014
Sub-sector	Passive Infrastructure	Last reviewed on	21/06/2018
Occupation	Operations & Maintenance	Next review date	31/03/2019
NSQC Clearance on	20/07/2015		

Job Role	R F Site Surveyor
Role Description	Identify site location, estimate tower height and determine antenna height and direction as per clutter.
NSQF level	4
Minimum Educational Qualifications*	10+2 Preferably
Maximum Educational Qualifications*	B.Tech (Electronics and Communication)
Training (Suggested but not mandatory)	NA
Minimum Job Entry Age	18 Years
Experience	Nil
Applicable National Occupational Standards (NOS)	Compulsory: 1. TEL/N4115 (Identify site location) 2. TEL/N4116 (Determine tower height) 3. TEL/N4117 (Determine height and direction of antenna as per clutter type)
Performance Criteria	As described in the relevant OS units

Definitions

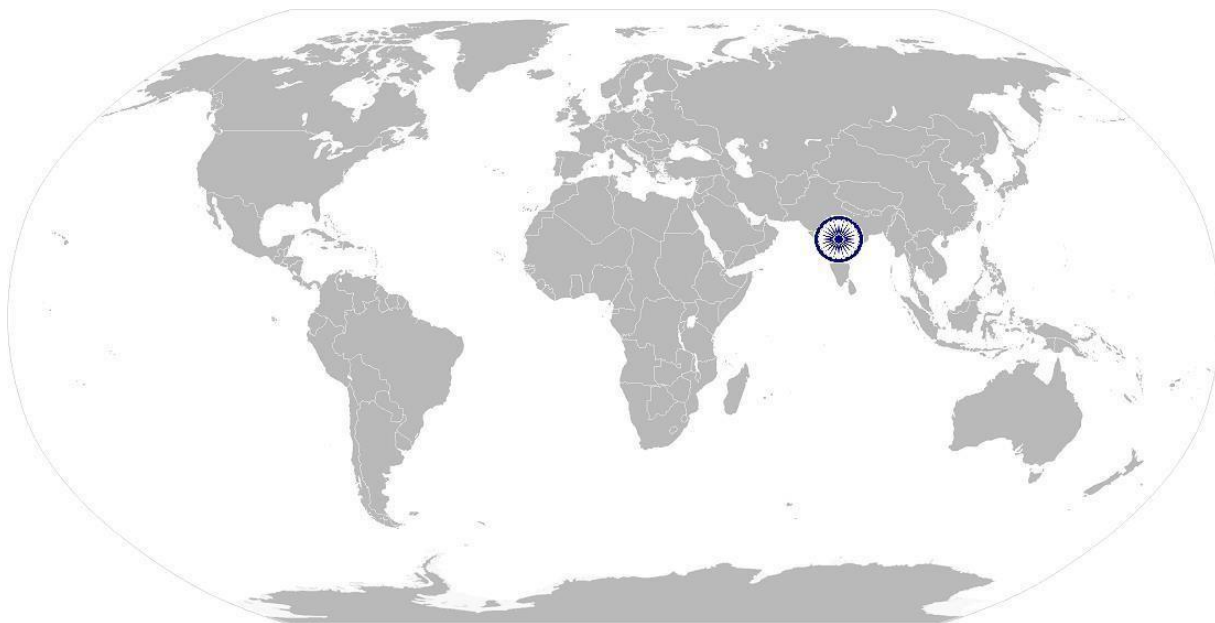
Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests
Sub-sector	Sub-sector is derived from a further 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 (Occupational Standards)	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 standards of performance required when carrying out a task
National Occupational Standards	NOS are Occupational Standards which apply uniquely in the Indian context
QP (Qualification 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
Qualification Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack
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 statements which together specify the technical , generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standards
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/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

Acronyms	Keywords /Terms	Description
	AMSL	Above Mean Sea Level
	BTS	Base Transceiver Station
	GPS	Global Positioning System
	OHS	Organizational Health and Safety
	RF	Radio Frequency
	SHE	Safety, Health and Environment
	SAM	Search Area Map

TEL/N4115

Identify site location

National Occupational Standard



Overview

This unit is about identification of RF site location.

