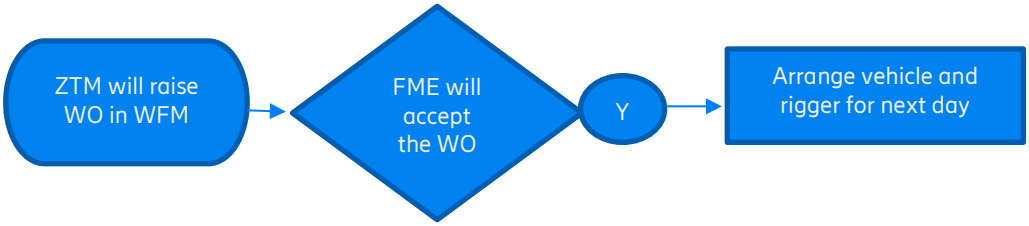
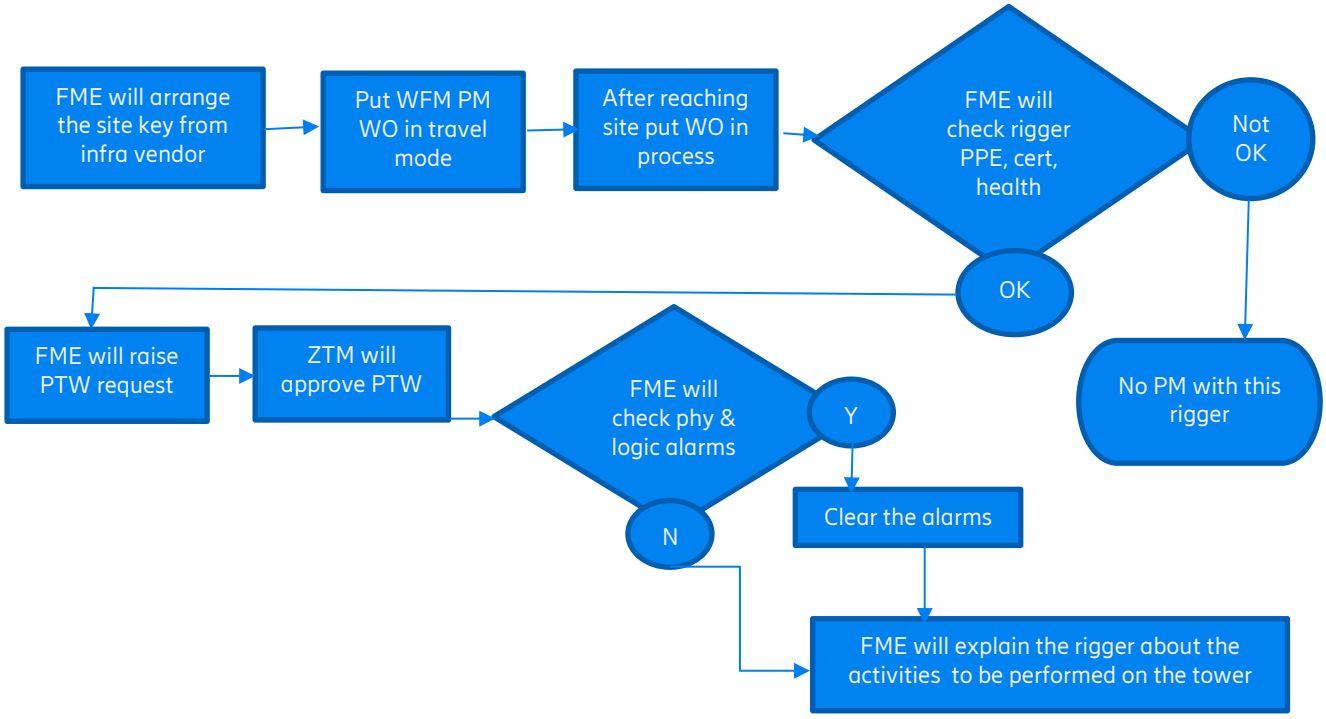
MOP of Preventive Maintenance

