

Job Details	Qualifications Pack Code	TEL/Q4103		
	Job Role	R F Site Surveyor		
	Credits(NSQF)		Version number	1.0
	Sector	Telecom	Drafted on	19/09/2014
	Sub-sector	Passive Infrastructure	Last reviewed on	08/10/2014
	Occupation	Operations & Maintenance	Next review date	09/10/2016

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	Preferably 10+2
Maximum Educational Qualifications	B.Tech (Electronics and Communication)
Training (Suggested but not mandatory)	NA
Experience	Nil
Applicable National Occupational Standards (NOS)	<p>(Click to open the below hyperlinks)</p> <p>Compulsory:</p> <ol style="list-style-type: none"> 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) <p>Optional: NA</p>
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 <u>qualifications pack</u>
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

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

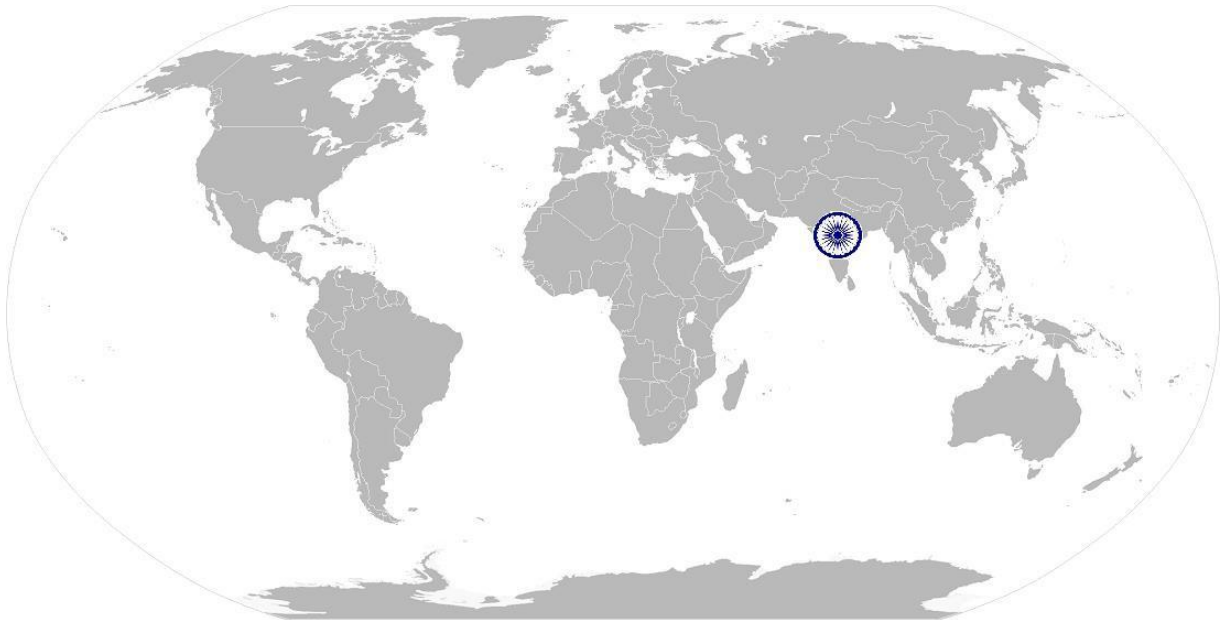
Acronyms	Keywords /Terms	Description
	AMSL	Above Mean Sea Level
	BTS	Base Transceiver Station
	GPS	Global Positioning System
	OHS	Organizational Health and Safety
	RF	Radio Frequency
	SHE	Safety, Health and Environment
	SAM	Search Area Map

[Back to Top](#)