TEL/N4115

Identify site location

National Occupational Standard

Unit Code	TEL/N4115
Unit Title (Task)	Identify site location
Description	This OS unit is about identifying RF site location.
Scope	This unit/task covers the following: - Coordinating activities for identifying RF site location - Interacting with RF Planner and Landlord
Performance Criteria(PC) w.r.t. the Scope:	
Element	Performance Criteria
Arrange for tools and information	To be competent, the user/individual on the job must be able to: PC1. ensure availability of tools (GPS,Camera,Binoculars, Compass, laptop,Map info software) for survey preparation PC2. read Search Area Map (SAM)/ nominals of proposed location obtained from the RF planning team PC3. confirm that SAM contains all relevant information about proposed site;site name,site id,latitude and longitude,coverage objective
Coordinating RF site survey activities for identifying site location	To be competent, the user/individual on the job must be able to: PC1. operate GPS to capture latitude/longitude on reaching site location PC2. Identify physical location of the nominals on the site and locate three options PC3. put obtained latitude and longitude in Map info software to see nearby R F sites for distance, orientation and signal quality PC4. verify landlord antecedents
Health and Safety	To be competent, the user/individual on the job must be able to: PC1. ensure compliance with site risk control, OHS, environmental and quality requirements as per norms PC2. ensure that work is carried out in accordance to the level of competence and legal requirements PC3. ensure that personal protection equipments like helmets, safety boots etc are used as required PC4. ensure adherence to emergency plans in case of safety incidents
Report and record	To be competent, the user/individual on the job must be able to: PC1. ensure GPS data is documented and the proposed options are recorded PC2. ensure signal quality observed is recorded PC3. ensure filling all the required details in survey report template PC4. ensure documents are available to all appropriate authorities for inspection

TEL/N4115

Identify site location

Knowledge and Understanding	
A. Organizational Context (Knowledge of the company / organization & its process relevant to area of responsibilities)	The user/individual on the job needs to know and understand: KA1. the importance of record keeping KA2. the importance of following defined procedures/work instructions KA3. escalation matrix for reporting identified incidents, troubles, emergencies KA4. SHE and OHS guidelines and regulations as per company's norms KA5. first aid requirements in case of fall and other common injuries
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. functionality of GPS,Camera,Binoculars,Compass,laptop KB2. search area map (SAM),Site id, latitude,longitude KB3. understanding of Map info software KB4. principles of RF propagation

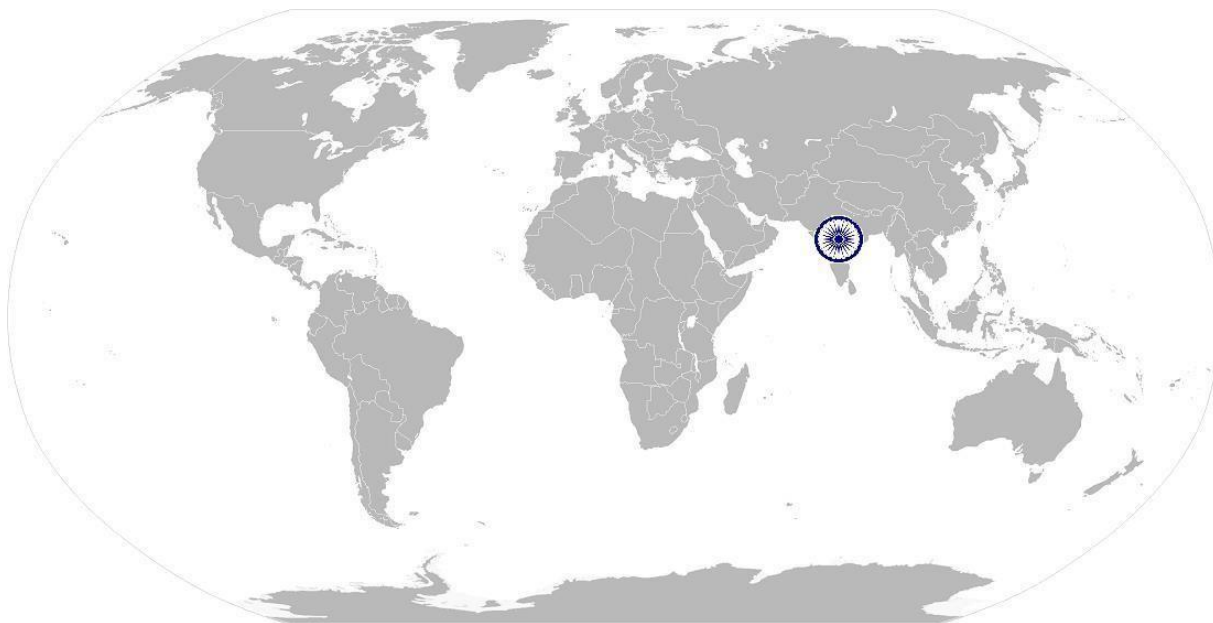
Skills (S)	
A. Core Skills/ Generic Skills	The user/ individual on the job needs to know and understand how to: SA1. reading skills- read and understand manuals, work orders, health and safety instructions, reports etc SA2. writing skills-fill up appropriate technical forms, maintain proper records as per given format SA3. communication skills- communicate with supervisor, peers and landlord SA4. interpersonal skills- create and maintain effective working relationships and team environment SA5. other skills-take initiatives and progressively assume increased responsibilities
B. Professional Skills	The user/individual on the job needs to know and understand how to: SB1. equipment handling skills- GPS,Camera,Binoculars, Compass, laptop,Map info soft ware SB2. interpretation skills-interpret diagrams and other numerical data SB3. problem solving skills-develop viable site options

