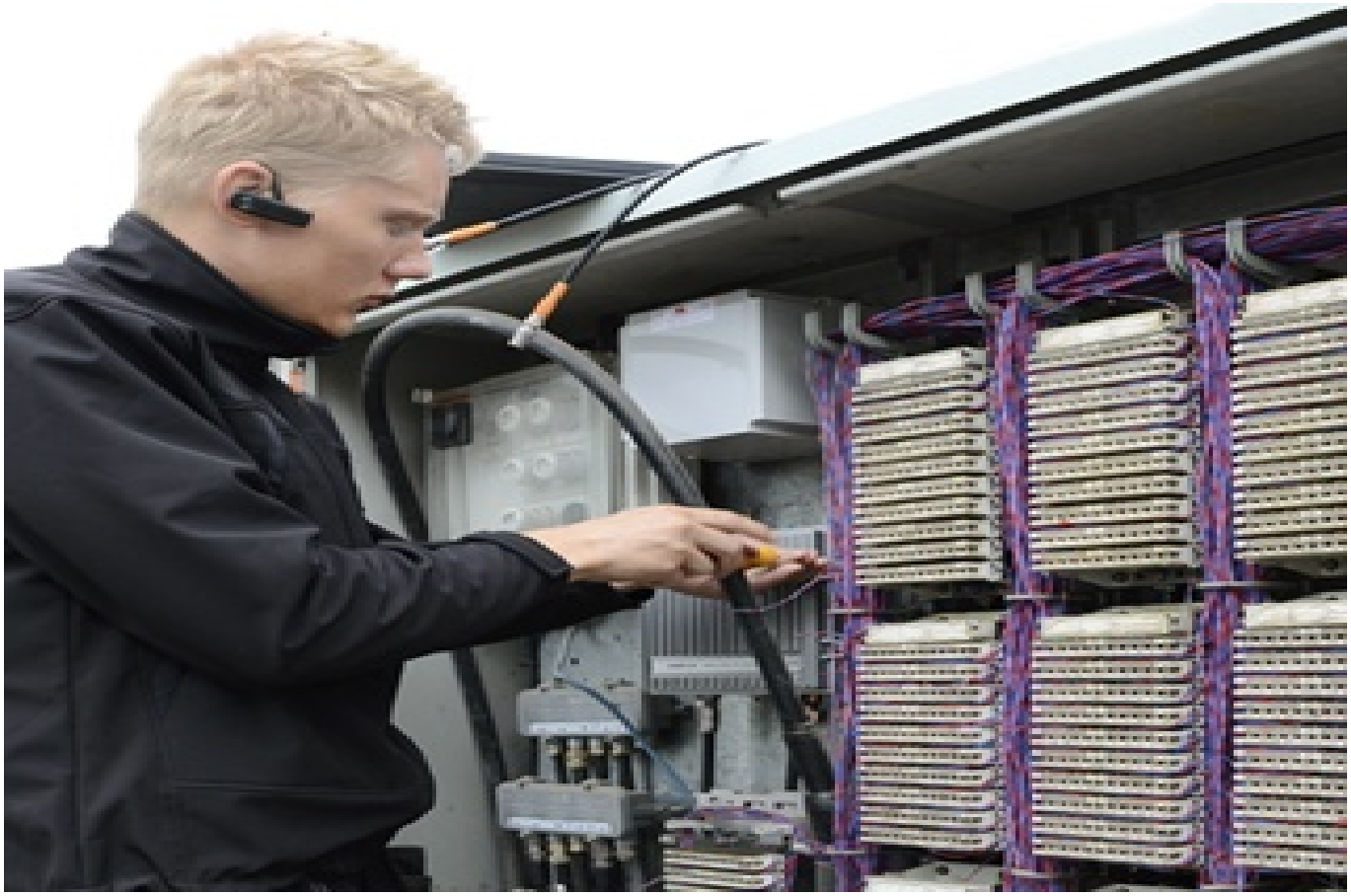
Telecom Sector Skill Council

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

Qualification Pack

N·S·D·C National Skill Development Corporation
Transforming the skill landscape



Field Maintenance Engineer

QP Code: TEL/Q6202

Version: 1.0

NSQF Level: 5

Telecom Sector Skill Council || 3rd Floor, Plot No 126, Sector - 44
Gurgaon - 122003

Contents

TEL/Q6202: Field Maintenance Engineer

Brief Job Description

FM engineer is responsible for coordinating with the NOC and transmission team to ensure fault free network through periodic maintenance activities and assisting in fault management in case of fault occurrence at radio locations. He is also responsible for accepting new sites from Projects team and ensuring completion of upgrade/ change activities as required.

Personal Attributes

This job requires the individual to work closely with multiple teams and third party vendors. The individual should be willing to work on-field requiring frequent local travel. He should be analytical and be able to handle high pressure situations to successfully perform the assigned responsibilities.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. TEL/N6208: Undertake Site acceptance testing
2. TEL/N6209: Perform preventive maintenance at radio locations
3. TEL/N6210: Perform Change management at radio locations
4. TEL/N6211: Perform corrective maintenance/ fault management at radio locations

Qualification Pack (QP) Parameters

Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
Country	India
NSQF Level	5
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3114.0701

Minimum Educational Qualification & Experience	I.T.I (Electronics, Computer Science, IT and related field) with 1-2 Years of experience Field technician in the same role OR Diploma (Electronics, Computer Science, IT and related field)
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	Technical trainings on Active and Passive infrastructure equipment (including transmission equipment) deployed at Radio sites
Minimum Job Entry Age	21 Years
Last Reviewed On	21/06/2018
Next Review Date	31/03/2022
NSQC Approval Date	18/06/2015
Version	1.0
Reference code on NQR	2015/TEL/TSSC/00981
NQR Version	1.0

TEL/N6208: Undertake Site acceptance testing

Description

This unit is about carrying out Site acceptance testing for the sites handed over by Projects team to O&M team

Scope

This unit/task covers the following:

- Undertake testing of the site as per the test checklist
- Communicate testing status to the project engineer

Elements and Performance Criteria

Prepare to undertake Acceptance Test of new sites

To be competent, the user/individual on the job must be able to:

PC5. ensure that the software versions are current and ready to use

PC1. ensure checklist for performing site acceptance test is obtained from the supervisors

PC2. obtain site documents and specifications from the project's team

PC3. ensure availability of test equipments required for performing acceptance tests

PC4. ensure that equipment specific software are installed in the laptop device

UndertakeAcceptance Test ofnew sites

To be competent, the user/individual on the job must be able to:

PC6. • ensure completion of physical tests of the site as per the checklist
• like physical upkeep, shelter status, weather proofing, equipment grouting, effective cabling, earthing and utilization of connectors

PC7. ensure completion of logical tests (VSWR levels, alarm connectivity, equipmentconnectivity) as per the checklist

PC8. ensure co-ordination with the infrastructure engineer and the riggers incompleting testing of passive infrastructure antenna tilt, diesel generatorworking, battery/ SMPS condition

Communicate testresults & Record

To be competent, the user/individual on the job must be able to:

PC9. ensure all relevant parties (including BSS/ BTS support engineer, NOC team,other supervisors and the projects) are notified of the test results

PC10. ensure clear communication of the remaining punch points that need to beaddressed by the projects team before site handover

PC11. ensure site is approved for handover/ integration only once no punch pointsare observed during the testing

PC12. ensure that documents that are required to be updated are identified and updated

PC13. ensure that documents are available to all appropriate authorities to inspect

Health and Safety

To be competent, the user/individual on the job must be able to:

PC14. ensure compliance with site risk control, ohs, environmental and qualityrequirements as per company's norms

PC15. ensure that work is carried out in accordance to the level of competence andlegal requirements

PC16. ensure that sites are periodically assessed for health and safety risk as percompany's guidelines

PC17. ensure that hazards associated with the workplace that have not beenpreviously controlled, are reported in accordance with appropriate procedures

PC18. ensure periodic tool-box talk is carried out for the infra technicians and otherthird party vendors

PC19. ensure that personal protection equipments like anti-static bands, harness,belts and helmets are appropriately used as required

PC20. ensure compliance to health and safety guidelines both contractually and onsite by the third party vendors and infra technicians

PC21. ensure availability of first aid box at site

PC22. ensure escalation of safety incidents to relevant authorities as per guidelines

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. risk and impact of not following defined procedures/work instructions

KU2. escalation matrix for reporting identified incidents, troubles and/ oremergencies e.g. system failures ,fire and power failures

KU3. types of documentation in organization and importance of the same

KU4. records to be maintained and implications of non-maintenance of the same

KU5. process for obtaining sign-off post completion of the maintenance activities

KU6. knowledge of spare management and repair & return process for faultyequipments

KU7. she and ohs guidelines and regulations as per companys norms

KU8. protection equipments (anti-static bands, anti-static packaging, appropriateinsulations) that are required to be used

KU9. first aid requirements in case of electrical shocks, cuts, fall from height andother common injuries

KU10. electrical and chemical related hazards and precautionary measures

KU11. use of safety kit for climbing towers

KU12. usage of fire safety equipments

KU13. functionality of BTS site active equipments like Microwave (TDM and IP based),BTS (Indoor and Outdoor), feeder cables (IF, RF cables)

KU14. functionality of Passive infrastructure equipments like DG set, PIU panel,Transformer, SMPS, Air Conditioner, Battery bank

KU15. transmission media - optical and microwave

KU16. login cables (RJ45, RS232, and Hi-Speed USB) for different site equipments

KU17. functionality of test equipments like E1 tester, Ethernet tester, VSWR meter, RFpower meter, Optical meter

KU18. software types and versions of bts and other equipments
KU19. need and requirement of earthing the equipments
KU20. mechanism to maintain the earthing pit to absolute zero Need and process ofEarthing of equipments
KU21. knowledge of using and deploying cable connectors, cable ties and cable tray
KU22. BTS O&M software tools like Microwave Link
KU23. knowledge of IP based network - IP back-hauling and IP networking
KU24. process of logging in the bts site equipments
KU25. site acceptance checklist and critical punch points
KU26. standard fault-finding (troubleshooting) techniques

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. liaise and coordinate with third party vendors
GS2. communicate with upstream and downstream teams
GS3. communicate in the local language
GS4. prioritize and execute tasks in a high-pressure environment
GS5. multi-task by handling multiple tasks and completing them successfully withindue timelines
GS6. use and maintain resources efficiently and effectively
GS7. be flexible and accept changes in job requirements, schedules, or workenvironments
GS8. interpret reports, readings and numerical data
GS9. keep up to date with new technology
GS10. create and maintain effective working relationships and team environment
GS11. take initiatives and progressively assume increased responsibilities
GS12. share knowledge with other team members and colleagues
GS13. effectively resolve disputes and manage disagreements
GS14. operate active equipments installed at BTS sites like BTS (Indoor and Outdoor),Microwaves (TDM and IP based), IF, RF cables
GS15. operate passive infrastructure equipments like DG set, PIU panel, Earthingsystems, Transformer, SMPS, Air Conditioner, Battery
GS16. operate equipment specific software like network manager
GS17. utilize appropriate test and measurement equipments - E1 tester, Ethernettester, VSWR meter, RF power meter, Optical meter
GS18. connect appropriate login cables (RJ45, RS232, Hi-speed USB) to log on to thecore nodes
GS19. use appropriate cables (RF, IF) and connectors for effective cabling
GS20. troubleshoot common equipment and network related problems
GS21. utilize appropriate tools and commands to rectify faults
GS22. utilize appropriate communication channels to escalate unresolved problemsto relevant personnel