Flow Chart

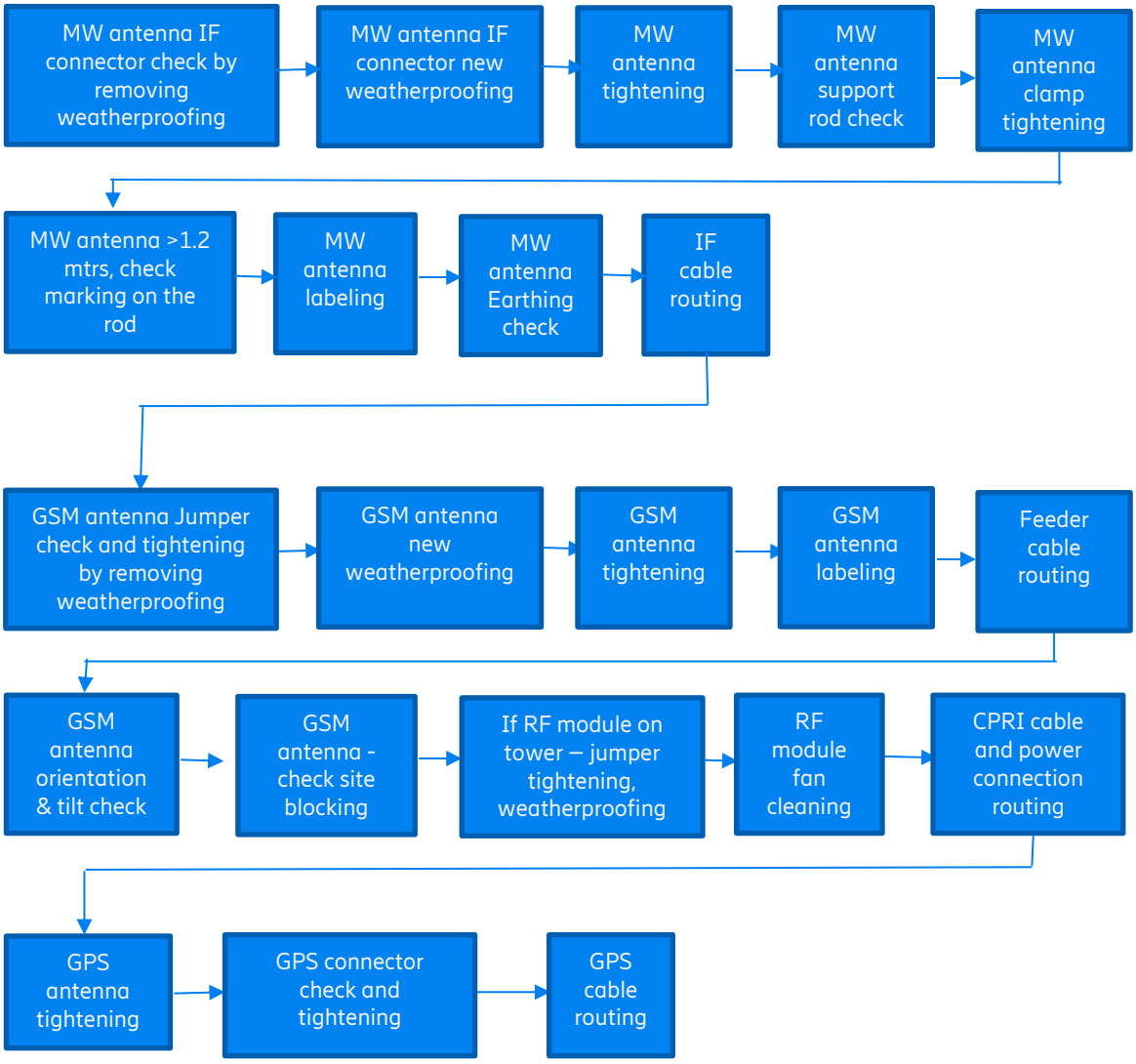
Day before PM



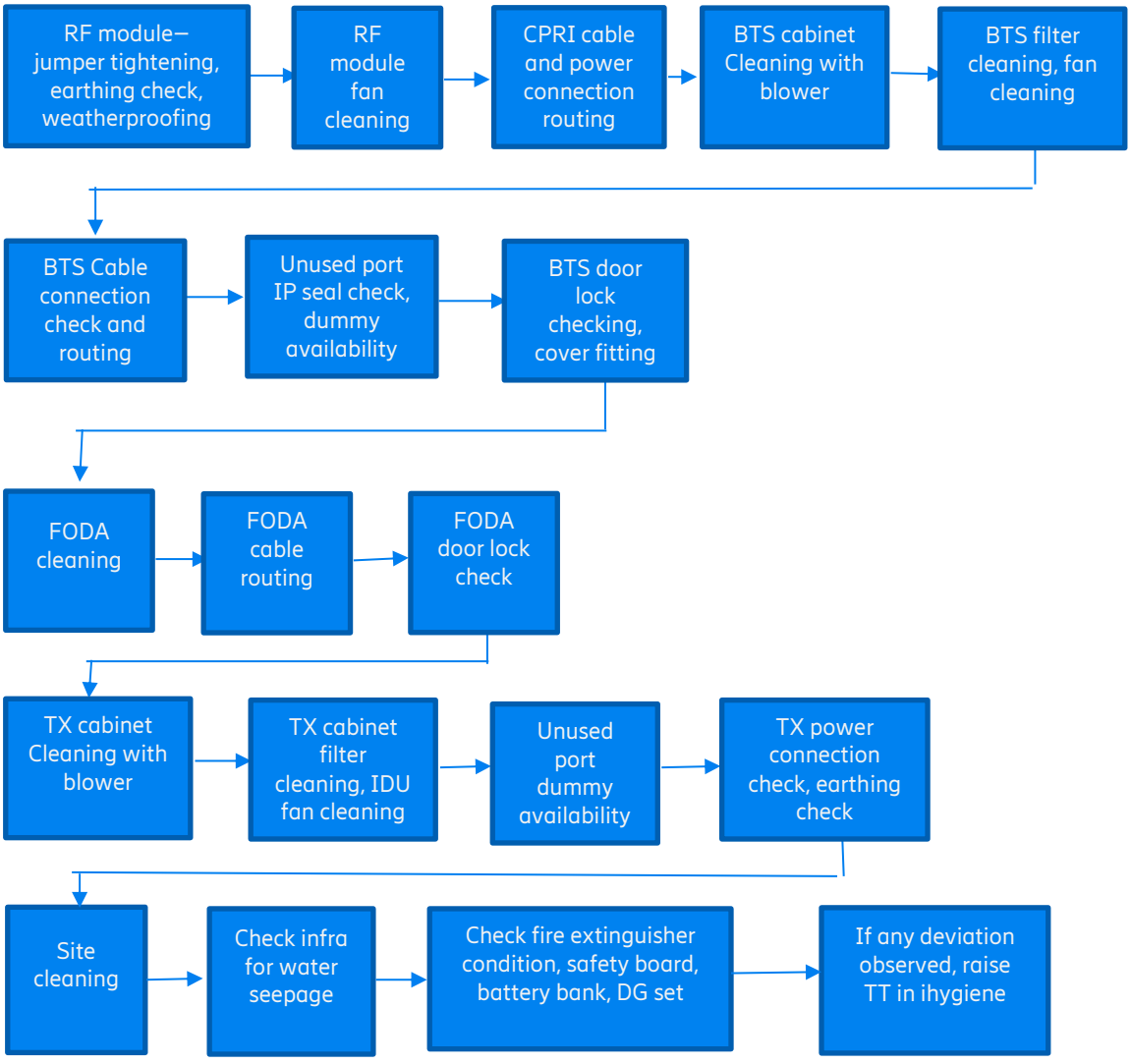
Day of PM - Preparation



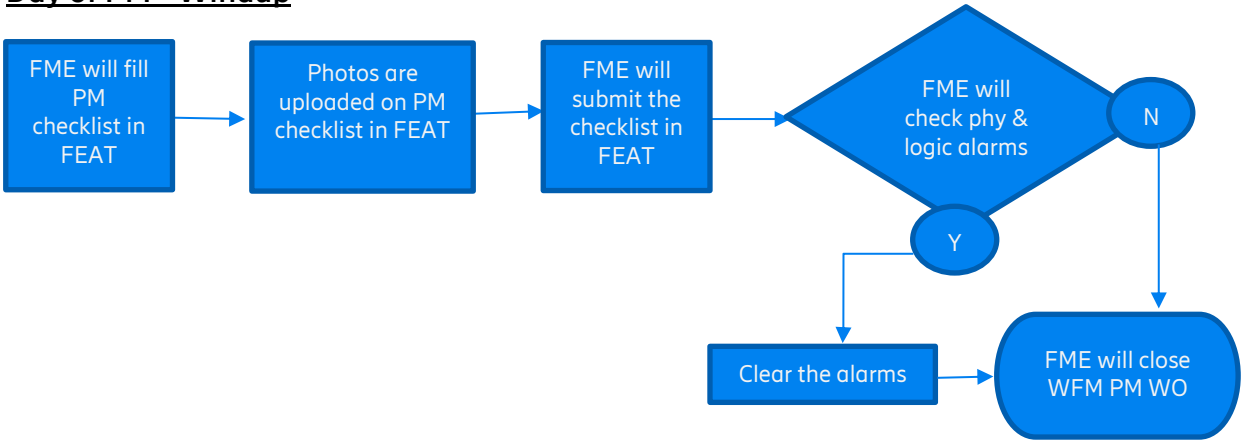
Tower Activities



Ground Activities



Day of PM - Windup



Day before PM

1. ZTM will raise WO - one day before
2. FME will get the WO after 2 hrs
3. FME will immediately Accept the WO
4. After further 2 hrs WO will sync with FEAT
5. FME will decide the PM time and arrange the vehicle (plan may change if there is corrective WO next day)

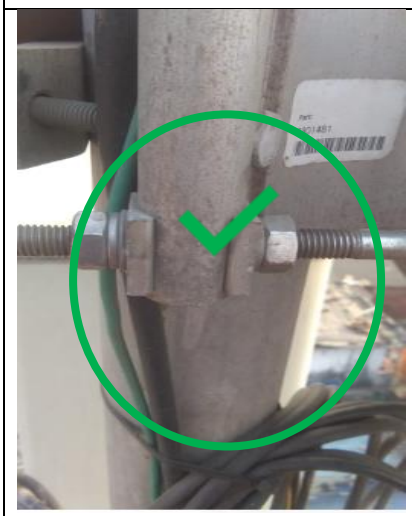
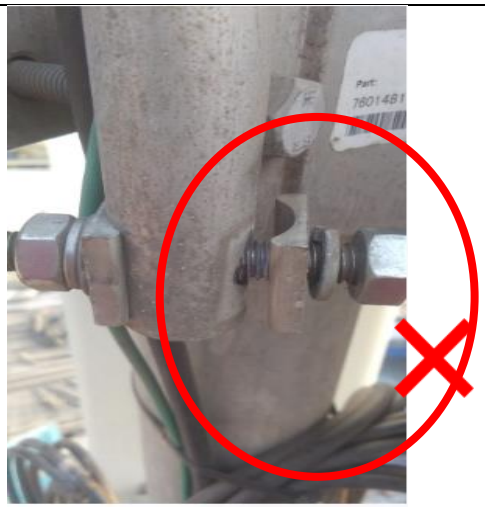
PM day

1. Arrange the key for the site from infra vendor
2. PM WFM WO put in travel
3. Reach the site
4. Put WFM PM WO in process
5. FME will ensure that the rigger has PPE kit, work at height certificate, medical certificate, present healthy physical condition, site condition including hygiene
6. Raise PTW request

7. PTW approval by ZTM
8. FME will login the BTS and check for any active alarm. If alarm is available, take corrective action
9. FME will login to MW TX and check for active alarm. If alarm is available, take corrective action