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	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> 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	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure availability of tools (GPS, Camera, Binoculars, Compass, laptop, Map info software) for survey preparation</p> <p>PC2. read Search Area Map (SAM)/ nominals of proposed location obtained from the RF planning team</p> <p>PC3. confirm that SAM contains all relevant information about proposed site; site name, site id, latitude and longitude, coverage objective</p>
Coordinating RF site survey activities for identifying site location	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. operate GPS to capture latitude/longitude on reaching site location</p> <p>PC2. Identify physical location of the nominals on the site and locate three options</p> <p>PC3. put obtained latitude and longitude in Map info software to see nearby RF sites for distance, orientation and signal quality</p> <p>PC4. verify landlord antecedents</p>
Health and Safety	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure compliance with site risk control, OHS, environmental and quality requirements as per norms</p> <p>PC2. ensure that work is carried out in accordance to the level of competence and legal requirements</p> <p>PC3. ensure that personal protection equipments like helmets, safety boots etc are used as required</p> <p>PC4. ensure adherence to emergency plans in case of safety incidents</p>
Report and record	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure GPS data is documented and the proposed options are recorded</p> <p>PC2. ensure signal quality observed is recorded</p> <p>PC3. ensure filling all the required details in survey report template</p> <p>PC4. ensure documents are available to all appropriate authorities for inspection</p>

TEL/N4115

Identify site location

Knowledge and Understanding	
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> <ul style="list-style-type: none"> 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	<p>The user/individual on the job needs to know and understand:</p> <ul style="list-style-type: none"> 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

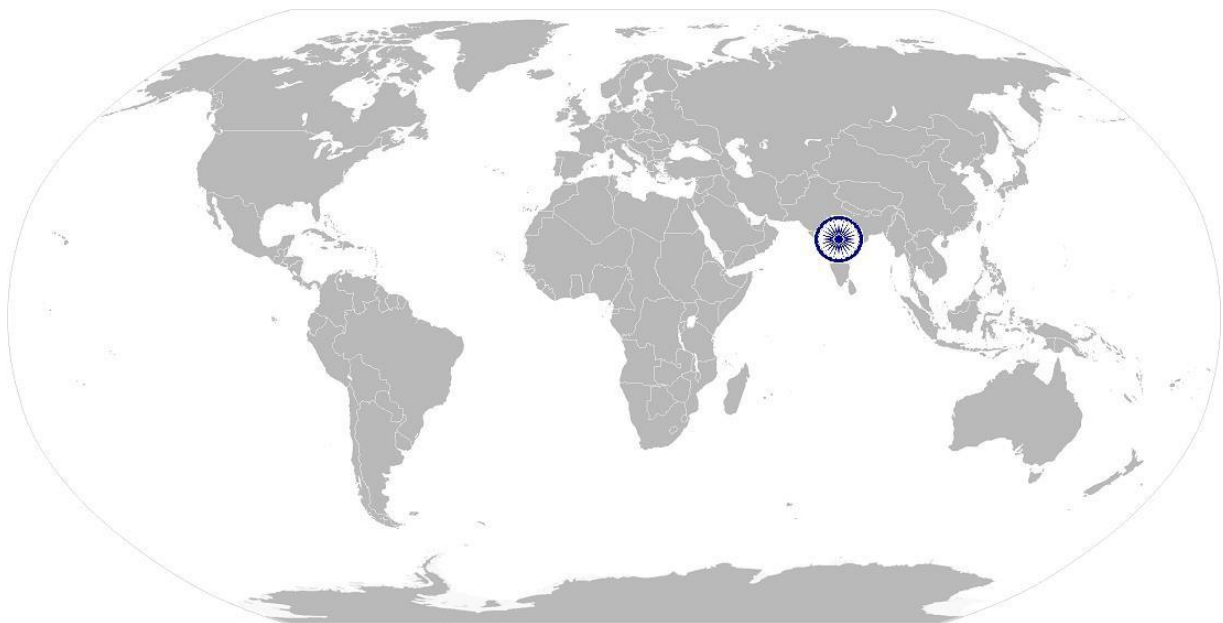
Skills (S)	
A. Core Skills/ Generic Skills	<p>The user/ individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> SA1. reading skills- read and understand manuals, work orders, health and safety instructions, reports etc SA2. writing skills-fill up appropriate 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	<p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> 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