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare to undertake Acceptance Test of new sites	**13**	**2**	**-**	**-**
PC5. ensure that the software versions are current and ready to use	2	-	-	-
PC1. ensure checklist for performing site acceptance test is obtained from the supervisors	2	-	-	-
PC2. obtain site documents and specifications from the project's team	2	-	-	-
PC3. ensure availability of test equipments required for performing acceptance tests	4	-	-	-
PC4. ensure that equipment specific software are installed in the laptop device	3	2	-	-
UndertakeAcceptance Test ofnew sites	**23**	**17**	**-**	**-**
PC6. • ensure completion of physical tests of the site as per the checklist • like physical upkeep, shelter status, weather proofing, equipment grouting, effective cabling, earthing and utilization of connectors	10	5	-	-
PC7. ensure completion of logical tests (VSWR levels, alarm connectivity, equipmentconnectivity) as per the checklist	8	7	-	-
PC8. ensure co-ordination with the infrastructure engineer and the riggers incompleting testing of passive infrastructure antenna tilt, diesel generatorworking, battery/ SMPS condition	5	5	-	-
Communicate testresults & Record	**7**	**13**	**-**	**-**
PC9. ensure all relevant parties (including BSS/ BTS support engineer, NOC team,other supervisors and the projects) are notified of the test results	-	4	-	-
PC10. ensure clear communication of the remaining punch points that need to beaddressed by the projects team before site handover	-	6	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. ensure site is approved for handover/ integration only once no punch pointsare observed during the testing	3	3	-	-
PC12. ensure that documents that are required to be updated are identified and updated	2	-	-	-
PC13. ensure that documents are available to all appropriate authorities to inspect	2	-	-	-
Health and Safety	**14**	**11**	**-**	**-**
PC14. ensure compliance with site risk control, ohs, environmental and qualityrequirements as per company's norms	2	-	-	-
PC15. ensure that work is carried out in accordance to the level of competence andlegal requirements	-	2	-	-
PC16. ensure that sites are periodically assessed for health and safety risk as percompany's guidelines	3	2	-	-
PC17. ensure that hazards associated with the workplace that have not beenpreviously controlled, are reported in accordance with appropriate procedures	-	5	-	-
PC18. ensure periodic tool-box talk is carried out for the infra technicians and otherthird party vendors	2	-	-	-
PC19. ensure that personal protection equipments like anti-static bands, harness,belts and helmets are appropriately used as required	3	-	-	-
PC20. ensure compliance to health and safety guidelines both contractually and onsite by the third party vendors and infra technicians	2	-	-	-
PC21. ensure availability of first aid box at site	-	2	-	-
PC22. ensure escalation of safety incidents to relevant authorities as per guidelines	2	-	-	-
NOS Total	**57**	**43**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6208
NOS Name	Undertake Site acceptance testing
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation & Maintenance
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	21/06/2018
Next Review Date	31/03/2022
NSQC Clearance Date	20/07/2015

TEL/N6209: Perform preventive maintenance at radio locations

Description

This unit is about carrying out preventive maintenance activities at Radio locations to ensure their optimal working

Scope

This unit/task covers the following:

- Ensure adherence to the preventive maintenance schedule
- Carry out preventive maintenance activities at radio locations
- Reporting and documenting the status at the end of scheduled activity

Elements and Performance Criteria

Obtain schedule & notify NOC

To be competent, the user/individual on the job must be able to:

PC1. ensure maintenance of site folder containing list of sites, BTS type, and number of transceivers

PC2. obtain the preventive maintenance schedule and the corresponding checklist from the supervisors

PC3. coordinate with network operating centre (noc) prior to undertaking the maintenance activitie

Arrange for tools and spares

To be competent, the user/individual on the job must be able to:

PC4. ensure availability of login cables (RJ45, RS232, Hi-speed USB)

PC5. ensure that equipment specific software are installed in the laptop device

PC6. ensure that the software versions are current and ready to use

PC7. ensure availability of spare hardware equipments like TRX cards and raiserequest for spares, in case the same are not available

PC8. ensure that faulty equipments are sent to logistics team for repair andreplacement

Undertake Maintenance activities

To be competent, the user/individual on the job must be able to:

PC9. conduct periodic (monthly, quarterly, half yearly) maintenance activities

PC10. ensure completion of physical maintenance tasks like checking sitetemperatures, routing of Ethernet cables & optical fibers, fan workingcondition, battery - voltage levels; DG set - oil filter, lubrication; Airconditioner - refill gas, clean evaporator and condenser, other powerequipments (including MCBs, power plan)

PC11. ensure review of equipment grouting, earthing connections, watering of earthing pit, site matting for insulation, adequacy of wiring

PC12. ensure completion of logical maintenance tasks like checking alarm status,system availability parameters, logical redundancy

PC13. ensure that for 3rd party elements that require maintenance, tickets are raisedto the respective vendors by the noc team

PC14. ensure timely escalation of emergency/ unresolved issues according toestablished company's procedure

PC15. ensure environmental up-keep of sites in coordination with infra engineer andtechnicians

Test effectiveness &close activity

To be competent, the user/individual on the job must be able to:

PC16. confirm effectiveness of the maintenance process, by monitoring site's alarmstatus in co-ordination with the noc team

PC17. ensure completion of administrative jobs like site clearance, return of testequipments

Health and Safety

To be competent, the user/individual on the job must be able to:

PC18. ensure compliance with site risk control, ohs, environmental and qualityrequirements as per company's norms

PC19. ensure that work is carried out in accordance to the level of competence andlegal requirements

PC20. ensure that sites are periodically assessed for health and safety risk as percompany's guidelines

PC21. ensure that hazards associated with the workplace that have not beenpreviously controlled, are reported in accordance with appropriate procedures

PC22. ensure periodic tool-box talk is carried out for the infra technicians and otherthird party vendors

PC23. ensure that personal protection equipments like anti-static bands, harness,belts and helmets are appropriately used as required

PC24. ensure compliance to health and safety guidelines both contractually and onsite by the third party vendors and infra technicians

PC25. ensure availability of first aid box at site

PC26. ensure escalation of safety incidents to relevant authorities as per guidelines

Report & Record

To be competent, the user/individual on the job must be able to:

PC27. ensure all relevant parties (including BSS/ BTS support engineer, NOC team,other supervisors) are notified of the results of the maintenance activities andthe sign-off is obtained from relevant personnel

PC28. ensure that documents that are required to be updated are identified

PC29. ensure completion of routine maintenance logs, activity logs and spare trackerwithin stipulated timelines

PC30. ensure that documents are available to all appropriate authorities to inspect

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. risk and impact of not following defined procedures/work instructions

KU2. escalation matrix for reporting identified incidents, troubles and/ oremergencies e.g. system failures ,fire and power failures
KU3. types of documentation in organization and importance of the same
KU4. records to be maintained and implications of non-maintenance of the same
KU5. process for obtaining sign-off post completion of the maintenance activities
KU6. knowledge of spare management and repair & return process for faultyequipments
KU7. SHE and OHS guidelines and regulations as per companys norms
KU8. protection equipments (anti-static bands, anti-static packaging, appropriateinsulations) that are required to be used
KU9. first aid requirements in case of electrical shocks, cuts, fall from height andother common injuries
KU10. electrical and chemical related hazards and precautionary measures
KU11. use of safety kit for climbing towers
KU12. usage of fire safety equipments
KU13. functionality of BTS site active equipments like Microwave (TDM and IP based),BTS (Indoor and Outdoor), feeder cables (IF, RF cables
KU14. functionality of BTS site active equipments like Microwave (TDM and IP based),BTS (Indoor and Outdoor), feeder cables (IF, RF cables
KU15. transmission media - optical and microwave
KU16. login cables (RJ45, RS232, and Hi-Speed USB) for different site equipments
KU17. functionality of test equipments like E1 tester, Ethernet tester, VSWR meter, RFpower meter, Optical meter
KU18. software types and versions of bts and other equipments
KU19. need and requirement of earthing the equipments
KU20. mechanism to maintain the earthing pit to absolute zero
KU21. knowledge of using and deploying cable connectors, cable ties and cable tray
KU22. BTS O&M software tools like Microwave Link
KU23. knowledge of IP based network - IP back-hauling and IP networking
KU24. process of logging in the BTS site equipments
KU25. standard maintenance activities that are performed at radio site locations
KU26. standard fault-finding (troubleshooting) techniques

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. liaise and coordinate with third party vendors
GS2. communicate with upstream and downstream teams
GS3. communicate in the local language
GS4. prioritize and execute tasks in a high-pressure environment
GS5. multi-task by handling multiple tasks and completing them successfully withindue timelines
GS6. use and maintain resources efficiently and effectively

GS7. be flexible and accept changes in job requirements, schedules, or workenvironments

GS8. interpret reports, readings and numerical data

GS9. keep up to date with new technology

GS10. create and maintain effective working relationships and team environment

GS11. take initiatives and progressively assume increased responsibilities

GS12. share knowledge with other team members and colleagues

GS13. effectively resolve disputes and manage disagreements

GS14. operate active equipments installed at BTS sites like BTS (Indoor and Outdoor),Microwaves (TDM and IP based), IF, RF cables

GS15. operate passive infrastructure equipments like DG set, PIU panel, Earthing systems, Transformer, SMPS, Air Conditioner, Battery

GS16. operate equipment specific software like network manager

GS17. utilize appropriate test and measurement equipments - E1 tester, Ethernettester, VSWR meter, RF power meter, Optical meter

GS18. connect appropriate login cables (RJ45, RS232, Hi-speed USB) to log on to thecore nodes

GS19. use appropriate cables (RF, IF) and connectors for effective cabling

GS20. interpret VSWR, E1, power meter test results to localize faults and undertakeappropriate steps to be rectify the same

GS21. analyze periodic reports to identify instances of deteriorating cell siteperformance like frequent service affecting faults and excessive diesel use