TEL/N4115

Identify site location

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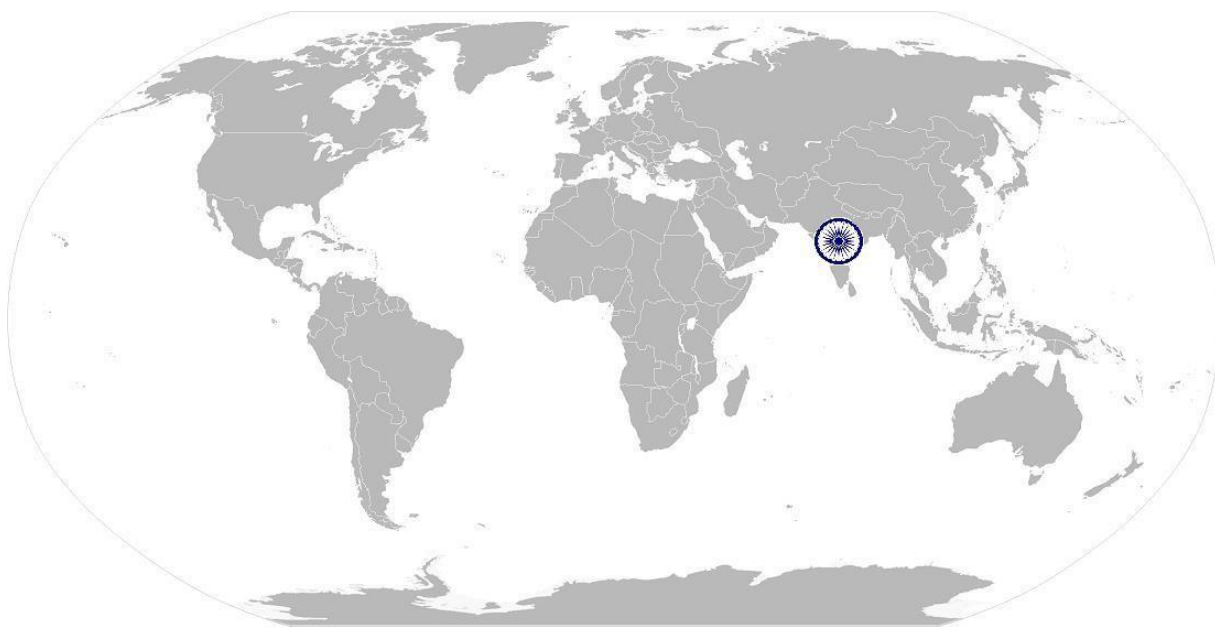
NOS Code	TEL/N4115		
Credits(NSQF)	TBD	Version number	1.0
Industry	Telecom	Drafted on	19/09/2014
Industry Sub-sector	Passive Infrastructure	Last reviewed on	21/06/2018
Occupation	Operations & Maintenance	Next review date	31/03/2019



TEL/N4116

Determine tower height

National Occupational Standard



Overview

This unit is about determining tower height.