10. Explain the rigger about the activity to be performed on tower

11. Rigger will check microwave antenna tightening, IF connector weatherproofing, IF cable routing, microwave labeling and support rod.

Check nut-bolts on antenna clamp and tight it properly

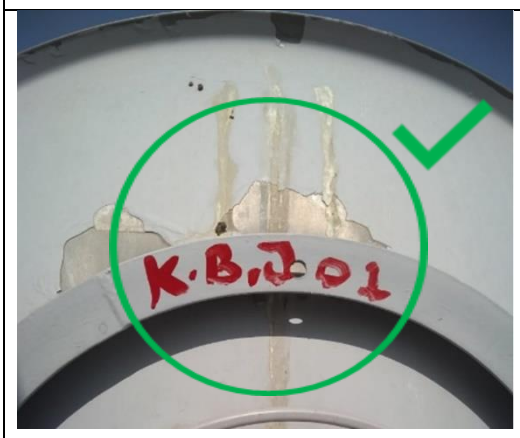
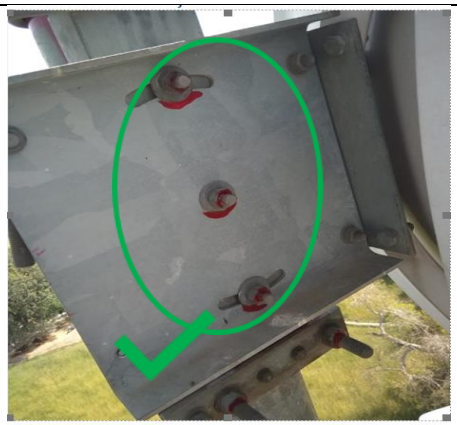
Microwave antenna tightening – Post PM photo	Microwave antenna tightening – Pre PM photo
	

MW antenna alignment process: - use campus to check Azimuth & MW height and align as per plan. If ODU performance find ok, then we need to align MW vertically & horizontally with the help of supporting rod in case of >0.9 MW antenna. Check if MW antenna pole mount is in proper place. Also check feed horn polarization correct position & clean it. Following marking are used on >0.9 mtrs MW antenna

1. Far End ID: - Every Hop should be written with Far End Id so that MW misalignment can be easily found. It is useful when multiple MW are installed at a site
2. Assembly Marking: - Marking on assembly of MW for Up and down tilt positions.