GS22. prioritize actioning on alarms based on faults service impact analysis

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Obtain schedule & notify NOC	**15**	**-**	**-**	**-**
PC1. ensure maintenance of site folder containing list of sites, BTS type, and number of transceivers	5	-	-	-
PC2. obtain the preventive maintenance schedule and the corresponding checklist from the supervisors	5	-	-	-
PC3. coordinate with network operating centre (noc) prior to undertaking the maintenance activitie	5	-	-	-
Arrange for tools and spares	**1**	**4**	**-**	**-**
PC4. ensure availability of login cables (RJ45, RS232, Hi-speed USB)	-	1	-	-
PC5. ensure that equipment specific software are installed in the laptop device	-	1	-	-
PC6. ensure that the software versions are current and ready to use	-	1	-	-
PC7. ensure availability of spare hardware equipments like TRX cards and raiserequest for spares, in case the same are not available	-	1	-	-
PC8. ensure that faulty equipments are sent to logistics team for repair andreplacement	1	-	-	-
Undertake Maintenance activities	**26**	**14**	**-**	**-**
PC9. conduct periodic (monthly, quarterly, half yearly) maintenance activities	4	-	-	-
PC10. ensure completion of physical maintenance tasks like checking sitetemperatures, routing of Ethernet cables & optical fibers, fan workingcondition, battery - voltage levels; DG set - oil filter, lubrication; Airconditioner - refill gas, clean evaporator and condenser, other powerequipments (including MCBs, power plan)	10	10	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. ensure review of equipment grouting, earthing connections, watering of earthing pit, site matting for insulation, adequacy of wiring	4	4	-	-
PC12. ensure completion of logical maintenance tasks like checking alarm status,system availability parameters, logical redundancy	2	-	-	-
PC13. ensure that for 3rd party elements that require maintenance, tickets are raisedto the respective vendors by the noc team	3	-	-	-
PC14. ensure timely escalation of emergency/ unresolved issues according toestablished company's procedure	1	-	-	-
PC15. ensure environmental up-keep of sites in coordination with infra engineer andtechnicians	2	-	-	-
Test effectiveness &close activity	**-**	**10**	**-**	**-**
PC16. confirm effectiveness of the maintenance process, by monitoring site's alarmstatus in co-ordination with the noc team	-	5	-	-
PC17. ensure completion of administrative jobs like site clearance, return of testequipments	-	5	-	-
Health and Safety	**13**	**7**	**-**	**-**
PC18. ensure compliance with site risk control, ohs, environmental and qualityrequirements as per company's norms	2	-	-	-
PC19. ensure that work is carried out in accordance to the level of competence andlegal requirements	-	2	-	-
PC20. ensure that sites are periodically assessed for health and safety risk as percompany's guidelines	3	-	-	-
PC21. ensure that hazards associated with the workplace that have not beenpreviously controlled, are reported in accordance with appropriate procedures	-	3	-	-
PC22. ensure periodic tool-box talk is carried out for the infra technicians and otherthird party vendors	2	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC23. ensure that personal protection equipments like anti-static bands, harness,belts and helmets are appropriately used as required	3	-	-	-
PC24. ensure compliance to health and safety guidelines both contractually and onsite by the third party vendors and infra technicians	2	-	-	-
PC25. ensure availability of first aid box at site	-	2	-	-
PC26. ensure escalation of safety incidents to relevant authorities as per guidelines	1	-	-	-
Report & Record	**10**	**-**	**-**	**-**
PC27. ensure all relevant parties (including BSS/ BTS support engineer, NOC team,other supervisors) are notified of the results of the maintenance activities andthe sign-off is obtained from relevant personnel	4	-	-	-
PC28. ensure that documents that are required to be updated are identified	2	-	-	-
PC29. ensure completion of routine maintenance logs, activity logs and spare trackerwithin stipulated timelines	2	-	-	-
PC30. ensure that documents are available to all appropriate authorities to inspect	2	-	-	-
NOS Total	**65**	**35**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6209
NOS Name	Perform preventive maintenance at radio locations
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation & Maintenance
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	21/06/2018
Next Review Date	31/03/2022
NSQC Clearance Date	20/07/2015

TEL/N6210: Perform Change management at radio locations

Description

This unit is about carrying out change management activities (System upgrade/ Site capacity augmentation/ Re-alignment of antenna/ Physical optimization) at Radio locations

Scope

This unit/task covers the following:

- Ensure timely response to the change work orders
- Implement change work order and test effectiveness of change
- Reporting and documenting the status

Elements and Performance Criteria

Determine change requirement

To be competent, the user/individual on the job must be able to:

PC1. receive change requests from the relevant teams (noc, change management, network planning team)

PC2. identify activity type to be performed - hardware upgrade, software upgrade, capacity augmentation, antenna re-alignment, microwave back-up

PC3. identify criticality, and timelines for carrying out the changes

PC4. develop work plan and identify dependencies if any

PC5. assess the potential impact of the proposed activity and plan for possibleoutage condition or deferral of the activity

PC6. ensure that network operating centre (noc) is notified prior to undertakingthe change activities

Arrange for tools and spares

To be competent, the user/individual on the job must be able to:

PC7. ensure availability of login cables (RJ45, RS232, Hi-speed USB)

PC8. ensure that equipment specific software are installed in the laptop device

PC9. ensure that the software versions are current and ready to use

PC10. ensure availability of spare hardware equipments like TRX cards and raiserequest for spares, in case the same are not available

PC11. ensure that faulty equipments are sent to logistics team for repair andreplacement

Carry out change andperform post changemonitoring

To be competent, the user/individual on the job must be able to:

PC12. ensure completion of the requested change task as per requestor'srequirement

PC13. ensure continuous monitoring of progress of change and notify change requestor of problems encountered if any

PC14. abort change and implement contingency plan should the change plan not berealized without major disruption to network

PC15. ensure compliance with the defined SLA for carrying out changes

Test effectiveness &close activity

To be competent, the user/individual on the job must be able to:

PC16. confirm effectiveness of the change process, by monitoring site's alarm statusin co-ordination with the noc team

PC17. ensure completion of administrative jobs like site clearance, return of testequipments

Health and Safety

To be competent, the user/individual on the job must be able to:

PC18. ensure compliance with site risk control, OHS, environmental and qualityrequirements as per company's norms

PC19. ensure that work is carried out in accordance to the level of competence andlegal requirements

PC20. ensure that sites are periodically assessed for health and safety risk as percompany's guidelines

PC21. ensure that hazards associated with the workplace that have not beenpreviously controlled, are reported in accordance with appropriate procedures

PC22. ensure periodic tool-box talk is carried out for the infra technicians and otherthird party vendors

PC23. ensure that personal protection equipments like anti-static bands, harness,belts and helmets are appropriately used as required

PC24. ensure that work is carried out in accordance to the level of competence andlegal requirements

PC25. ensure availability of first aid box at site

PC26. ensure escalation of safety incidents to relevant authorities as per guidelines

Report & Record

To be competent, the user/individual on the job must be able to:

PC27. ensure all relevant parties (including bss/ bts support engineer, noc team,other supervisors) are notified of the results of the change managementactivities and sign-off is obtained from relevant personnel

PC28. ensure that documents that are required to be updated are identified

PC29. ensure completion of routine maintenance logs, activity logs and spare trackerwithin stipulated timelines

PC30. ensure that documents are available to all appropriate authorities to inspect

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. risk and impact of not following defined procedures/work instructions

KU2. escalation matrix for reporting identified incidents, troubles and/ oremergencies e.g. system failures ,fire and power failures

KU3. types of documentation in organization and importance of the same

KU4. records to be maintained and implications of non-maintenance of the same

KU5. process for obtaining sign-off post completion of the maintenance activities

KU6. knowledge of spare management and repair & return process for faultyequipments
KU7. SHE and OHS guidelines and regulations as per companys norms
KU8. protection equipments (anti-static bands, anti-static packaging, appropriateinsulations) that are required to be used
KU9. first aid requirements in case of electrical shocks, cuts, fall from height andother common injuries
KU10. electrical and chemical related hazards and precautionary measures
KU11. use of safety kit for climbing towers
KU12. usage of fire safety equipments
KU13. functionality of BTS site active equipments like Microwave (TDM and IP based),BTS (Indoor and Outdoor), feeder cables (IF, RF cables)
KU14. functionality of Passive infrastructure equipments like DG set, PIU panel,Transformer, SMPS, Air Conditioner, Battery bank
KU15. transmission media - optical and microwave
KU16. login cables (RJ45, RS232, and Hi-Speed USB) for different site equipments
KU17. functionality of test equipments like e1 tester, ethernet tester, vswr meter, rfpower meter, optical meter
KU18. software types and versions of BTS and other equipments
KU19. need and requirement of earthing the equipments
KU20. mechanism to maintain the earthing pit to absolute zero
KU21. knowledge of using and deploying cable connectors, cable ties and cable tray
KU22. BTS O&M software tools like Microwave Link
KU23. knowledge of IP based network - IP back-hauling and IP networking
KU24. process of logging in the bts site equipments
KU25. standard fault-finding (troubleshooting) techniques

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. liaise and coordinate with third party vendors
GS2. communicate with upstream and downstream teams
GS3. communicate in the local language
GS4. prioritize and execute tasks in a high-pressure environment
GS5. multi-task by handling multiple tasks and completing them successfully withindue timelines
GS6. use and maintain resources efficiently and effectively
GS7. be flexible and accept changes in job requirements, schedules, or workenvironments
GS8. interpret reports, readings and numerical data
GS9. keep up to date with new technology
GS10. create and maintain effective working relationships and team environment
GS11. take initiatives and progressively assume increased responsibilities
GS12. share knowledge with other team members and colleagues

GS13. effectively resolve disputes and manage disagreements

GS14. operate active equipments installed at BTS sites like BTS (Indoor and Outdoor),Microwaves (TDM and IP based), IF, RF cables

GS15. operate passive infrastructure equipments like DG set, PIU panel, Earthingsystems, Transformer, SMPS, Air Conditioner, Battery

GS16. operate equipment specific software like network manager

GS17. utilize appropriate test and measurement equipments - E1 tester, Ethernettester, VSWR meter, RF power meter, Optical meter

GS18. connect appropriate login cables (RJ45, RS232, Hi-speed USB) to log on to the core nodes

GS19. use appropriate cables (RF, IF) and connectors for effective cabling

GS20. interpret VSWR, E1, power meter test results to localize faults and undertakeappropriate steps to be rectify the same

GS21. analyze periodic reports to identify instances of deteriorating cell siteperformance like frequent service affecting faults and excessive diesel use

GS22. analyze the impact of the activity on the network and develop appropriate plans

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Determine change requirement	**18**	**22**	**-**	**-**
PC1. receive change requests from the relevant teams (noc, change management, network planning team)	5	-	-	-
PC2. identify activity type to be performed - hardware upgrade, software upgrade, capacity augmentation, antenna re-alignment, microwave back-up	5	5	-	-
PC3. identify criticality, and timelines for carrying out the changes	-	7	-	-
PC4. develop work plan and identify dependencies if any	-	10	-	-
PC5. assess the potential impact of the proposed activity and plan for possibleoutage condition or deferral of the activity	5	-	-	-
PC6. ensure that network operating centre (noc) is notified prior to undertakingthe change activities	3	-	-	-
Arrange for tools and spares	**1**	**4**	**-**	**-**
PC7. ensure availability of login cables (RJ45, RS232, Hi-speed USB)	-	1	-	-
PC8. ensure that equipment specific software are installed in the laptop device	-	1	-	-
PC9. ensure that the software versions are current and ready to use	-	1	-	-
PC10. ensure availability of spare hardware equipments like TRX cards and raiserequest for spares, in case the same are not available	-	1	-	-
PC11. ensure that faulty equipments are sent to logistics team for repair andreplacement	1	-	-	-
Carry out change andperform post changemonitoring	**2**	**13**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. ensure completion of the requested change task as per requestor'srequirement	-	3	-	-
PC13. ensure continuous monitoring of progress of change and notify change requestor of problems encountered if any	-	5	-	-
PC14. abort change and implement contingency plan should the change plan not berealized without major disruption to network	-	5	-	-
PC15. ensure compliance with the defined SLA for carrying out changes	2	-	-	-
Test effectiveness &close activity	**-**	**10**	**-**	**-**
PC16. confirm effectiveness of the change process, by monitoring site's alarm statusin co-ordination with the noc team	-	5	-	-
PC17. ensure completion of administrative jobs like site clearance, return of testequipments	-	5	-	-
Health and Safety	**13**	**7**	**-**	**-**
PC18. ensure compliance with site risk control, OHS, environmental and qualityrequirements as per company's norms	2	-	-	-
PC19. ensure that work is carried out in accordance to the level of competence andlegal requirements	-	2	-	-
PC20. ensure that sites are periodically assessed for health and safety risk as percompany's guidelines	3	-	-	-
PC21. ensure that hazards associated with the workplace that have not beenpreviously controlled, are reported in accordance with appropriate procedures	-	3	-	-
PC22. ensure periodic tool-box talk is carried out for the infra technicians and otherthird party vendors	2	-	-	-
PC23. ensure that personal protection equipments like anti-static bands, harness,belts and helmets are appropriately used as required	3	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. ensure that work is carried out in accordance to the level of competence andlegal requirements	2	-	-	-
PC25. ensure availability of first aid box at site	-	2	-	-
PC26. ensure escalation of safety incidents to relevant authorities as per guidelines	1	-	-	-
Report & Record	**10**	**-**	**-**	**-**
PC27. ensure all relevant parties (including bss/ bts support engineer, noc team,other supervisors) are notified of the results of the change managementactivities and sign-off is obtained from relevant personnel	4	-	-	-
PC28. ensure that documents that are required to be updated are identified	2	-	-	-
PC29. ensure completion of routine maintenance logs, activity logs and spare trackerwithin stipulated timelines	2	-	-	-
PC30. ensure that documents are available to all appropriate authorities to inspect	2	-	-	-
NOS Total	**44**	**56**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6210
NOS Name	Perform Change management at radio locations
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation & Maintenance
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	21/06/2018
Next Review Date	31/03/2022
NSQC Clearance Date	20/07/2015