TEL/N4116

Determine tower height

National Occupational Standard

Unit Code	TEL/N4116
Unit Title (Task)	Determine tower height
Description	This OS unit is about determining tower height
Scope	This unit/task covers the following: - Coordinating activities for estimating tower height - Interacting with RF Planner
Performance Criteria(PC) w.r.t. the Scope:	
Elements	Performance Criteria
Arrange for tools	To be competent, the user/individual on the job must be able to: PC1. ensure availability of tools (GPS,Camera,Binoculars,Compass)
Coordinating RF site survey activities for estimating tower height	To be competent, the user/individual on the job must be able to: PC1. use GPS to locate tower on site PC2. use camera to take photograph of site for proposing tower and BTS location on the site PC3. mark proposed tower / pole location on a rough sketch of the building (rooftop) or ground site PC4. use GPS to take AMSL data PC5. measure building height using laser meter PC6. use binocular to check for any obstructions like other tall buildings around proposed site PC7. estimate tower height
Health and Safety	To be competent, the user/individual on the job must be able to: PC1. ensure compliance with site risk control, OHS, environmental and quality requirements as per norms PC2. ensure that work is carried out in accordance to the level of competence and legal requirements PC3. ensure that personal protection equipments like helmets, safety boots etc are used as required PC4. ensure adherence to emergency plans in case of safety incidents
Report and record	To be competent, the user/individual on the job must be able to: PC1. ensure GPS data is documented and proposed options are recorded PC2. ensure AMSL data is recorded PC3. ensure filling all the required details in survey report template PC4. ensure documents are available to all appropriate authorities for inspection

TEL/N4116

Determine tower height

Knowledge and Understanding	
A. Organizational Context (Knowledge of the company / organization & its process relevant to area of responsibilities)	The user/individual on the job needs to know and understand: - KA1. the importance of record keeping - KA2. the importance of following defined procedures/work instructions - KA3. escalation matrix for reporting identified incidents, troubles, emergencies - KA4. SHE and OHS guidelines and regulations as per company's norms - KA5. the importance of using personal protection equipments like helmets, safety boots - KA6. first aid requirements in case of , fall and other common injuries
B. Technical Knowledge	The user/individual on the job needs to know and understand: - KB1. functionality of GPS,Camera,Binoculars,Compass,Laser meter - KB2. marking site layout - KB3. search area map (SAM),Site id, latitude, longitude - KB4. principles of RF propagation

TEL/N4116

Determine tower height

Skills (S)	
A. Core Skills/ Generic Skills	The user/ individual on the job needs to know and understand how to: - SA1. reading skills- read and understand manuals, work orders, health and safety instructions, reports etc - SA2. writing skills-fill up appropriate technical forms, maintain proper records as per given format - SA3. communication skills- communicate with supervisor and peers - SA4. interpersonal skills- create and maintain effective working relationships and team environment - SA5. other skills-take initiatives and progressively assume increased responsibilities
B. Professional Skills	The user/individual on the job needs to know and understand how to: - SB1. equipment handling skills: GPS,Camera,Binoculars,laser meter - SB2. interpretation skills-interpret diagrams and other numerical data - SB3. problem solving skills