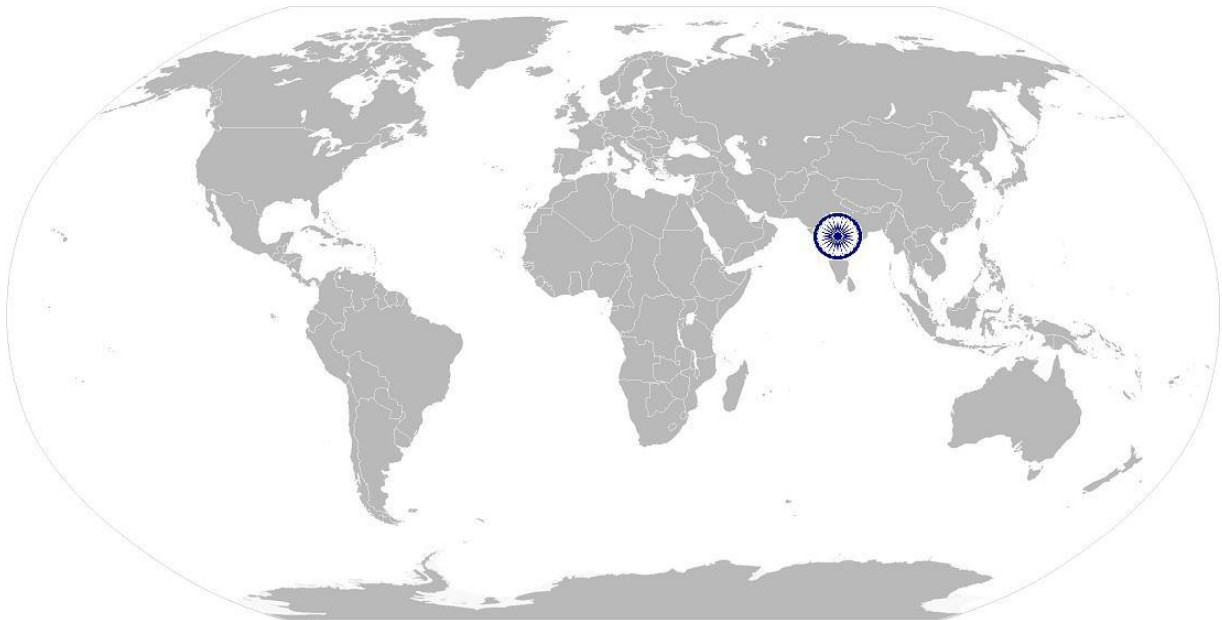
NOS Version Control:

NOS Code			
Credits(NSQF)		Version number	1.0
Industry		Drafted on	19/09/2014
Industry Sub-sector		Last reviewed on	08/10/2014
		Next review date	09/10/2016



[Back to QP](#)

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	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Coordinating activities for estimating tower height Interacting with RF Planner
Performance Criteria(PC) w.r.t. the Scope:	
Elements	Performance Criteria
Arrange for tools	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure availability of tools (GPS, Camera, Binoculars, Compass)</p>
Coordinating RF site survey activities for estimating tower height	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. use GPS to locate tower on site</p> <p>PC2. use camera to take photograph of site for proposing tower and BTS location on the site</p> <p>PC3. mark proposed tower / pole location on a rough sketch of the building (rooftop) or ground site</p> <p>PC4. use GPS to take AMSL data</p> <p>PC5. measure building height using laser meter</p> <p>PC6. use binocular to check for any obstructions like other tall buildings around proposed site</p> <p>PC7. estimate tower height</p>
Health and Safety	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure compliance with site risk control, OHS, environmental and quality requirements as per norms</p> <p>PC2. ensure that work is carried out in accordance to the level of competence and legal requirements</p> <p>PC3. ensure that personal protection equipments like helmets, safety boots etc are used as required</p> <p>PC4. ensure adherence to emergency plans in case of safety incidents</p>
Report and record	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure GPS data is documented and proposed options are recorded</p> <p>PC2. ensure AMSL data is recorded</p> <p>PC3. ensure filling all the required details in survey report template</p> <p>PC4. ensure documents are available to all appropriate authorities for inspection</p>