TEL/N6211: Perform corrective maintenance/ fault management at radio locations

Description

This unit is about carrying out corrective maintenance/ fault management activities at Radio locations (BTS, NodeB, RNC) to ensure their optimal working

Scope

This unit/task covers the following:

- Ensure timely response to the network alarms/ trouble tickets
- Carry out diagnostic tests at site location and identify root cause of fault
- Rectify fault condition or escalate in case additional technical support in required
- Reporting and documenting the status of the activity

Elements and Performance Criteria

Respond to Network Alarm

To be competent, the user/individual on the job must be able to:

PC1. obtain alarm information from the noc team and determine alarm severity,SLAs and the affected network elements

PC2. ensure understanding of nature of alarm, and provide information to/ seek advice from relevant parties to identify the problem and root-cause of the alarm

PC3. prioritize actioning on alarms based on fault's service impact analysis incoordination with the noc engineer

Arrange for tools and spares

To be competent, the user/individual on the job must be able to:

PC4. Ensure availability of login cables (RJ45, RS232, Hi-speed USB)

PC5. Ensure that equipment specific software are installed in the laptop device

PC6. Ensure that the software versions are current and ready to use

PC7. ensure availability of spare hardware equipments like TRX cards and raiserequest for spares, in case the same are not available

PC8. Ensure that faulty equipments are sent to logistics team for repair andreplacement

Fault identification &rectification

To be competent, the user/individual on the job must be able to:

PC9. Ascertain if the alarms are due to passive infrastructure based on the alarm/other site indicators

PC10. Coordinate with infra engineer/ technicians if the fault was due to passiveinfrastructure

PC11. in case of non-infra alarm, ensure that appropriate login cables are used to ogin to BTS, IDU (for microwave)

PC12. Ensure necessary diagnostic tests are carried out to identify the root cause ofthe alarm by logging in onto equipment specific application tool

PC13. Determine the options to rectify the fault and confirm with supervisors ifrequired

PC14. ensure rectification of network problem/ fault within the alarm SLAs

PC15. Ensure timely completion of work by monitoring activities performed by theinfra engineer and technicians

PC16. Ensure compliance to enterprise policy while escalating unresolved faults/instances of delays

Test effectiveness &close activity

To be competent, the user/individual on the job must be able to:

PC17. Confirm effectiveness of the maintenance process, by monitoring site's alarmstatus in co-ordination with the noc team

PC18. Ensure completion of administrative jobs like site clearance, return of testequipments

Health and Safety

To be competent, the user/individual on the job must be able to:

PC19. Ensure compliance with site risk control, ohs, environmental and qualityrequirements as per company's norms

PC20. Ensure that work is carried out in accordance to the level of competence andlegal requirements

PC21. Ensure that sites are periodically assessed for health and safety risk as percompany's guidelines

PC22. Ensure that hazards associated with the workplace that have not beenpreviously controlled, are reported in accordance with appropriate procedures

PC23. Ensure periodic tool-box talk is carried out for the infra technicians and otherthird party vendors

PC24. Ensure that personal protection equipments like anti-static bands, harness,belts and helmets are appropriately used as required

PC25. Ensure compliance to health and safety guidelines both contractually and onsite by the third party vendors and infra technicians

PC26. Ensure availability of first aid box at site

PC27. Ensure escalation of safety incidents to relevant authorities as per guidelines

Report & Record

To be competent, the user/individual on the job must be able to:

PC28. ensure all relevant parties (including BSS/ BTS support engineer, NOC team,other supervisors) are notified of the results of the fault management/corrective maintenance activities and the sign-off is obtained

PC29. Ensure that documents that are required to be updated are identified

PC30. Ensure completion of routine maintenance logs, activity logs and spare tracker within stipulated timelines

PC31. Ensure that documents are available to all appropriate authorities to inspect

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Risk and impact of not following defined procedures/work instructions

KU2. Escalation matrix for reporting identified incidents, troubles and/ oremergencies e.g. system failures ,fire and power failures

KU3. Types of documentation in organization and importance of the same

KU4. Records to be maintained and implications of non-maintenance of the same

KU5. Process for obtaining sign-off post completion of the maintenance activities

KU6. Knowledge of spare management and repair & return process for faultyequipments

KU7. SHE and OHS guidelines and regulations as per companys norms

KU8. Protection equipments (anti-static bands, anti-static packaging, appropriateinsulations) that are required to be used

KU9. First aid requirements in case of electrical shocks, cuts, fall from height andother common injuries

KU10. electrical and chemical related hazards and precautionary measures Use ofsafety kit for climbing towers

KU11. Usage of fire safety equipments

KU12. Functionality of bts site active equipments like microwave (tdm and ip based),bts (indoor and outdoor), feeder cables (if, rf cables)

KU13. Functionality of passive infrastructure equipments like dg set, piu panel,transformer, smps, air conditioner, battery bank

KU14. Transmission media - optical and microwave

KU15. login cables (RJ45, RS232, and Hi-Speed USB) for different site equipments

KU16. functionality of test equipments like E1 tester, Ethernet tester, VSWR meter, RFpower meter, Optical meter

KU17. Software types and versions of bts and other equipments

KU18. Need and requirement of earthing the equipments

KU19. Mechanism to maintain the earthing pit to absolute zero

KU20. Knowledge of using and deploying cable connectors, cable ties and cable tray

KU21. BTS O&M software tools like Microwave Link

KU22. Knowledge of ip based network - ip-hauling and ip networking

KU23. Process of logging in the bts site equipments

KU24. Standard fault-finding (troubleshooting) techniques

KU25. Alarm types, resolution and remedy SLAs and escalation matrix

KU26. Implications for non response to tickets within defined SLAs

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. Liaise and coordinate with third party vendors

GS2. Communicate with upstream and downstream teams

GS3. Communicate in the local language

GS4. Prioritize and execute tasks in a high-pressure environment

GS5. Multi-task by handling multiple tasks and completing them successfully withindue timelines

GS6. Use and maintain resources efficiently and effectively
GS7. Be flexible and accept changes in job requirements, schedules, or workenvironments
GS8. Interpret reports, readings and numerical data
GS9. Keep up to date with new technology
GS10. Create and maintain effective working relationships and team environment
GS11. Take initiatives and progressively assume increased responsibilities
GS12. Share knowledge with other team members and colleagues
GS13. Effectively resolve disputes and manage disagreements
GS14. operate active equipments installed at BTS sites like BTS (Indoor and Outdoor),Microwaves (TDM and IP based), IF, RF cables
GS15. operate passive infrastructure equipments like DG set, PIU panel, Earthingsystems, Transformer, SMPS, Air Conditioner, Battery
GS16. operate equipment specific software like network manager
GS17. utilize appropriate test and measurement equipments - E1 tester, Ethernettester, VSWR meter, RF power meter, Optical meter
GS18. connect appropriate login cables (RJ45, RS232, Hi-speed USB) to log on to the core nodes
GS19. use appropriate cables (RF, IF) and connectors for effective cabling
GS20. interpret VSWR, E1, power meter test results to localize faults and undertakeappropriate steps to be rectify the same
GS21. Analyze periodic reports to identify instances of deteriorating cell siteperformance like frequent service affecting faults and excessive diesel use
GS22. Analyze service impact of the fault to prioritize actioning on alarms
GS23. Troubleshoot common equipment and network related problems
GS24. Utilize appropriate tools and commands to rectify faults
GS25. Utilize appropriate communication channels to escalate unresolved problemsto relevant personnel

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Respond to Network Alarm	**9**	**6**	**-**	**-**
PC1. obtain alarm information from the noc team and determine alarm severity,SLAs and the affected network elements	3	-	-	-
PC2. ensure understanding of nature of alarm, and provide information to/ seek advice from relevant parties to identify the problem and root-cause of the alarm	2	6	-	-
PC3. prioritize actioning on alarms based on fault's service impact analysis incoordination with the noc engineer	4	-	-	-
Arrange for tools and spares	**1**	**4**	**-**	**-**
PC4. Ensure availability of login cables (RJ45, RS232, Hi-speed USB)	-	1	-	-
PC5. Ensure that equipment specific software are installed in the laptop device	-	1	-	-
PC6. Ensure that the software versions are current and ready to use	-	1	-	-
PC7. ensure availability of spare hardware equipments like TRX cards and raiserequest for spares, in case the same are not available	-	1	-	-
PC8. Ensure that faulty equipments are sent to logistics team for repair andreplacement	1	-	-	-
Fault identification &rectification	**35**	**5**	**-**	**-**
PC9. Ascertain if the alarms are due to passive infrastructure based on the alarm/other site indicators	5	-	-	-
PC10. Coordinate with infra engineer/ technicians if the fault was due to passiveinfrastructure	4	-	-	-
PC11. in case of non-infra alarm, ensure that appropriate login cables are used to ogin to BTS, IDU (for microwave)	5	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. Ensure necessary diagnostic tests are carried out to identify the root cause ofthe alarm by logging in onto equipment specific application tool	5	5	-	-
PC13. Determine the options to rectify the fault and confirm with supervisors ifrequired	4	-	-	-
PC14. ensure rectification of network problem/ fault within the alarm SLAs	4	-	-	-
PC15. Ensure timely completion of work by monitoring activities performed by theinfra engineer and technicians	4	-	-	-
PC16. Ensure compliance to enterprise policy while escalating unresolved faults/instances of delays	4	-	-	-
Test effectiveness &close activity	**-**	**10**	**-**	**-**
PC17. Confirm effectiveness of the maintenance process, by monitoring site's alarmstatus in co-ordination with the noc team	-	5	-	-
PC18. Ensure completion of administrative jobs like site clearance, return of testequipments	-	5	-	-
Health and Safety	**13**	**7**	**-**	**-**
PC19. Ensure compliance with site risk control, ohs, environmental and qualityrequirements as per company's norms	2	-	-	-
PC20. Ensure that work is carried out in accordance to the level of competence andlegal requirements	-	2	-	-
PC21. Ensure that sites are periodically assessed for health and safety risk as percompany's guidelines	3	-	-	-
PC22. Ensure that hazards associated with the workplace that have not beenpreviously controlled, are reported in accordance with appropriate procedures	-	3	-	-
PC23. Ensure periodic tool-box talk is carried out for the infra technicians and otherthird party vendors	2	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. Ensure that personal protection equipments like anti-static bands, harness,belts and helmets are appropriately used as required	3	-	-	-
PC25. Ensure compliance to health and safety guidelines both contractually and onsite by the third party vendors and infra technicians	2	-	-	-
PC26. Ensure availability of first aid box at site	-	2	-	-
PC27. Ensure escalation of safety incidents to relevant authorities as per guidelines	1	-	-	-
Report & Record	**10**	**-**	**-**	**-**
PC28. ensure all relevant parties (including BSS/ BTS support engineer, NOC team,other supervisors) are notified of the results of the fault management/corrective maintenance activities and the sign-off is obtained	4	-	-	-
PC29. Ensure that documents that are required to be updated are identified	2	-	-	-
PC30. Ensure completion of routine maintenance logs, activity logs and spare tracker within stipulated timelines	2	-	-	-
PC31. Ensure that documents are available to all appropriate authorities to inspect	2	-	-	-
NOS Total	**68**	**32**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6211
NOS Name	Perform corrective maintenance/ fault management at radio locations
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation & Maintenance
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	21/06/2018
Next Review Date	31/03/2022
NSQC Clearance Date	20/07/2015

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ 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 Element/ 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 part for each candidate at each examination/training center (as per assessment criteria below).