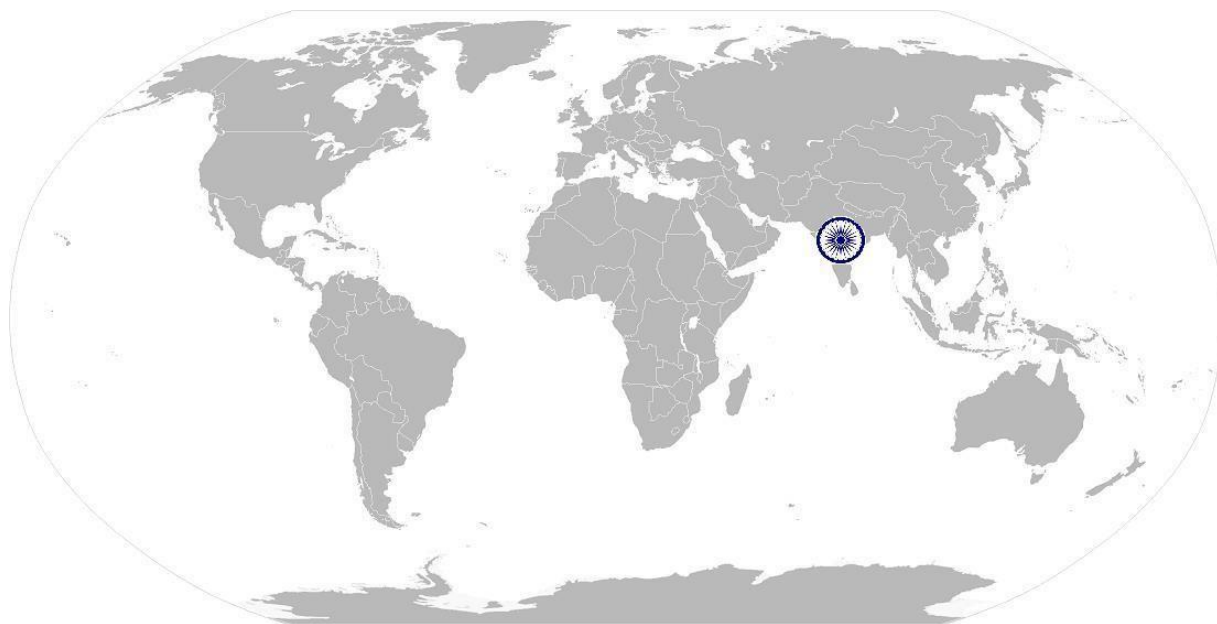


TEL/N4116

Determine tower height

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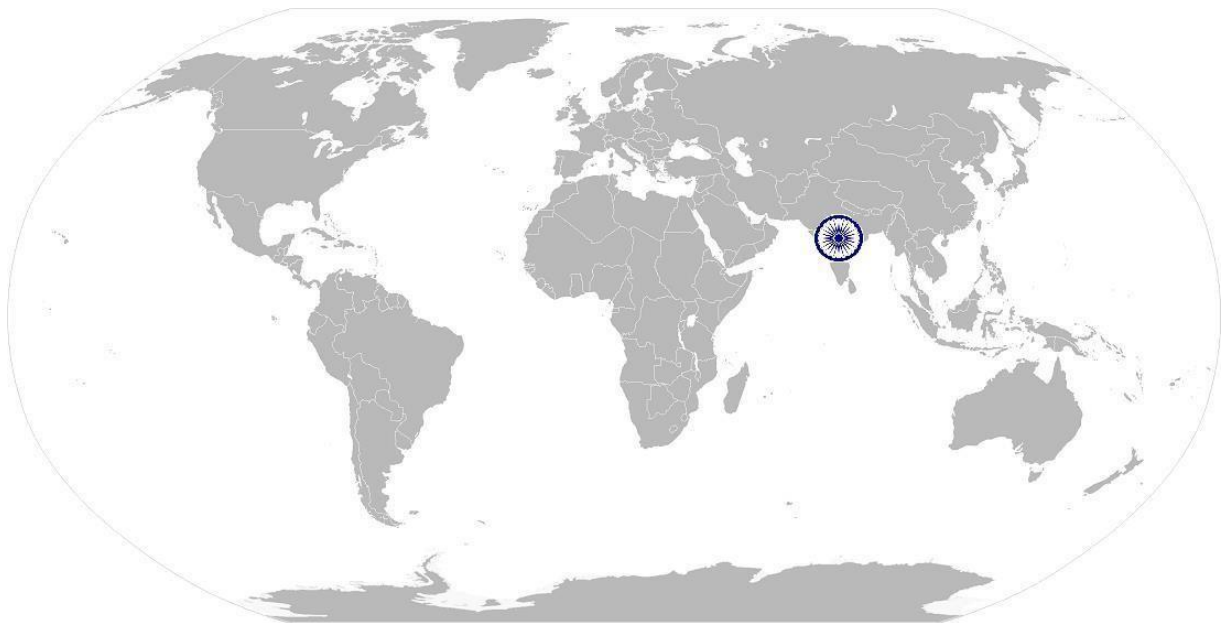
NOS Code	TEL/N4116		
Credits(NSQF)	TBD	Version number	1.0
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Industry Sub-sector	Passive Infrastructure	Last reviewed on	21/06/2018
Occupation	Operations & Maintenance	Next review date	31/03/2019



TEL/N4117

Determine height and direction of antenna as per clutter type

National Occupational Standard



Overview

This unit is about determining height and direction of antenna as per clutter type around proposed R F site.