Adjust the azimuth over a 30 degree sweep by turning the adjustment bolt in increments of 1/10th turn to avoid missing the main lobe. When the highest signal has been found for azimuth, repeat for the elevation adjustment

3. Pole Mount Marking 1: - Marking on Pole Mount with Clamp and a Straight Marking line vertically between Upper Clamp and Lower Clamp. In case of misalign this marking provide proper location of clamp tightening where Hop was running on required RSL.
4. Pole Mount Marking 2: - Marking on Pole Mount of MW assembly lower clamp. It is useful when MW assembly drift on Pole Mount. Rigger can identify position of MW assembly on which Required RSL was running
5. Upper Clamp Marking: - Upper Clamp Marking on Pole Mount or on Pole. It is useful when Mw Holding Clamps drifted, and this marking provide proper position of Upper Clamp for proper RSL achievement
6. Supporting Rod Marking: - Marking on Supporting Rod Clamp. It is useful when MW is misaligned. Rigger first open supporting rod then try to align MW. During this activity this marking is helpful to reinstall supporting rod
7. Marking on screws: - It is useful when Mw get loses and this marking help Rigger to identify locking position of MW

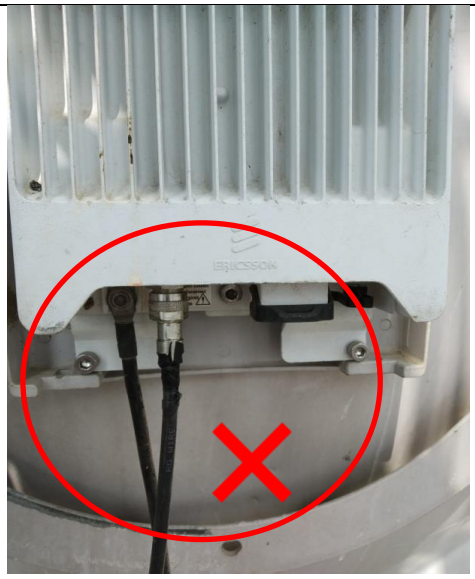
MW antenna >0.9 mtrs – far end ID	MW antenna >0.9 mtrs – Assembly Marking
	

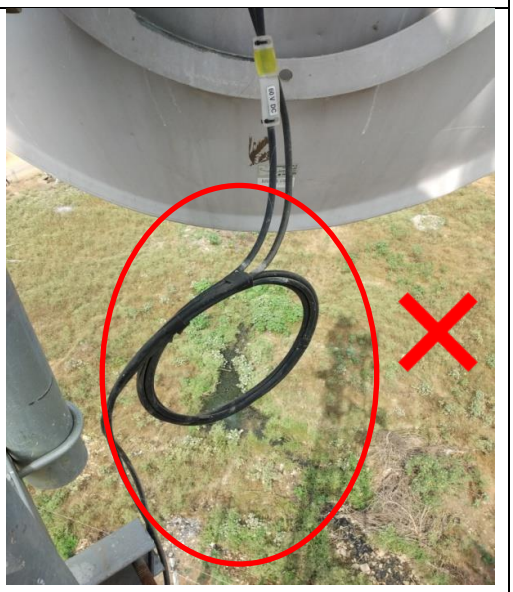
MW antenna >0.9 mtrs – Pole Mount Marking 1

MW antenna >0.9 mtrs – Upper clamp Marking	MW antenna >0.9 mtrs – Support rod Marking
	

MW antenna >0.9 mtrs –Marking on screws	MW antenna >0.9 mtrs – Pole Mount Marking 2
	

IF connector – Post PM photo	IF connector – Pre PM photo
	

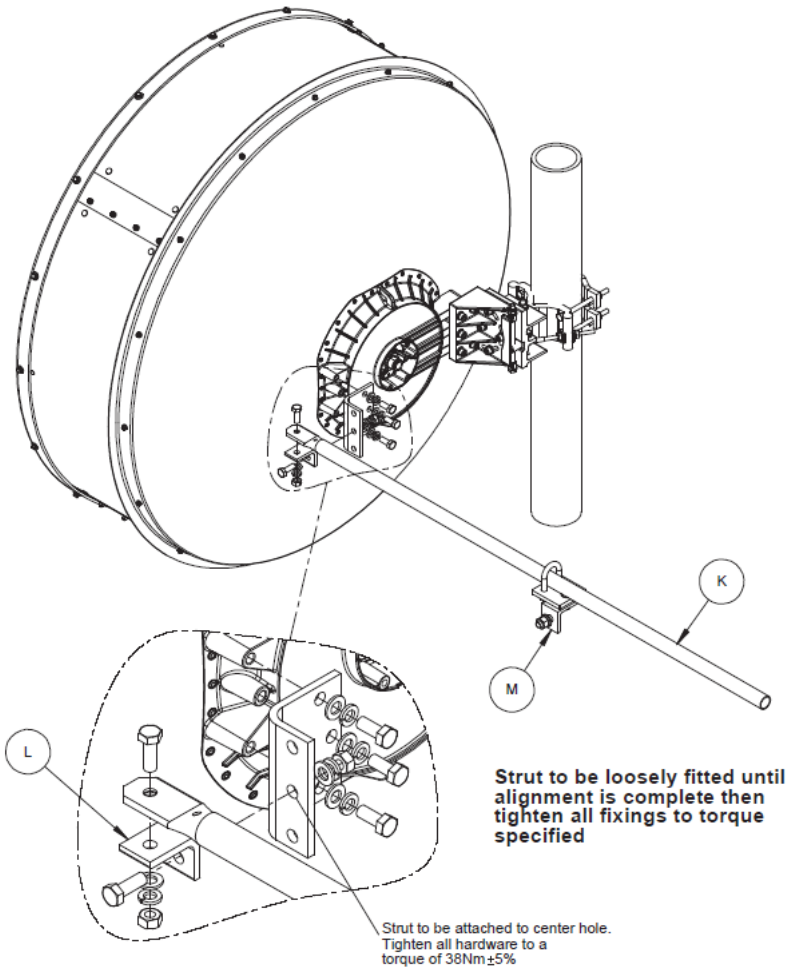
IF connector – Post PM photo	IF connector – Pre PM photo
	