5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.

6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.

7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 70

(**Please note**: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
TEL/N6208.Undertake Site acceptance testing	57	43	-	-	100	25
TEL/N6209.Perform preventive maintenance at radio locations	65	35	-	-	100	25
TEL/N6210.Perform Change management at radio locations	44	56	-	-	100	25
TEL/N6211.Perform corrective maintenance/ fault management at radio locations	68	32	-	-	100	25
Total	**234**	**166**	**-**	**-**	**400**	**100**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
AMF Panel	Auto Man Failure
BSS	Base station subsystem
BTS	Base Transceiver Station
DG	Diesel Generator
EB connection	Electricity Board Connection
FM Engineer	Field Maintenance Engineer
IF cable	Intermediate Frequency cable
MCB	Miniature Circuit Breaker
O&M	Operations & Maintenance
OHS	Organizational Health & Safety
PIU	Power Interface unit
RF cable	Radio Frequency Cable
SHE	Safety Health & Environment
SMPS	Switch Mode Power Supply
VSWR	Voltage Standing Wave Ratio

Glossary

Sector	Sector is a conglomeration of different business operations having similar business 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.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (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 (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications 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.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation 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 (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment 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.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.
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 â€˜Nâ€™.
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.'

Telecom Sector Skill Council

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

Qualification Pack

N·S·D·C National Skill Development Corporation
Transforming the skill landscape

Field Management (FM) Engineer

QP Code: TEL/Q6202

Version: 2.0

NSQF Level: 5

Telecom Sector Skill Council || 3rd Floor, Plot No 126, Sector - 44
Gurgaon - 122003

Contents

TEL/Q6202: Field Management (FM) Engineer

Brief Job Description

A Field Management (FM) Engineer coordinates with the Network Operation Centre (NOC) and transmission team to ensure a fault-free network through periodic maintenance activities and helps in fault management in case of fault occurrence at radio locations. They are also responsible for accepting new sites from the projects team and for ensuring completion of upgrade/ change activities as required.

Personal Attributes

This job requires the individual to be a team player and possess good communication skills for interacting with third party vendors. They should be physically fit and be able to work on-site and travel frequently. They should be analytical and be able to handle high pressure situations to successfully perform the assigned responsibilities.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. TEL/N6208: Undertake Site Acceptance Testing
2. TEL/N6209: Perform Preventive and Corrective Maintenance at Radio Locations
3. TEL/N6210: Perform Change Management at Radio Locations
4. TEL/N6500: Undertake Fault Rectification
5. TEL/N6501: Undertake Configuration Changes, Upgrades and Node Back-up Activities
6. TEL/N9103: Implement Effective Interaction at workplace
7. TEL/N9104: Manage Work, Resources and Safety at workplace

Qualification Pack (QP) Parameters

Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
Country	India

NSQF Level	5
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3114.0701
Minimum Educational Qualification & Experience	Post Graduate (in relevant field) OR B.E./B.Tech (Electronics/Telecom /IT and other relevant fields) OR Graduate (in relevant field) with 1 Year of experience of relevant experience OR Diploma (after Class 12th (3 years in Electronics/Telecom/IT and other relevant fields)) with 1 Year of experience of relevant experience OR Certificate-NSQF (L4 Active Network Management Associate) with 3 Years of experience of relevant experience
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	Technical training on Active and Passive infrastructure equipment (including transmission equipment) deployed at Radio sites
Minimum Job Entry Age	21 Years
Last Reviewed On	31/03/2022
Next Review Date	31/03/2026
Deactivation Date	31/03/2026
NSQC Approval Date	31/03/2022
Version	2.0
Reference code on NQR	2022/TEL/TSSC/05797
NQR Version	1.0

TEL/N6208: Undertake Site Acceptance Testing

Description

This OS unit is about carrying out site acceptance testing for the sites handed over by projects to Operations and Maintenance (O&M) team.

Scope

The scope covers the following :

- Perform Acceptance Test (AT) of new sites
- Communicate test results and record

Elements and Performance Criteria

Perform Acceptance Test (AT) of new sites

To be competent, the user/individual on the job must be able to:

PC1. obtain checklists to perform site AT from the supervisor and other site documents and specifications from the projects team

PC2. check availability and functioning of test equipment required to perform AT

PC3. verify that correct software version of the equipment is installed in the laptop and the software is ready to use

PC4. supervise completion of physical tests of the site as per the checklist such as physical upkeep, shelter status, weather proofing, equipment grouting, effective cabling, earthing and utilization of connectors

PC5. ensure completion of logical tests (VSWR levels, alarm connectivity, equipment connectivity) as per the checklist

PC6. coordinate with the infrastructure engineer and the riggers to complete testing of passive infrastructure such as antenna tilt, diesel generator working, battery/SMPS condition

Communicate test results and record

To be competent, the user/individual on the job must be able to:

PC7. inform all relevant parties (including BSS/BTS support engineer, NOC team, other supervisors and the projects) of the test results

PC8. communicate to the projects team the remaining punch points that need to be addressed before site handover

PC9. update all required documents as per organisational norms and formats

PC10. ensure updated documents are available to all appropriate authorities for further inspection

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. use of site acceptance checklist and critical punch points

KU2. functionality of test equipment like E1 tester, ethernet tester, VSWR meter, power meter, optical meter etc.

KU3. login cables (RJ45, RS232, and Hi-Speed USB) for different site equipment

KU4. software types and versions of BTS and other equipment as well as tools like microwave link

KU5. functionality of BTS site active equipment like Microwave, BTS (indoor and outdoor), feeder cables

KU6. functionality of passive infrastructure equipment like DG set, PIU panel, Transformer, SMPS, air conditioner, battery bank etc.

KU7. types of documentation in organization and importance of the same

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. read and interpret necessary documents

GS2. be abreast with new/latest technology

GS3. use and maintain resources efficiently and effectively

GS4. multitask by handling multiple tasks and completing them successfully with due timeline

GS5. prioritize and execute tasks in a high-pressure environment

GS6. create and maintain effective working relationships and team environment

GS7. take initiatives and progressively assume increased responsibilities

GS8. maintain proper records as per given format

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Perform Acceptance Test (AT) of new sites	**20**	**34**	**-**	**6**
PC1. obtain checklists to perform site AT from the supervisor and other site documents and specifications from the projects team	4	6	-	1
PC2. check availability and functioning of test equipment required to perform AT	3	6	-	1
PC3. verify that correct software version of the equipment is installed in the laptop and the software is ready to use	4	6	-	1
PC4. supervise completion of physical tests of the site as per the checklist such as physical upkeep, shelter status, weather proofing, equipment grouting, effective cabling, earthing and utilization of connectors	3	5	-	1
PC5. ensure completion of logical tests (VSWR levels, alarm connectivity, equipment connectivity) as per the checklist	3	5	-	1
PC6. coordinate with the infrastructure engineer and the riggers to complete testing of passive infrastructure such as antenna tilt, diesel generator working, battery/SMPS condition	3	6	-	1
Communicate test results and record	**15**	**21**	**-**	**4**
PC7. inform all relevant parties (including BSS/BTS support engineer, NOC team, other supervisors and the projects) of the test results	4	5	-	1
PC8. communicate to the projects team the remaining punch points that need to be addressed before site handover	3	6	-	1
PC9. update all required documents as per organisational norms and formats	4	5	-	1
PC10. ensure updated documents are available to all appropriate authorities for further inspection	4	5	-	1
NOS Total	**35**	**55**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6208
NOS Name	Undertake Site Acceptance Testing
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
NSQF Level	5
Credits	TBD
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2026
NSQC Clearance Date	31/03/2022

TEL/N6209: Perform Preventive and Corrective Maintenance at Radio Locations

Description

This OS unit is about carrying out Preventive Maintenance (PM) and Corrective Maintenance (CM) activities at radio locations to ensure their optimal working.

Scope

The scope covers the following :

- Prepare for Preventive Maintenance (PM)
- Prepare for Corrective Maintenance (CM)
- Arrange for tools and spares
- Carry out Preventive Maintenance (PM)
- Carry out Corrective Maintenance (CM)
- Report and document the status

Elements and Performance Criteria

Prepare for Preventive Maintenance (PM)

To be competent, the user/individual on the job must be able to:

PC1. maintain a site folder containing list of sites, BTS type and number of transceivers

PC2. obtain PM schedule and the corresponding checklist from the supervisor

PC3. coordinate with Network Operation Centre (NOC) prior to undertake PM activities

Prepare for Corrective Maintenance (CM)

To be competent, the user/individual on the job must be able to:

PC4. assess alarm severity, Service Level Agreements (SLAs) and the affected network elements after obtaining alarm information from the NOC team

PC5. provide information to and seek advice from other relevant parties in identifying the cause of the network alarms

PC6. prioritize action on alarms based on fault service impact analysis

Arrange for tools and spares

To be competent, the user/individual on the job must be able to:

PC7. arrange for login cables, latest version of equipment specific software and spare hardware equipment like Transceiver (TRX) cards

PC8. generate request for spares, in case the same are not available as per organisation policy

PC9. implement the process such that faulty equipment are sent to logistics team for repair and replacement

Carry out preventive maintenance activities

To be competent, the user/individual on the job must be able to:

PC10. conduct periodic (monthly, quarterly, half yearly) maintenance activities

PC11. perform completion of physical maintenance tasks such as checking site temperatures, routing of ethernet cables and optical fibers, fan working condition, battery voltage levels, oil filter lubrication in DG set etc.