TEL/N4117

Determine height and direction of antenna as per clutter type

Service Provider

Unit Code	TEL/N4117
Unit Title (Task)	Determine height and direction of antenna as per clutter type
Description	This unit is about determining height and direction of antenna as per clutter type
Scope	This unit/task covers the following: - Coordinating activities for determining height and direction of antenna as per clutter type - Key stakeholders: RF Planner, RF Site Surveyor
Performance Criteria(PC) w.r.t. the Scope:	
Element	Performance Criteria
Arrange for tools	To be competent, the user/individual on the job must be able to: PC1. ensure availability of tools (GPS,Camera,Binoculars, Compass, Map info software,Laptop)
Coordinating RF site survey activities for antenna height and direction as per clutter type	To be competent, the user/individual on the job must be able to: PC1. identify north using compass PC2. use camera take photographs of the panoramic view at 30 degree interval starting with north PC3. use camera to take the photograph in the proposed antenna azimuth for coverage PC4. use GPS to capture direction and latitude/longitude of any immediate obstructions (tall building,chimney,water tank etc) PC5. use binocular to capture and interpret clutter information PC6. collect hotspot information using GPS PC7. estimate and provide for required antenna heights and orientation based on clutter PC8. verify space availability for antenna on the tower in case of shared survey PC9. verify direction availability for antenna on the tower in case of shared survey
Health and Safety	To be competent, the user/individual on the job must be able to: PC1. ensure compliance with site risk control, OHS, environmental and quality requirements as per norms PC2. ensure that work is carried out in accordance to the level of competence and legal requirements PC3. ensure that personal protection equipments like helmets, safety boots etc are used as required PC4. ensure adherence to emergency plans in case of safety incidents

TEL/N4117

Determine height and direction of antenna as per clutter type

Report and record	To be competent, the user/individual on the job must be able to: PC1. ensure GPS data is documented and the proposed options are recorded PC2. ensure clutter and hotspot information is recorded PC3. ensure filling all the required details in survey report template PC4. ensure documents are available to all appropriate authorities for inspection
Knowledge and Understanding	
A. Organizational Context (Knowledge of the company / organization & its process relevant to area of responsibilities)	The user/individual on the job needs to know and understand: KA1. the importance of record keeping KA2. the importance of following defined procedures/work instructions KA3. escalation matrix for reporting identified incidents, troubles, emergencies KA4. SHE and OHS guidelines and regulations as per company's norms KA5. the importance of using personal protection equipments like helmets, safety boots KA6. first aid requirements in case of , fall and other common injuries
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. functionality of GPS,Camera,Binoculars,Compass,Laptop,Laser meter KB2. understanding of Map Info software KB3. site id,latitude,longitude,azimuth angle, hot spot, clutter KB4. principles of RF propagation
Skills (S)	
A. Core Skills/ Generic Skills	The user/ individual on the job needs to know and understand how to: SA1. reading skills- read and understand manuals, work orders, health and safety instructions, reports etc SA2. writing skills-fill up appropriate technical forms, maintain proper records as per given format SA3. communication skills- communicate with supervisor and peers SA4. interpersonal skills- create and maintain effective working relationships and team environment SA5. other skills-take initiatives and progressively assume increased responsibilities