IF cable routing – Post PM photo	IF cable routing – Pre PM photo
	

IF cable routing – Post PM photo	IF cable routing – Pre PM photo
	

Microwave labeling – Post PM photo	Microwave labeling – Pre PM photo
	

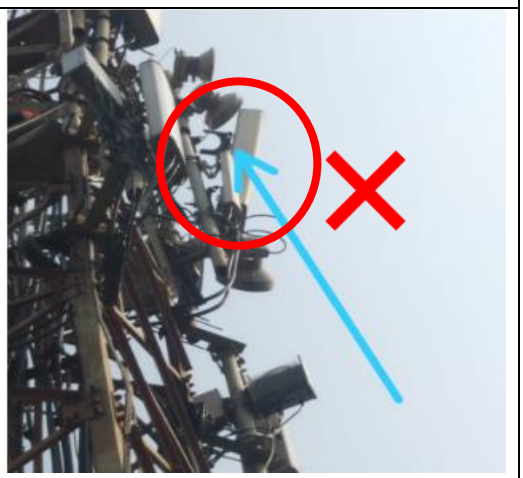
<u>Supporting Rod installation on 1.2 mt and 1.8 mt Antenna:</u> - Every supporting rod must be installed opposite to clamp with proper tightening, so that max protection can be given


K
M
L
Strut to be loosely fitted until alignment is complete then tighten all fixings to torque specified
Strut to be attached to center hole. Tighten all hardware to a torque of 38Nm±5%

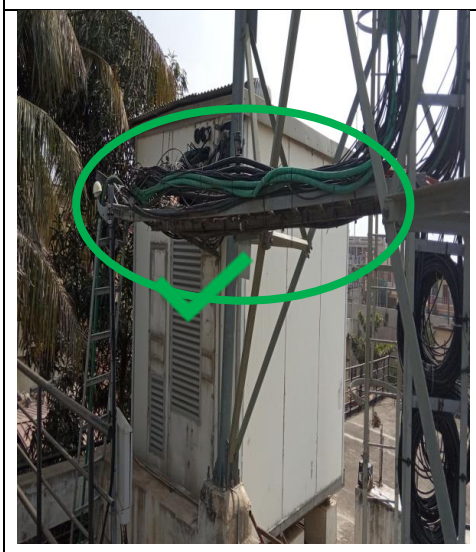
Support rod – Post PM photo	Support rod – Pre PM photo
	

Support rod – Post PM photo	Support rod – Pre PM photo
	

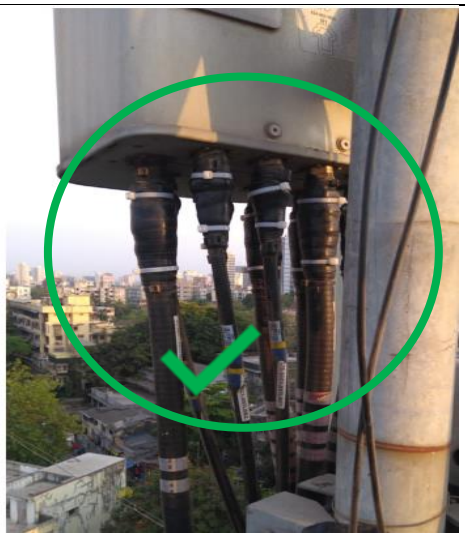
12. Rigger will check all GSM antenna tightening, jumper tightening, jumper routing, tape weatherproofing, labeling, GSM orientation as per GIS, check GSM blocking, feeder cable routing if RF module is installed on ground

GSM antenna tightening – Post PM photos	GSM antenna tightening –Pre PM photos
	
	

GSM antenna tightening – Post PM photos	GSM antenna tightening –Pre PM photos
	

Feeder routing - Post PM photo	Feeder routing - Pre PM photo
	

Feeder routing - Post PM photo	Feeder routing - Pre PM photo
	

Tape weather proofing – Post PM photo	
	

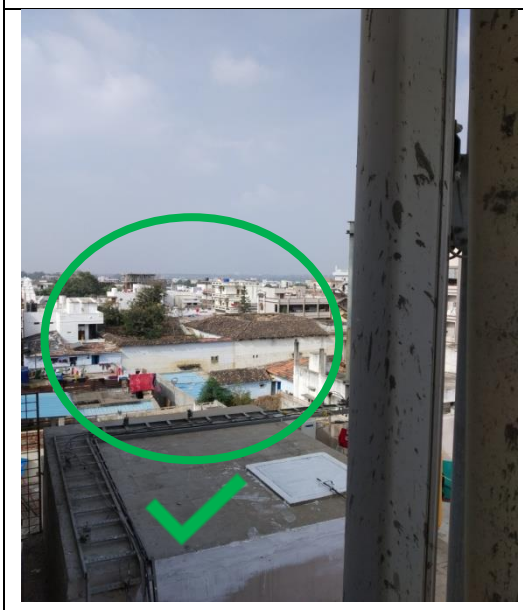
Labeling – Good PM photo	Labeling – Bad PM photo
	