PC12. supervise review of equipment grouting, earthing connections, watering of earthing pit, site matting for insulation, adequacy of wiring

PC13. perform completion of logical maintenance tasks like checking alarm status, system availability parameters, logical redundancy

PC14. implement process for third party elements that require maintenance such that tickets are raised to the respective vendors by the NOC team if required

PC15. perform timely escalation of emergency/unresolved issues according to established company procedure

PC16. implement ways for environmental up-keep of sites in coordination with infra engineer and technicians

PC17. carry out initial diagnostic tests to identify the root cause of the alarm within the defined Service Level Agreement (SLA)

PC18. analyse the options to rectify the fault and confirm with supervisors if required as per company policy

PC19. coordinate with infra engineer/ technicians if the alarms are due to passive infrastructure based on the alarm/ other site indicators

PC20. use appropriate login cables to login to BTS, IDU (for microwave) in case of non-infra alarm

PC21. implement timely completion and rectification of work by monitoring activities/rectification performed by the infra engineer and technicians as per alarm SLA

Test effectiveness, report and record

To be competent, the user/individual on the job must be able to:

PC22. confirm effectiveness of the maintenance process, by monitoring site's alarm status in co-ordination with the NOC team

PC23. ensure completion of administrative jobs like site clearance, return of test equipment

PC24. inform all relevant parties (including BSS/BTS support Engineer, NOC team, other supervisors and the projects) of the test results

PC25. complete routine maintenance logs, activity logs and spare tracker within stipulated timelines

PC26. implement ways to ensure that documents that are required to be updated are identified and updated

PC27. ensure that documents are available to all appropriate authorities to inspect

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. functionality of BTS site active equipment like Microwave, BTS (indoor and outdoor), feeder cables etc.

KU2. standard preventive maintenance activities that need to be carried out

KU3. alarm types, indicators and resolution SLAs/timelines

KU4. login cables (RJ45, RS232, and Hi-Speed USB) for different site equipment

KU5. knowledge of spare management and repair and return process for faulty equipment

KU6. risk and impact of not following defined procedures/work instructions

KU7. functionality of passive infrastructure equipment like DG set, PIU panel, Transformer, SMPS, Air Conditioner, Battery bank etc.

KU8. need and requirement of earthing the equipment

KU9. mechanism to maintain the earthing pit to absolute zero

KU10. alarm types, resolution and remedy

KU11. functionality of test equipment like E1 tester, Ethernet tester, VSWR meter, RF power meter, optical meter

KU12. escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures, fire and power failures

KU13. process of logging in the BTS site equipment

KU14. types of documentation in organization and importance of the same

KU15. records to be maintained and implications of non-maintenance of the same

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. obtain technical information by researching manufacturer manual

GS2. interpret reports, readings and numerical data

GS3. handle multiple tasks and complete them successfully in time

GS4. prioritize and execute tasks in a high-pressure environment

GS5. liaise and coordinate with third party vendors

GS6. take initiatives and progressively assume increased responsibilities

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for Preventive Maintenance (PM)	**3**	**8**	**-**	**2**
PC1. maintain a site folder containing list of sites, BTS type and number of transceivers	1	2	-	1
PC2. obtain PM schedule and the corresponding checklist from the supervisor	1	3	-	-
PC3. coordinate with Network Operation Centre (NOC) prior to undertake PM activities	1	3	-	1
Prepare for Corrective Maintenance (CM)	**4**	**8**	**-**	**1**
PC4. assess alarm severity, Service Level Agreements (SLAs) and the affected network elements after obtaining alarm information from the NOC team	2	3	-	1
PC5. provide information to and seek advice from other relevant parties in identifying the cause of the network alarms	1	3	-	-
PC6. prioritize action on alarms based on fault service impact analysis	1	2	-	-
Arrange for tools and spares	**3**	**8**	**-**	**3**
PC7. arrange for login cables, latest version of equipment specific software and spare hardware equipment like Transceiver (TRX) cards	1	2	-	1
PC8. generate request for spares, in case the same are not available as per organisation policy	1	3	-	1
PC9. implement the process such that faulty equipment are sent to logistics team for repair and replacement	1	3	-	1
Carry out preventive maintenance activities	**14**	**24**	**-**	**3**
PC10. conduct periodic (monthly, quarterly, half yearly) maintenance activities	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. perform completion of physical maintenance tasks such as checking site temperatures, routing of ethernet cables and optical fibers, fan working condition, battery voltage levels, oil filter lubrication in DG set etc.	1	2	-	-
PC12. supervise review of equipment grouting, earthing connections, watering of earthing pit, site matting for insulation, adequacy of wiring	1	2	-	-
PC13. perform completion of logical maintenance tasks like checking alarm status, system availability parameters, logical redundancy	1	2	-	-
PC14. implement process for third party elements that require maintenance such that tickets are raised to the respective vendors by the NOC team if required	1	2	-	1
PC15. perform timely escalation of emergency/unresolved issues according to established company procedure	1	2	-	-
PC16. implement ways for environmental up-keep of sites in coordination with infra engineer and technicians	1	2	-	1
PC17. carry out initial diagnostic tests to identify the root cause of the alarm within the defined Service Level Agreement (SLA)	2	2	-	-
PC18. analyse the options to rectify the fault and confirm with supervisors if required as per company policy	2	2	-	-
PC19. coordinate with infra engineer/ technicians if the alarms are due to passive infrastructure based on the alarm/ other site indicators	1	2	-	-
PC20. use appropriate login cables to login to BTS, IDU (for microwave) in case of non-infra alarm	1	2	-	-
PC21. implement timely completion and rectification of work by monitoring activities/rectification performed by the infra engineer and technicians as per alarm SLA	1	2	-	-
Test effectiveness, report and record	**6**	**12**	**-**	**1**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. confirm effectiveness of the maintenance process, by monitoring site's alarm status in co-ordination with the NOC team	1	2	-	-
PC23. ensure completion of administrative jobs like site clearance, return of test equipment	1	2	-	1
PC24. inform all relevant parties (including BSS/BTS support Engineer, NOC team, other supervisors and the projects) of the test results	1	2	-	-
PC25. complete routine maintenance logs, activity logs and spare tracker within stipulated timelines	1	2	-	-
PC26. implement ways to ensure that documents that are required to be updated are identified and updated	1	2	-	-
PC27. ensure that documents are available to all appropriate authorities to inspect	1	2	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6209
NOS Name	Perform Preventive and Corrective Maintenance at Radio Locations
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
NSQF Level	5
Credits	TBD
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2026
NSQC Clearance Date	31/03/2022

TEL/N6210: Perform Change Management at Radio Locations

Description

This OS unit is about carrying out change management activities (system upgrade/site capacity augmentation/re-alignment of antenna/physical optimization) at radio locations.

Scope

The scope covers the following :

- Assess upgradation of infrastructure
- Arrange for tools and spares
- Carry out change and monitor post change
- Report and document the status

Elements and Performance Criteria

Assess upgradation of infrastructure

To be competent, the user/individual on the job must be able to:

PC1. receive change requests from the relevant teams (NOC, change management, network planning team)

PC2. identify activity type to be performed – hardware upgrade, software upgrade, capacity augmentation, antenna re-alignment, microwave back-up

PC3. analyse criticality of the issue and timelines for the resolution before carrying out the changes

PC4. prepare a work plan and identify dependencies, if any

PC5. assess the potential impact of the proposed activity and plan for possible outage condition or deferral of the activity

PC6. inform the Network Operation Centre (NOC) prior to undertake the upgradation activity

Arrange for tools and spares

To be competent, the user/individual on the job must be able to:

PC7. ensure that login cables, latest version of equipment specific software and spare hardware equipment like TRX cards are timely available

PC8. generate request for spares, in case any spare parts required for change management is not available

PC9. perform change management in accordance to organisational process such that faulty equipment/part is sent to the logistics team for repair and/or replacement

Carry out change and monitor post change

To be competent, the user/individual on the job must be able to:

PC10. implement ways to ensure that changes are carried as per the change request

PC11. monitor continuously and notify the problems if any to the change requestor

PC12. develop a contingency plan in case change management do not occur within the anticipated time to ensure minimum service disruption

PC13. comply with the defined Service Level Agreement (SLA) for carrying out changes

Report and document the status

To be competent, the user/individual on the job must be able to:

PC14. complete all administrative tasks post change management like site clearance, return of test equipment etc.

PC15. confirm effectiveness of the maintenance process, by monitoring site's alarm status in co-ordination with the NOC team

PC16. notify all relevant parties (including Field Management (FM) Engineer, NOC team, supervisors) of the results of the maintenance result and obtain the sign-off from relevant personnel

PC17. identify documents to be updated and to be made available for inspection

PC18. complete routine maintenance logs, activity logs and spare tracker within stipulated timeline

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. upgradation activities that need to be carried out

KU2. login cables (RJ-45, RS-232, and Hi-Speed USB) for different site equipment

KU3. spare management and repair and return process for faulty equipment

KU4. functionality of site active equipment like microwave, BTS (indoor and outdoor), feeder cables etc.

KU5. risks and impact of not following defined procedures/work instructions

KU6. types of documentation in the organisation and importance of the same

KU7. records to be maintained and implications of non-maintenance of the same

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. interpret reports, readings and numerical data

GS2. prioritize and execute tasks in a high-pressure environment

GS3. communicate with stakeholders

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Assess upgradation of infrastructure	**9**	**21**	**-**	**3**
PC1. receive change requests from the relevant teams (NOC, change management, network planning team)	2	4	-	1
PC2. identify activity type to be performed – hardware upgrade, software upgrade, capacity augmentation, antenna re-alignment, microwave back-up	2	4	-	-
PC3. analyse criticality of the issue and timelines for the resolution before carrying out the changes	2	4	-	1
PC4. prepare a work plan and identify dependencies, if any	1	3	-	-
PC5. assess the potential impact of the proposed activity and plan for possible outage condition or deferral of the activity	1	3	-	1
PC6. inform the Network Operation Centre (NOC) prior to undertake the upgradation activity	1	3	-	-
Arrange for tools and spares	**4**	**6**	**-**	**3**
PC7. ensure that login cables, latest version of equipment specific software and spare hardware equipment like TRX cards are timely available	1	2	-	1
PC8. generate request for spares, in case any spare parts required for change management is not available	2	2	-	1
PC9. perform change management in accordance to organisational process such that faulty equipment/part is sent to the logistics team for repair and/or replacement	1	2	-	1
Carry out change and monitor post change	**11**	**15**	**-**	**3**
PC10. implement ways to ensure that changes are carried as per the change request	3	4	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. monitor continuously and notify the problems if any to the change requestor	2	3	-	1
PC12. develop a contingency plan in case change management do not occur within the anticipated time to ensure minimum service disruption	2	4	-	1
PC13. comply with the defined Service Level Agreement (SLA) for carrying out changes	4	4	-	1
Report and document the status	**9**	**15**	**-**	**1**
PC14. complete all administrative tasks post change management like site clearance, return of test equipment etc.	3	4	-	1
PC15. confirm effectiveness of the maintenance process, by monitoring site's alarm status in co-ordination with the NOC team	1	2	-	-
PC16. notify all relevant parties (including Field Management (FM) Engineer, NOC team, supervisors) of the results of the maintenance result and obtain the sign-off from relevant personnel	1	2	-	-
PC17. identify documents to be updated and to be made available for inspection	2	4	-	-
PC18. complete routine maintenance logs, activity logs and spare tracker within stipulated timeline	2	3	-	-
NOS Total	**33**	**57**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6210
NOS Name	Perform Change Management at Radio Locations
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
NSQF Level	5
Credits	TBD
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2026
NSQC Clearance Date	31/03/2022

TEL/N6500: Undertake Fault Rectification

Description

This OS unit is about carrying out rectification of faults in the Base Station Sub-system (BSS) network in coordination with the field teams.