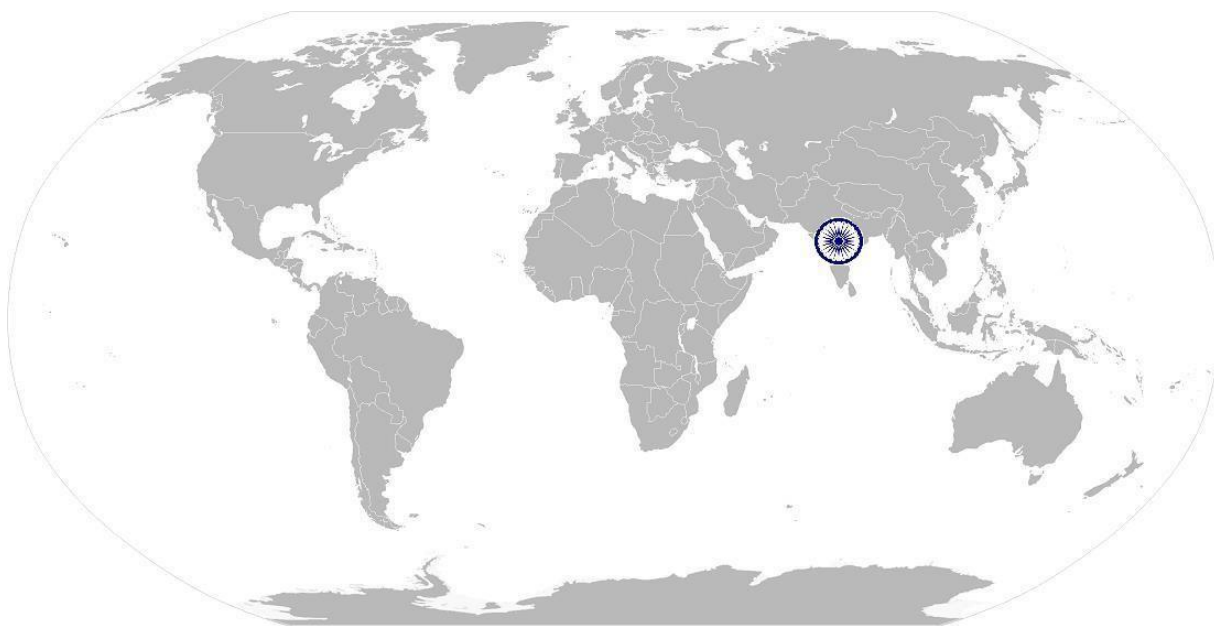
TEL/N4117

Determine height and direction of antenna as per clutter type

B. Professional Skills

The user/individual on the job needs to know and understand how to:

- SB1. equipment handling skills: GPS, Camera, Binoculars, Compass, Laptop and Map Info soft ware
- SB2. interpretation skills-interpret diagrams and other numerical data
- SB3. problem solving skills- develop viable antenna placement options

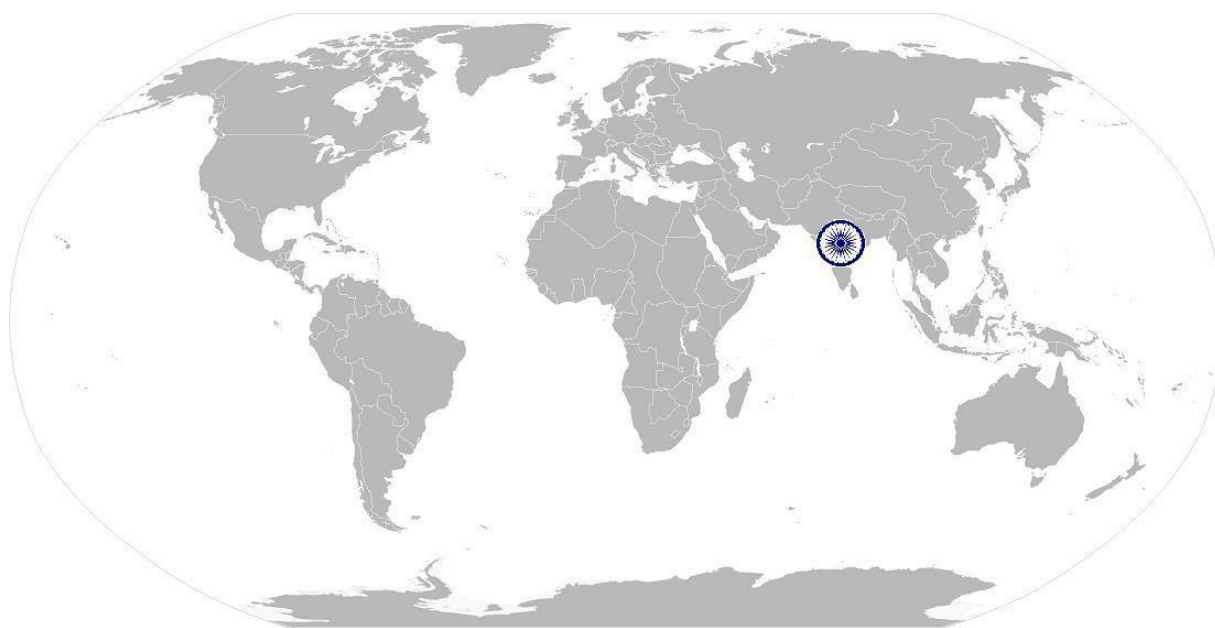


TEL/N4117

Determine height and direction of antenna as per clutter type

NOS Version Control:

NOS Code	TEL/N4117		
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Occupation	Operations & Maintenance	Next review date	31/03/2019





Qualification Pack for R F Surveyor

Job Role

R F Site Surveyor

Qualification Pack

TEL/Q4103

Sector Skill Council

Telecom

Guidelines for Assessment

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.
- 4a. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
- 4b. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.
5. To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
6. In case of *unsuccessful completion*, the trainee may seek reassessment on the Qualification Pack.