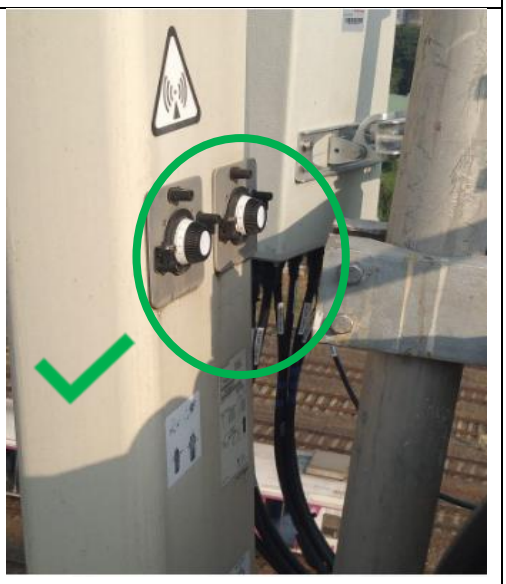
Labeling – Good PM photo	Labeling – Bad PM photo
	

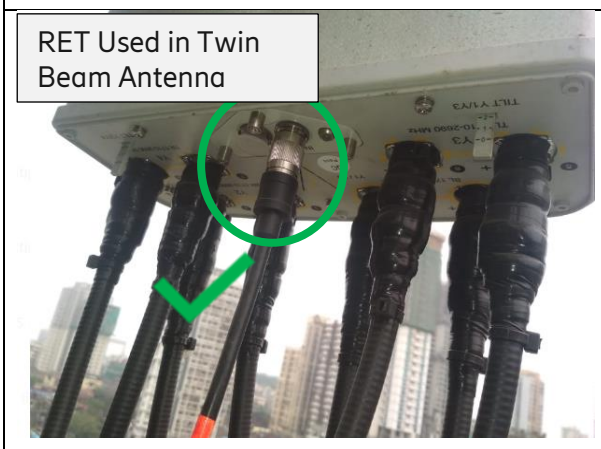
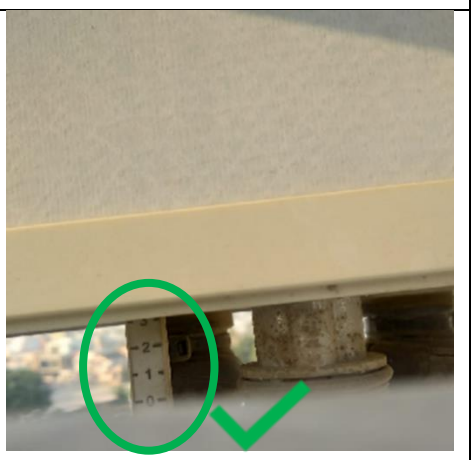
GSM orientation – Proper orientation	
	

GSM orientation – Proper orientation	GSM orientation – Faulty orientation
	

GSM blocking – Site without blocking	GSM blocking – Site with blocking
	

GSM blocking – Site without blocking	GSM blocking – Site with blocking
	

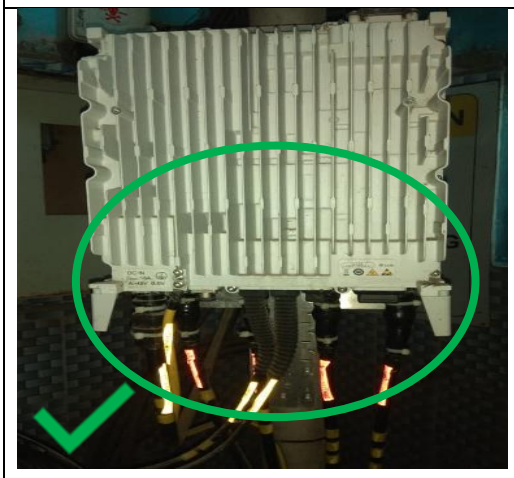
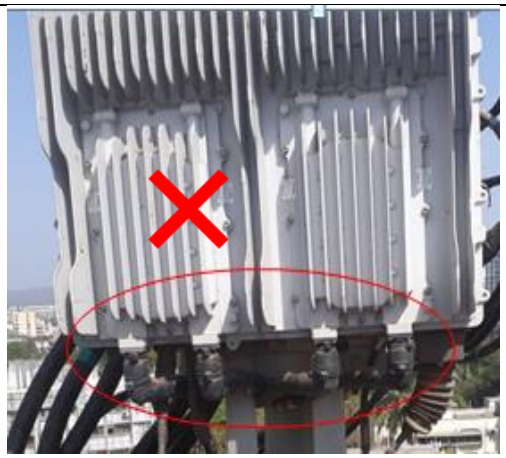
GSM tilt photos of 1st sector Mechanical and Electrical – Post PM photo	
	