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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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)	
<p>A. Core Skills/ Generic Skills</p>	<p>The user/ individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> 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
<p>B. Professional Skills</p>	<p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> SB1. equipment handling skills: GPS, Camera, Binoculars, laser meter SB2. interpretation skills-interpret diagrams and other numerical data SB3. problem solving skills

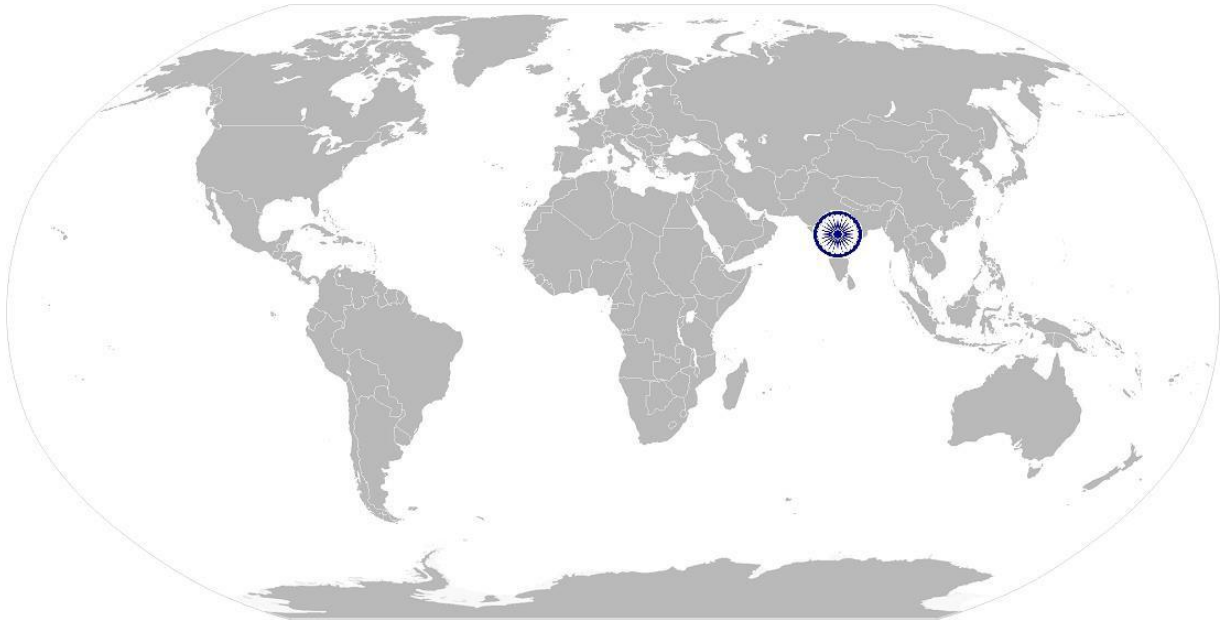


TEL/N4116

Determine tower height

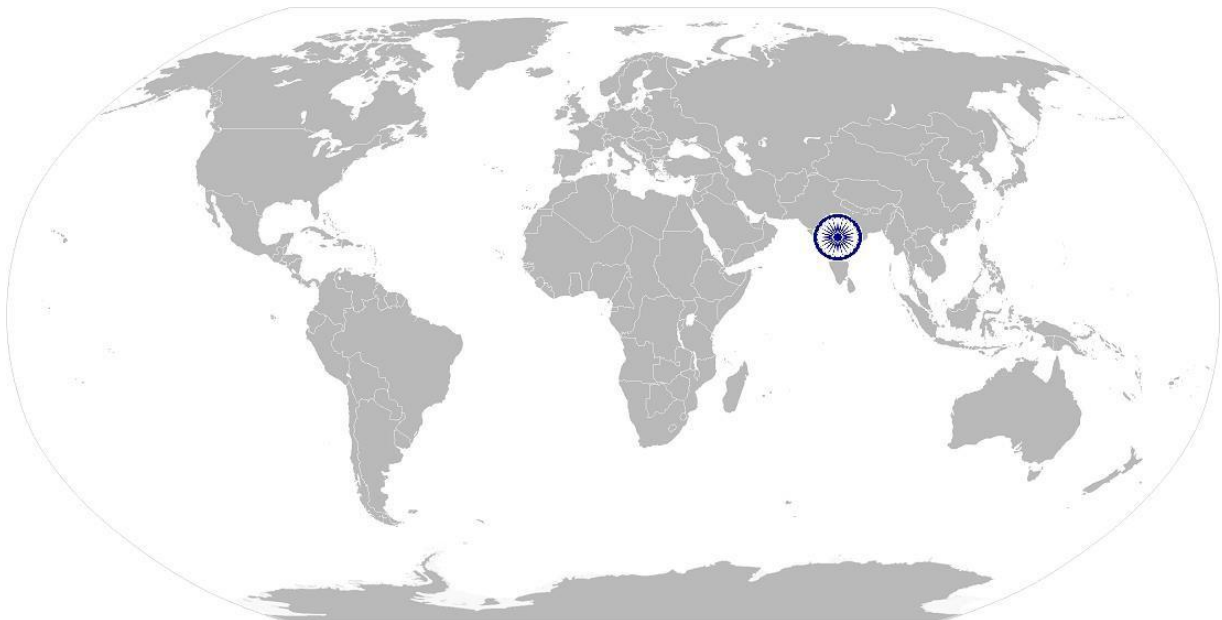
NOS Version Control:

NOS Code	TEL/N4116		
Credits(NSQF)		Version number	1.0
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Industry Sub-sector	Passive Infrastructure	Last reviewed on	08/10/2014
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[Back to QP](#)

National Occupational Standard



Overview

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

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	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> 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	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure availability of tools (GPS, Camera, Binoculars, Compass, Map info software, Laptop)</p>
	Coordinating RF site survey activities for antenna height and direction as per clutter type	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. identify north using compass</p> <p>PC2. use camera take photographs of the panoramic view at 30 degree interval starting with north</p> <p>PC3. use camera to take the photograph in the proposed antenna azimuth for coverage</p> <p>PC4. use GPS to capture direction and latitude/longitude of any immediate obstructions (tall building, chimney, water tank etc)</p> <p>PC5. use binocular to capture and interpret clutter information</p> <p>PC6. collect hotspot information using GPS</p> <p>PC7. estimate and provide for required antenna heights and orientation based on clutter</p> <p>PC8. verify space availability for antenna on the tower in case of shared survey</p> <p>PC9. verify direction availability for antenna on the tower in case of shared survey</p>
	Health and Safety	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. ensure compliance with site risk control, OHS, environmental and quality requirements as per norms</p> <p>PC2. ensure that work is carried out in accordance to the level of competence and legal requirements</p> <p>PC3. ensure that personal protection equipments like helmets, safety boots etc are used as required</p> <p>PC4. ensure adherence to emergency plans in case of safety incidents</p>

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

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

NOS Version Control:

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[Back to QP](#)

Job Role R F Site Surveyor
Qualification Pack TEL/Q4103
Sector Skill Council : Telecom

- 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.
- The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
- Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
- To pass the Qualification Pack, every trainee should score a minimum of 40% in every NOS and 50% overall.
- In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack

NOS	Element	PC	Total Mark (300)	Element Weight	Out of	Theory	Skills Practical
1. 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
2. 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		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		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		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					

3. 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	