Assessment Outcome	Assessment Criteria		Total Mark (300)	Element Weight	Out of	Theory	Skills Practical
TEL/N4115 Identify Site Location	Arrange for tools and information	PC1. ensure availability of tools (GPS,Camera, Binoculars, Compass,	100	20	5	2	3
		PC2. read Search Area Map (SAM)/ nominals of proposed location			7	2	5
		PC3. confirm that SAM contains all relevant information about proposed site;site name,site id,latitude and longitude,coverage objective			8	3	5
	Coordinating R F site survey activities for identifying site location	PC1. operate GPS to capture latitude/longitude on reaching site location		60	20	2	18
		PC2. identify physical location of the nominals on the site and locate three options			20	2	18
		PC3. put obtained latitude and longitude in Map info software to see nearby R F sites for distance, orientation and signal quality			15	3	12
		PC4. verify landlord antecedents			5	5	0
	Health and Safety	pc1. ensure compliance with site risk control, OHS, environmental and quality		10	3	3	0
		PC2. ensure that work is carried out in accordance to the level of competence			2	2	0
		PC3. ensure that personal protection equipments like helmets, safety boots etc are used as required			3	3	0
		PC4. ensure adherence to emergency plans in case of safety incidents			2	2	0
		PC1. ensure GPS data is documented and the proposed options are recorded			3	1	2
		PC2. ensure signal quality observed is recorded			3	1	2

	Report and Record	PC3. ensure filling all the required details in survey report template		10	2	2	0
		PC4. ensure documents are available to all appropriate authorities for inspection			2	2	0
			Total	100	100	35	65
TEL/N4116 Determine Tower Height	Arrange for tools	PC1. ensure availability of tools (GPS,Camera, Binoculars,Compass,Laptop,Map info software)	100	5	5	2	3
	Coordinating R F site survey activities for estimating tower height site location	PC1. use GPS to locate tower on site		75	15	3	12
		PC2. use camera to take photograph of site for proposing tower and BTS			10	2	8
		PC3. mark proposed tower / pole location on a rough sketch of the building			10	2	8
		PC4. use GPS to take AMSL data			10	2	8
		PC5. measure building height using laser meter			10	2	8
		PC6. use binocular to check for any obstructions like other tall buildings around			10	2	8
		PC7. estimate tower height			10	2	8
	Health and Safety	PC1. ensure compliance with site risk control, OHS, environmental and quality		10	3	3	0
		PC2. ensure that work is carried out in accordance to the level of competence			2	2	0
		PC3. ensure that personal protection equipments like helmets, safety boots etc are			3	3	0
		PC4. ensure adherence to emergency plans in case of safety incidents			2	2	0
	Report and Record	PC1. ensure GPS data is documented and the proposed options are recorded		10	3	1	2
		PC2. ensure AMSL data is recorded			3	1	2
		PC3. ensure filling all the required details in survey report template			2	2	0
		PC4. ensure documents are available to all appropriate authorities for inspection			2	2	0
			Total	100	100	33	67
	Arrange for tools	PC1. ensure availability of tools (GPS,Camera, Binoculars,Compass,Laptop)		5	5	2	3
		PC1. identify north using compass			5	1	4
		PC2. use camera take photographs of the panoramic view at 30 degree interval starting with north			10	2	8
		PC3. use camera to take the photograph in the proposed antenna azimuth for coverage			10	2	8
		PC4. use GPS to capture direction and latitude/ longitude					

TEL/N4117 Determine height and direction of antenna as per clutter type	Coordinating R F site survey activities for antenna height and direction as per clutter type	of any immediate obstructions (tall building, chimney, water tank etc)	100	75	10	2	8
		PC5. use binocular to capture and interpret clutter information			10	2	8
		PC6. collect hotspot information using GPS			10	2	8
		PC7. estimate and provide for required antenna heights and orientation based on clutter			10	2	8
		PC8. verify space availability for antenna on the tower in case of shared survey			5	2	3
		PC9. verify direction availability for antenna on the tower in case of shared survey			5	2	3
	Health and Safety	pc1. ensure compliance with site risk control, OHS, environmental and quality		10	3	3	0
		PC2. ensure that work is carried out in accordance to the level of competence			2	2	0
		PC3. ensure that personal protection equipments like helmets, safety boots etc are used as required			3	3	0
		PC4. ensure adherence to emergency plans in case of safety incidents			2	2	0
	Report and Record	PC1. ensure GPS data is documented and the proposed options are recorded		10	3	1	2
		PC2. ensure clutter and hotspot information is recorded			3	1	2
		PC3. ensure filling all the required details in survey report			2	2	0
		PC4. ensure documents are available to all appropriate			2	2	0
			Total	100	100	35	65