Scope

The scope covers the following :

- Monitor network alarms
- Perform fault diagnosis and rectification
- Test effectiveness, report and record the test results

Elements and Performance Criteria

Monitor network alarms

To be competent, the user/individual on the job must be able to:

PC1. use current user id and password to access the alarm management system

PC2. monitor network alarms on the NMS and observe the threshold levels to notify occurrence of faults

PC3. generate requests/tickets for handling alarms as per the priority matrix

PC4. assess alarm severity, priority, Service Level Agreement (SLA) and the affected network elements to take further action

PC5. verify fault resolutions involving configuration changes based on previous day's backup of system configuration and alarm logs

PC6. coordinate with the infrastructure NOC to verify that the alarm was caused due to faults in the passive infrastructure sites or not

PC7. prioritize action on alarms based on faults service impact analysis

Perform fault diagnosis and rectification

To be competent, the user/individual on the job must be able to:

PC8. identify root cause of the alarm and its resolution by referring to pre-defined procedures/methods

PC9. determine the cause of the faults using appropriate diagnostic tests like remote analysis of active equipment, in case pre-defined procedures/methods are not available

PC10. analyse the options to rectify the fault and confirm the resolution to be used with supervisors, if required as per company policy

PC11. check need for system reset and other common fault resolution mechanisms based on the severity and nature of the faults

PC12. implement ways to dispatch field engineers to the fault location in case field support is required and give clear instruction for part replacement/fault rectification as per SLA

PC13. monitor the activities performed by the infrastructure engineer and technicians

Test effectiveness, report and record the test results

To be competent, the user/individual on the job must be able to:

PC14. coordinate with NOC team to confirm the effectiveness of maintenance activity by monitoring the site alarm status

PC15. ensure completion of administrative jobs like site clearance, return of test equipment, etc. after successful faults rectification and maintenance

PC16. inform all relevant parties (including BSS/BTS support engineer, NOC team, other supervisors and the projects) about the test results

PC17. complete routine maintenance logs, activity logs and parts/spare tracker within defined time frame post fault rectification and maintenance

PC18. implement ways to ensure that documents required are identified and updated

PC19. ensure that documents are available to all appropriate authorities to inspect

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the functionality of Network Monitoring System (NMS)

KU2. ticketing process and lifecycle of tickets

KU3. alarm types, their resolution and remedies defined as per SLAs and escalation matrix

KU4. standard fault-finding (troubleshooting) techniques

KU5. the functionality of passive infrastructure equipment like DG set, PIU panel, transformer, SMPS, Air Conditioner, battery bank

KU6. network topology like ring structure, daisy chain structure and their characteristics

KU7. how to interpret Maintenance Operation Protocols (MOPs) to promptly address repeat faults

KU8. service networks such as GSM, WCDMA and their related service applications characteristics and capabilities

KU9. how to interpret VSWR and E1 test results to localize faults and their rectification steps

KU10. types of documentation in organization and importance of the same

KU11. records to be maintained and implications of non-maintenance of the same

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. communicate in the local language (preferably)

GS2. prioritize and execute tasks in a high-pressure environment

GS3. use and maintain resources efficiently and effectively

GS4. interpret documents related to site maintenance

GS5. perform multiple tasks and complete them successfully within due timelines

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Monitor network alarms	**9**	**21**	**-**	**5**
PC1. use current user id and password to access the alarm management system	1	3	-	1
PC2. monitor network alarms on the NMS and observe the threshold levels to notify occurrence of faults	1	3	-	1
PC3. generate requests/tickets for handling alarms as per the priority matrix	1	3	-	1
PC4. assess alarm severity, priority, Service Level Agreement (SLA) and the affected network elements to take further action	2	3	-	1
PC5. verify fault resolutions involving configuration changes based on previous day's backup of system configuration and alarm logs	1	3	-	-
PC6. coordinate with the infrastructure NOC to verify that the alarm was caused due to faults in the passive infrastructure sites or not	1	3	-	-
PC7. prioritize action on alarms based on faults service impact analysis	2	3	-	1
Perform fault diagnosis and rectification	**11**	**20**	**-**	**5**
PC8. identify root cause of the alarm and its resolution by referring to pre-defined procedures/methods	2	3	-	1
PC9. determine the cause of the faults using appropriate diagnostic tests like remote analysis of active equipment, in case pre-defined procedures/methods are not available	2	4	-	1
PC10. analyse the options to rectify the fault and confirm the resolution to be used with supervisors, if required as per company policy	3	3	-	1
PC11. check need for system reset and other common fault resolution mechanisms based on the severity and nature of the faults	1	3	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. implement ways to dispatch field engineers to the fault location in case field support is required and give clear instruction for part replacement/fault rectification as per SLA	2	4	-	-
PC13. monitor the activities performed by the infrastructure engineer and technicians	1	3	-	1
Test effectiveness, report and record the test results	**10**	**19**	**-**	**-**
PC14. coordinate with NOC team to confirm the effectiveness of maintenance activity by monitoring the site alarm status	1	3	-	-
PC15. ensure completion of administrative jobs like site clearance, return of test equipment, etc. after successful faults rectification and maintenance	2	2	-	-
PC16. inform all relevant parties (including BSS/BTS support engineer, NOC team, other supervisors and the projects) about the test results	2	3	-	-
PC17. complete routine maintenance logs, activity logs and parts/spare tracker within defined time frame post fault rectification and maintenance	1	3	-	-
PC18. implement ways to ensure that documents required are identified and updated	2	4	-	-
PC19. ensure that documents are available to all appropriate authorities to inspect	2	4	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6500
NOS Name	Undertake Fault Rectification
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
NSQF Level	5
Credits	TBD
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2026
NSQC Clearance Date	31/03/2022

TEL/N6501: Undertake Configuration Changes, Upgrades and Node Back-up Activities

Description

This OS unit is about carrying change management and node back-up activities in the BSS network.

Scope

The scope covers the following :

- Determine change requirements
- Carry out change and monitor post change from NOC location
- Report and document the status

Elements and Performance Criteria

Determine change requirements

To be competent, the user/individual on the job must be able to:

PC1. determine change requirement as per schedule (for back up) or as per directions from other teams (in case of configuration changes, upgrades, updates) and understand the need for change

PC2. analyse criticality and timelines for implementing the required changes

PC3. prepare a work plan and identify dependencies, if any

PC4. assess the potential impact of the proposed activity and plan for possible outage condition or deferral of the activity

PC5. inform the Network Operation Centre (NOC) before starting the up-gradation activity

PC6. inform the customer and obtain approval in case of service impacting change activity

Carry out change and monitor post change from NOC location

To be competent, the user/individual on the job must be able to:

PC7. perform required changes (configuration change, upgrade activity) as per change work order

PC8. obtain the back-up of nodes both pre and post-performance of change activities and as per planned schedule

PC9. monitor continuously and notify the problems if any to the change requestor

PC10. implement a contingency plan in case of service disruption after aborting the change

PC11. comply with the defined Service Level Agreement (SLA) for carrying out changes

Report and document the status

To be competent, the user/individual on the job must be able to:

PC12. coordinate with NOC team to confirm the effectiveness of maintenance process, by monitoring site alarm status

PC13. notify all relevant parties (including Field Management (FM) engineer, NOC team, supervisors) about the maintenance result and obtain the sign-off from relevant personnel

PC14. ensure the status of change activity is captured in the system and the corresponding ticket is closed

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. change request process
KU2. escalation matrix for reporting incidents, hazards and/ or emergencies such as system failures, fire and power failures
KU3. the functionality of BSC and BTS site equipment like BSC node, BTS (indoor and outdoor), feeder cables (IF, RF cables), microwaves (TDM and IP based), optical fiber cables
KU4. the functionality of passive infrastructure equipment like DG set, PIU pane, transformer, SMPS, air conditioner, battery bank
KU5. the functionality of Network Monitoring System
KU6. risks and impact of not following defined procedures/work instructions

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. interpret reports, readings and numerical data
GS2. prioritize and execute tasks in a high-pressure environment
GS3. communicate with stakeholders in English/local language

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Determine change requirements	**13**	**25**	**-**	**4**
PC1. determine change requirement as per schedule (for back up) or as per directions from other teams (in case of configuration changes, upgrades, updates) and understand the need for change	3	5	-	1
PC2. analyse criticality and timelines for implementing the required changes	3	4	-	1
PC3. prepare a work plan and identify dependencies, if any	2	4	-	1
PC4. assess the potential impact of the proposed activity and plan for possible outage condition or deferral of the activity	2	4	-	1
PC5. inform the Network Operation Centre (NOC) before starting the up-gradation activity	2	4	-	-
PC6. inform the customer and obtain approval in case of service impacting change activity	1	4	-	-
Carry out change and monitor post change from NOC location	**11**	**22**	**-**	**5**
PC7. perform required changes (configuration change, upgrade activity) as per change work order	2	4	-	1
PC8. obtain the back-up of nodes both pre and post-performance of change activities and as per planned schedule	3	5	-	1
PC9. monitor continuously and notify the problems if any to the change requestor	2	4	-	1
PC10. implement a contingency plan in case of service disruption after aborting the change	2	5	-	1
PC11. comply with the defined Service Level Agreement (SLA) for carrying out changes	2	4	-	1
Report and document the status	**6**	**13**	**-**	**1**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. coordinate with NOC team to confirm the effectiveness of maintenance process, by monitoring site alarm status	2	4	-	1
PC13. notify all relevant parties (including Field Management (FM) engineer, NOC team, supervisors) about the maintenance result and obtain the sign-off from relevant personnel	2	5	-	-
PC14. ensure the status of change activity is captured in the system and the corresponding ticket is closed	2	4	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6501
NOS Name	Undertake Configuration Changes, Upgrades and Node Back-up Activities
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
NSQF Level	5
Credits	TBD
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2026
NSQC Clearance Date	31/03/2022

TEL/N9103: Implement Effective Interaction at workplace

Description

This OS unit is about communicating with superiors and colleagues as well as customers and other stakeholders in own or other work groups within as well as outside the organisation

Scope

The scope covers the following :

- Interact effectively with superiors
- Interact effectively with colleagues and customers
- Respect differences of gender and ability

Elements and Performance Criteria

Interact effectively with superiors

To be competent, the user/individual on the job must be able to:

PC1. interpret work requirements from the superior and customers

PC2. report any unforeseen disruptions or delays to superiors and/or concerned person

PC3. achieve productivity and quality of work as per the company procedure

Interact effectively with colleagues and customers

To be competent, the user/individual on the job must be able to:

PC4. explain the work requirements and the scope of work to the team

PC5. communicate information using different techniques such as face-to-face, telephonic and written means

PC6. co-ordinate with team to integrate work as per requirements

PC7. respect colleagues and customers and communicate taking care of their personal spaces

PC8. find solutions to work related difficulties with mutual agreement with colleagues and customers

PC9. resolve conflicts within the team at work to achieve smooth workflow

PC10. motivate team members to put organizational goals over individual goals

PC11. encourage the team to provide feedback on any issues facing them

Respect differences of gender and ability

To be competent, the user/individual on the job must be able to:

PC12. ensure personal behaviour of self and team is conducted taking gender and disability of the person into consideration

PC13. demonstrate sensitivity towards gender and person with disability while communicating

PC14. list the different types of disabilities with their respective issues

PC15. provide help to PwD team members in overcoming any challenges faced in work

PC16. use inclusive language irrespective of the disability and the gender of the person

