

Chapter 1 Routine Maintenance Instructions

1.1 Overview

ODU3601C Routine Maintenance Instructions describes in details the contents and methods of ODU3601C routine maintenance operations. It serves as a reference in determining the routine maintenance schedule of a particular site.

1.1.1 Purposes of Routine Maintenance

Normal system operation of ODU3601C in different running environment depends on effective routine maintenance. ODU3601C routine maintenance is intended to detect and solve problems in due time to prevent trouble.

1.1.2 Classification of Routine Maintenance Operations

I. Classification by implementing methods

- Conventional maintenance

This method is applied on regular basis to observe the operation of the system, test and analyze equipment performance.

- Unconventional maintenance

The unconventional method is to test whether the system performance has degraded by artificially creating some faults. For example, maintenance engineers may artificially create some faults and test if the alarm system reports alarm correctly.

II. Classification by period length

- Unscheduled maintenance

This includes the maintenance operations performed at equipment fault or network adjustment. For example, maintenance tasks performed due to by user complaint, damage of equipment and line fault. Solving of problems left over by daily maintenance operations is also regarded as unscheduled maintenance operation.

- Daily maintenance

It refers to the maintenance tasks conducted each day. ODU3601C daily maintenance helps maintenance engineers keep track of the operating conditions of the equipment at any moment so that problems can be solved in time. When a problem is detected in daily maintenance, record it in detail to help eliminate it in time.

- Periodical maintenance

Periodical maintenance refers to the maintenance tasks conducted regularly. Periodical maintenance helps maintenance engineers keep track of the long-term performance of the equipment.

Periodical maintenance includes: monthly maintenance, quarterly maintenance and yearly maintenance.

1.1.3 Usage of Routine Maintenance Records

As a maintenance engineer, you are required to fill in the following tables when you conduct the daily, monthly, quarterly and yearly maintenance for your ODU3601C. And specific instructions have been given after those tables.

I. Daily unexpected fault handling record

Note down in details the unexpected faults occurred in ODU3601C daily maintenance operations in the table for future reference. The user may modify the record according to the actual needs, or compile the records into manuals.

II. Monthly maintenance record

Note down in details the actual maintenance operations carried out during ODU3601C monthly maintenance in the table. For details, see ODU3601C Monthly Maintenance Operation Instruction.

III. Quarterly maintenance record

Note down in details the actual maintenance operations carried out during ODU3601C quarterly maintenance in the table. For details, see ODU3601C Quarterly Maintenance Operation Instruction.

IV. Yearly maintenance record

Note down in details the actual maintenance operations carried out during ODU3601C yearly maintenance in the table. For details, see ODU3601C Yearly Maintenance Operation Instruction.

Table 1-1 Daily Unexpected Fault Handling Record

Site		Belong-to BSC	
Time when fault occurred:		Time when fault is solved:	
Person on duty:		Handled by:	
Classification of fault:			
<input type="checkbox"/> Micro-bts Ac-dc Power supply Module (MAPM)		<input type="checkbox"/> Micro-bts Transceiver Module (MTRM)	
<input type="checkbox"/> Micro-bts Radio Frequency Front End Module (MFEM)		<input type="checkbox"/> Micro-bts Power Amplifier Module (MPAM)	
<input type="checkbox"/> Antenna and feeder system		<input type="checkbox"/> Others	
Fault detected:			
<input type="checkbox"/> With user complaint		<input type="checkbox"/> From the alarm system	
<input type="checkbox"/> In Daily maintenance		<input type="checkbox"/> From other sources	
Description of fault:			
Alarm handling & result:			

Table 1-2 Monthly Maintenance Record

Site: _____

Time of maintenance: ____ (MM) ____ (DD) ____ (YY) ____ (MM) ____ (DD) ____ (YY)		Maintainer:		
Items		Status	Remarks	Maintenance engineers
Environment		<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
Temperature		<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
Humidity		<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
Indoor air-conditioner		<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal	Upon indoor installation for ODU3601C	
Call test		<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
Battery group		<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal	When a battery group is used	
Grounding, lightening protection and power supply system		<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
RF antenna and feeder part		<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
Power supply module		<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
Description of fault and handling measures taken				
Problems remained				
Shift leader check				



Caution:

Avoid short circuit upon battery check!

Table 1-3 Quarterly Maintenance Record

Site: _____

Time of maintenance: ____ (MM) ____ (DD) ____ (YY) ____ (MM) ____ (DD) ____ (YY)		Maintainer:	
Items	Status	Remarks	Maintenance engineers
Power supply	<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
Road test	<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
Accessories check	<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
Description of fault and handling measures taken			
Problems remained			
Shift leader check			

Table 1-4 Yearly Maintenance Record

Site: _____

Time of maintenance: ____ (MM) ____ (DD) ____ (YY) ____ (MM) ____ (DD) ____ (YY)		Maintainer:	
Items	Status	Remarks	Maintenance engineers
Call test	<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
Cabinet sanitation	<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
BTS power output	<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
Grounding resistance and grounding wires	<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
Water-proof performance of antenna and feeder connector and lightening protection grounding clip	<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
Firmness and angle of antenna	<input type="checkbox"/> Normal, <input type="checkbox"/> Abnormal		
Description of fault and handling measures taken			
Problems remained			
Shift leader check			

1.2 Monthly Maintenance Instructions

Items	Instructions	Note
Call test	Make calls with a Mobile Station (MS). Collect information at both the MS and the Base Station Controller (BSC) to see if all calls are normal for all sector carriers.	There should be no noise, no call dropping, nor cross talking.
Grounding, lightening protection systems and power supply system	1) Check the connections in the grounding system and the lightening protection system. 2) Check if the power supply system is normal. 3) Check if any part of the lightening protector is burnt.	Keep the lightening protector in good status.
Antenna and feeder part	1) Check if the support of the antenna is set to the correct direction; 2) Check if the water-proof performance of the feeder is normal.	Query at the maintenance console.
Power supply module	Check if there is any alarm on the power supply module.	

1.3 Quarterly Maintenance Instructions

Items	Instructions	Note
Check 220V AC supply	Measure whether input voltage and frequency are in the specified range.	Range of normal input voltage: Rated frequency:
Road test	Test on the handoff and coverage area of the cells with a test MS.	
Accessories check	Check the auxiliary facility box and UPS, etc.	

1.4 Yearly Maintenance Instructions

Items	Instructions	Note
Call test	Make calls with an MS. Collect information at both the MS and the BSC to see if all calls are normal for all sector carriers.	There should be no noise, no call dropping, nor cross talking.
Cabinet sanitation	Tools required: Vacuum cleaner, alcohol and towel.	Impose strict operation regulations to prevent mis- operation on the power supply system.
BTS power output	Test the transmit power of the carriers.	Check if the output is the same as designed in the BSC.
Grounding resistance and grounding wires	1) Measure the grounding resistance with proper test instruments. 2) Check for lose grounding wire connectors and their aging status	
Water-proof performance of antenna and feeder connector and lightening protection grounding clip	1) Check the external parts; 2) Unwrap them and check.	Wrap up the checked parts with the same material used before the check.
Firmness and angle of antenna	1) Tighten the bolts with the wrench. 2) Check if the angle are correctly set.	Do not apply too much torque on the bolts