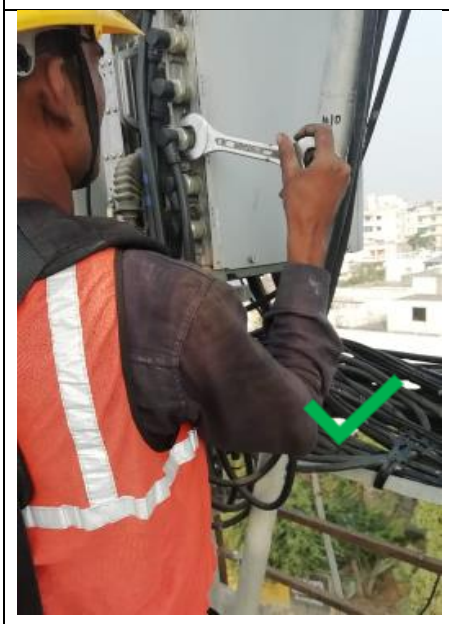
GSM Electrical tilt– Post PM photo	
	

GSM tilt photos of 1st sector Mechanical and Electrical – Post PM photo	
	

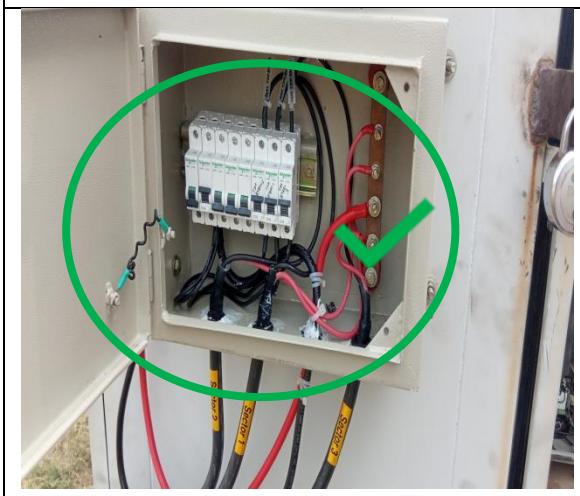
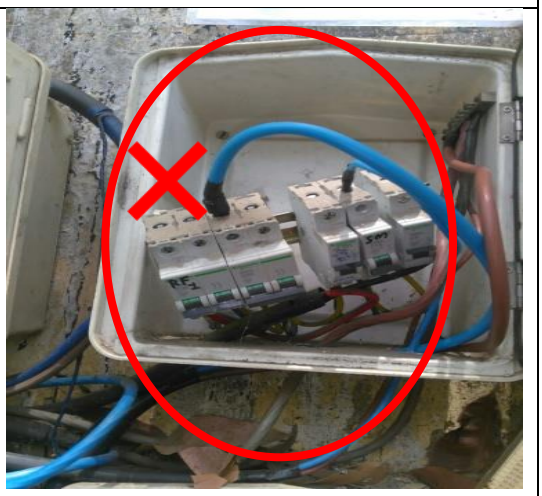
13. If RF module is installed on tower than check tape weatherproofing and jumper tightening, CPRI cable and power connection routing, RF module fan cleaning

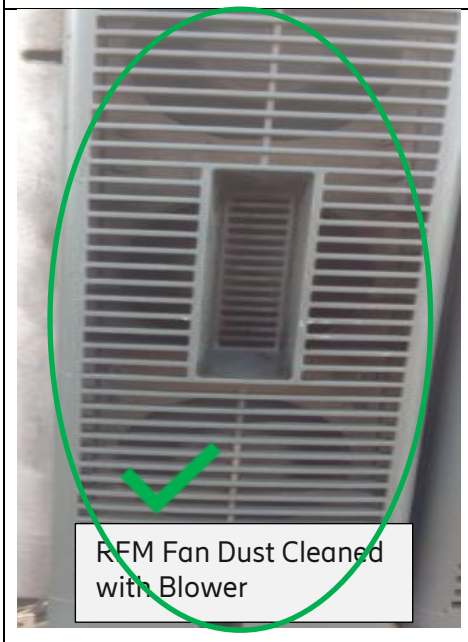
Tape weather proofing – Post PM photo	Tape weather proofing - Pre PM photo
	

Tape weather proofing – Post PM photo	Tape weather proofing - Pre PM photo
	

Jumper tightening - Post PM photo	Jumper tightening - Pre PM photo
	

CPRI cable routing - Post PM photo	CPRI cable routing - Pre PM photo
	

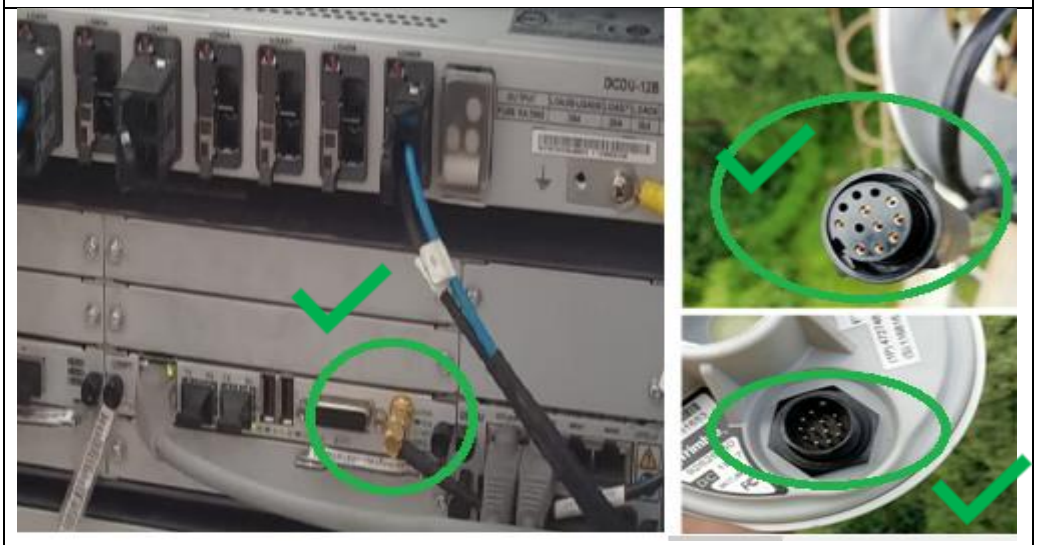
Power connection routing - Good PM photo	Power connection routing - Bad PM photo
	

RF module fan cleaning - Post PM photo	RF module fan cleaning - Pre PM photo
	

14. GPS antenna check

- Inspect Connectors
- Inspect the GPS cable
- Inspect the GPS Antenna mounting

GPS connector inspection for dust and proper fitting

GPS connector inspection for dust and proper fitting


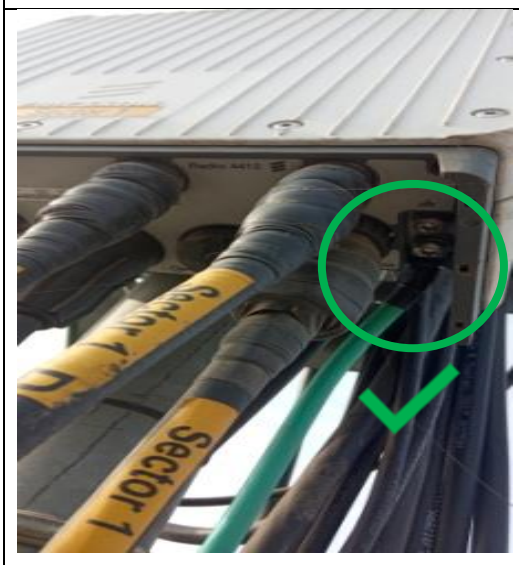
GPS connector inspection for Earthing and proper fitting - Good PM photo	GPS connector inspection for Earthing and proper fitting - Bad PM photo
	