PC17. treat all colleagues and co-workers equally

PC18. respect personal space of colleagues and co-workers

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. importance of effective and different means of communication and establishing good working relationships with colleagues and superiors
KU2. importance of helping colleagues with problems, in order to meet quality and time standards as a team
KU3. different methods of communication
KU4. different types of information that colleagues might need and the importance of providing this information in an appropriate manner
KU5. helping colleagues with problems, in order to meet quality and time standards as a team
KU6. organisation's policies and procedures for working with colleagues and superior
KU7. implications of own work on the work and schedule of others
KU8. importance of understanding consequences of gender based behaviour
KU9. gender based concepts, issues and legislation
KU10. organisation standards and guidelines to be followed for PwD and knowledge about laws, acts and provisions defined for PwD by the statutory bodies and the right way to use them including various medical conditions associated with PwD
KU11. health and safety requirements at workplace for PwD
KU12. rights and duties at workplace with respect to PwD
KU13. process of recruiting people for a particular job profile w.r.t PwD and gender
KU14. various government / private schemes and benefits available for PwD and information about various institutes working for PwD to enable in providing livelihood opportunities for PwD

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. complete written work with attention to detail and read instructions/guidelines/procedures
GS2. listen effectively and orally communicate information
GS3. ask for clarification and advice from the concerned person
GS4. deliver consistent and reliable service to customers
GS5. check that the work meets customer requirements
GS6. practice and acceptance of gender and its concepts
GS7. develop empathy across genders and towards PwD
GS8. reflect on own gender identity, gender roles and PwD issues
GS9. engage and participate in discussions to end gender and disability discrimination
GS10. improve and modify work practices
GS11. maintain positive and effective relationships with colleagues and customers
GS12. evaluate the possible solution(s) to the problem

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Interact effectively with superiors	**2**	**9**	**-**	**1**
PC1. interpret work requirements from the superior and customers	1	2	-	-
PC2. report any unforeseen disruptions or delays to superiors and/or concerned person	1	2	-	1
PC3. achieve productivity and quality of work as per the company procedure	-	5	-	-
Interact effectively with colleagues and customers	**13**	**27**	**-**	**5**
PC4. explain the work requirements and the scope of work to the team	2	3	-	-
PC5. communicate information using different techniques such as face-to-face, telephonic and written means	2	4	-	1
PC6. co-ordinate with team to integrate work as per requirements	-	4	-	1
PC7. respect colleagues and customers and communicate taking care of their personal spaces	-	3	-	-
PC8. find solutions to work related difficulties with mutual agreement with colleagues and customers	3	3	-	-
PC9. resolve conflicts within the team at work to achieve smooth workflow	-	4	-	1
PC10. motivate team members to put organizational goals over individual goals	3	4	-	1
PC11. encourage the team to provide feedback on any issues facing them	3	2	-	1
Respect differences of gender and ability	**15**	**24**	**-**	**4**
PC12. ensure personal behaviour of self and team is conducted taking gender and disability of the person into consideration	2	4	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. demonstrate sensitivity towards gender and person with disability while communicating	2	3	-	1
PC14. list the different types of disabilities with their respective issues	2	3	-	1
PC15. provide help to PwD team members in overcoming any challenges faced in work	2	3	-	-
PC16. use inclusive language irrespective of the disability and the gender of the person	2	3	-	1
PC17. treat all colleagues and co-workers equally	2	3	-	-
PC18. respect personal space of colleagues and co-workers	3	5	-	1
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N9103
NOS Name	Implement Effective Interaction at workplace
Sector	Telecom
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2026
NSQC Clearance Date	31/03/2022

TEL/N9104: Manage Work, Resources and Safety at workplace

Description

This OS unit is about planning work and implementing sustainable as well as healthy practices for safety and optimal use of resources

Scope

The scope covers the following :

- Manage learning and self-direction
- Develop critical thinking and problem solving
- Perform work as per quality standards
- Maintain safe and secure working environment
- Comply with material / energy / electricity conservation practices

Elements and Performance Criteria

Manage learning and self-direction

To be competent, the user/individual on the job must be able to:

PC1. develop technical and personal skills to be updated with new technologies prevalent in the industry

PC2. train the team such that they are able to adapt latest products/services in their working environment

PC3. identify opportunities for team building workshops and motivational trainings

Develop critical thinking and problem solving

To be competent, the user/individual on the job must be able to:

PC4. guide the team to be accountable for timely completion of tasks

PC5. analyse problems accurately to be able to correctly suggest suitable solutions to the concerned persons

PC6. train the team to estimate the cause of the problem and validate

Perform work as per quality standards

To be competent, the user/individual on the job must be able to:

PC7. implement ways to keep immediate as well as team's work area clean and tidy

PC8. maintain efficiency and productivity while performing role/responsibility

PC9. supervise the team to ensure that the work is done as per the assigned and agreed requirements

PC10. create schedules and rosters for the team to ensure they understand individual work requirements

Maintain safe and secure working environment

To be competent, the user/individual on the job must be able to:

PC11. identify organisation’s health, safety, security policies and procedures

PC12. instruct team to report any identified breaches in health, safety, and security policies and procedures to the designated person

PC13. manage hazards such as illness, accidents, fires or any other natural calamity safely, as per organisation's emergency procedures, within the limits of individual's authority

PC14. report any hazard outside the individual's authority to the relevant person in line with organisational procedures and warn others who may be affected

Material / energy / electricity conservation practices

To be competent, the user/individual on the job must be able to:

PC15. implement ways to optimize usage of material including water in various tasks/activities/processes

PC16. supervise the team to ensure responsible use of resources

PC17. motivate the team to carry out routine cleaning of tools, machine and equipment

PC18. guide the team to optimize use of electricity/energy in various tasks/activities/processes

PC19. implement periodic checks of the functioning of the equipment/machine and rectify wherever required

PC20. guide the team to report malfunctioning and lapses in maintenance of equipment

PC21. implement ways to use electrical equipment and appliances properly

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. strategies pertinent to the field that can be used to pursue an advancement of skills

KU2. key performance indicators for the new tasks

KU3. feedback processes and formats

KU4. timelines and goals as well as their relevance to work allocated

KU5. importance of quality and timely delivery of the product/service

KU6. layout of the workstation and equipment used

KU7. escalation matrix and its importance, especially in case of emergencies

KU8. ways of time and cost management

KU9. rules/regulation for maintaining health and safety at workplace

KU10. meaning of hazard, different types of health and safety hazards found in the workplace, risks and threats based on the nature of work

KU11. procedures to report breaches in health, safety and security

KU12. ways of managing resources and material efficiently

KU13. ways to recognize common electrical problems and common practices of conserving electricity

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. explore various pathways to expand one's own learning skills and abilities

GS2. analyse feedback for improving one's way of working
GS3. interpret feedback from superiors in a constructive way
GS4. identify the root cause of problems
GS5. understand the problem by asking significant questions to clarify the various points of view on the problem
GS6. seek clarifications from superior about the job requirement
GS7. work in a team with full coordination of team members
GS8. read instructions/guidelines and Standard Operating Practices (SOP) documents
GS9. complete tasks efficiently and accurately within stipulated time
GS10. record data in statutory documents relevant to safety and hygiene
GS11. escalate/refer all anomalies to the concerned persons
GS12. identify the most suitable course of action for completing the task using provided resources

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Manage learning and self-direction	**4**	**5**	**-**	**-**
PC1. develop technical and personal skills to be updated with new technologies prevalent in the industry	2	1	-	-
PC2. train the team such that they are able to adapt latest products/services in their working environment	1	2	-	-
PC3. identify opportunities for team building workshops and motivational trainings	1	2	-	-
Develop critical thinking and problem solving	**4**	**7**	**-**	**-**
PC4. guide the team to be accountable for timely completion of tasks	2	3	-	-
PC5. analyse problems accurately to be able to correctly suggest suitable solutions to the concerned persons	1	2	-	-
PC6. train the team to estimate the cause of the problem and validate	1	2	-	-
Perform work as per quality standards	**5**	**9**	**-**	**4**
PC7. implement ways to keep immediate as well as team's work area clean and tidy	1	2	-	-
PC8. maintain efficiency and productivity while performing role/responsibility	1	2	-	2
PC9. supervise the team to ensure that the work is done as per the assigned and agreed requirements	1	2	-	1
PC10. create schedules and rosters for the team to ensure they understand individual work requirements	2	3	-	1
Maintain safe and secure working environment	**12**	**13**	**-**	**2**
PC11. identify organisation’s health, safety, security policies and procedures	3	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. instruct team to report any identified breaches in health, safety, and security policies and procedures to the designated person	3	3	-	-
PC13. manage hazards such as illness, accidents, fires or any other natural calamity safely, as per organisation's emergency procedures, within the limits of individual's authority	3	4	-	1
PC14. report any hazard outside the individual's authority to the relevant person in line with organisational procedures and warn others who may be affected	3	3	-	1
Material / energy / electricity conservation practices	**15**	**16**	**-**	**4**
PC15. implement ways to optimize usage of material including water in various tasks/activities/processes	1	2	-	1
PC16. supervise the team to ensure responsible use of resources	2	2	-	1
PC17. motivate the team to carry out routine cleaning of tools, machine and equipment	2	2	-	1
PC18. guide the team to optimize use of electricity/energy in various tasks/activities/processes	3	4	-	-
PC19. implement periodic checks of the functioning of the equipment/machine and rectify wherever required	2	2	-	1
PC20. guide the team to report malfunctioning and lapses in maintenance of equipment	3	2	-	-
PC21. implement ways to use electrical equipment and appliances properly	2	2	-	-
NOS Total	**40**	**50**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N9104
NOS Name	Manage Work, Resources and Safety at workplace
Sector	Telecom
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	TBD
Version	1.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2026
NSQC Clearance Date	31/03/2022

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/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 Element/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 part for each candidate at each examination/training center (as per assessment criteria below).

5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.

6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.

7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 70

(**Please note**: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
TEL/N6208.Undertake Site Acceptance Testing	35	55	0	10	100	17
TEL/N6209.Perform Preventive and Corrective Maintenance at Radio Locations	30	60	0	10	100	17
TEL/N6210.Perform Change Management at Radio Locations	33	57	0	10	100	17
TEL/N6500.Undertake Fault Rectification	30	60	-	10	100	17
TEL/N6501.Undertake Configuration Changes, Upgrades and Node Back-up Activities	30	60	-	10	100	17
TEL/N9103.Implement Effective Interaction at workplace	30	60	-	10	100	7
TEL/N9104.Manage Work, Resources and Safety at workplace	40	50	-	10	100	8
Total	**228**	**402**	**-**	**70**	**700**	**100**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
AMF Panel	Auto Main Failure Panel
BSS	Base Station Sub-system
BTS	Base Transceiver Station
DG	Diesel Generator
EB connection	Electricity Board Connection
FM Engineer	Field Management Engineer
IF cable	Intermediate Frequency cable
MCB	Miniature Circuit Breaker
O&M	Operations and Maintenance
OHS	Organizational Health and Safety
PIU	Power Interface unit
RF cable	Radio Frequency Cable
SHE	Safety Health and Environment
SMPS	Switch Mode Power Supply
VSWR	Voltage Standing Wave Ratio

Glossary

Sector	Sector is a conglomeration of different business operations having similar business 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.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (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 (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications 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.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation 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 (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment 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.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.
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 a OS.
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.'