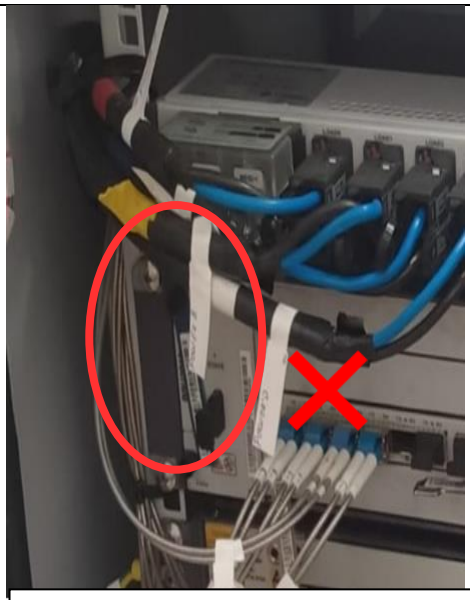
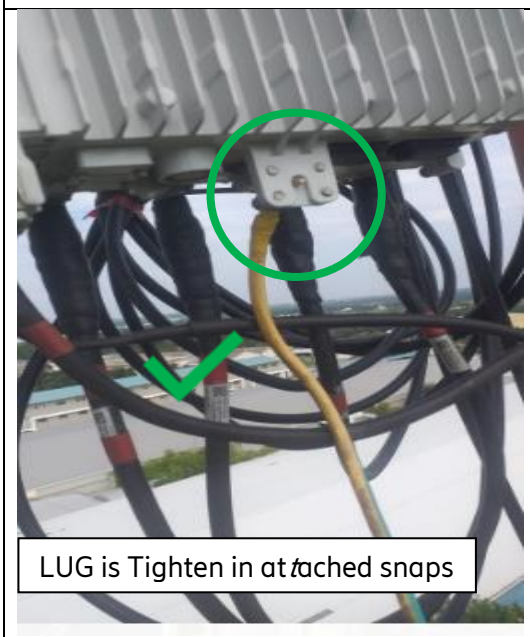
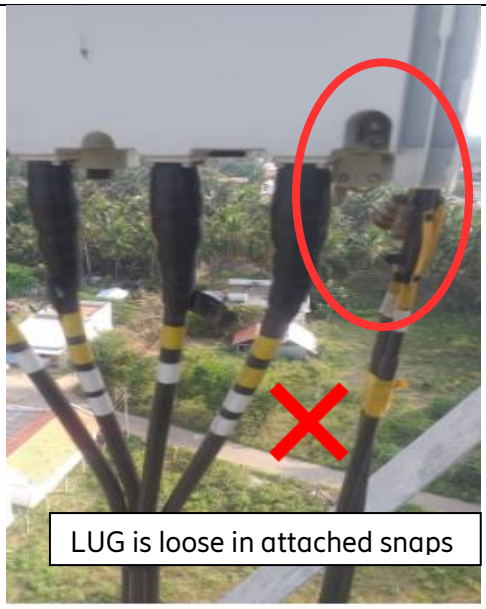
GPS antenna cable routing - Good PM photo	GPS antenna cable routing - Bad PM photo
	

15. All Equipment Earthing checks

Earthing - Post PM Photo	Earthing - Pre PM Photo
	
Proper grounding Connected to plinth	Grounding not available

Post PM Photo	Pre PM Photo
 LUG is Tighten in attached snaps	 LUG is loose in attached snaps

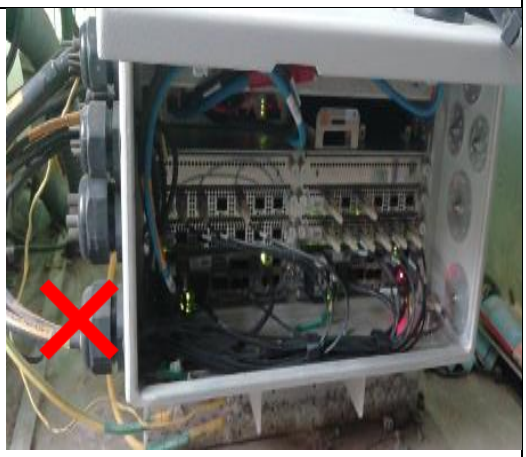
Earthing - Post PM Photo	
 Proper grounding Connected to plinth	

Earthing - Post PM Photo	Earthing - Pre PM Photo
	
Proper grounding Connected to plinth	Grounding not available
Post PM Photo	**Pre PM Photo**
	
LUG is Tighten in attached snaps	LUG is loose in attached snaps

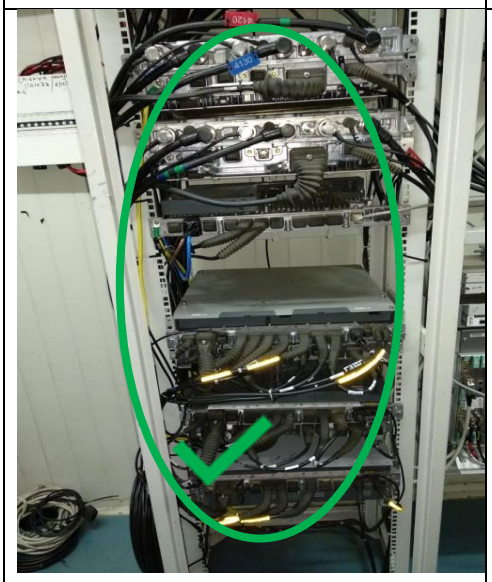
16. Rigger comes down from tower

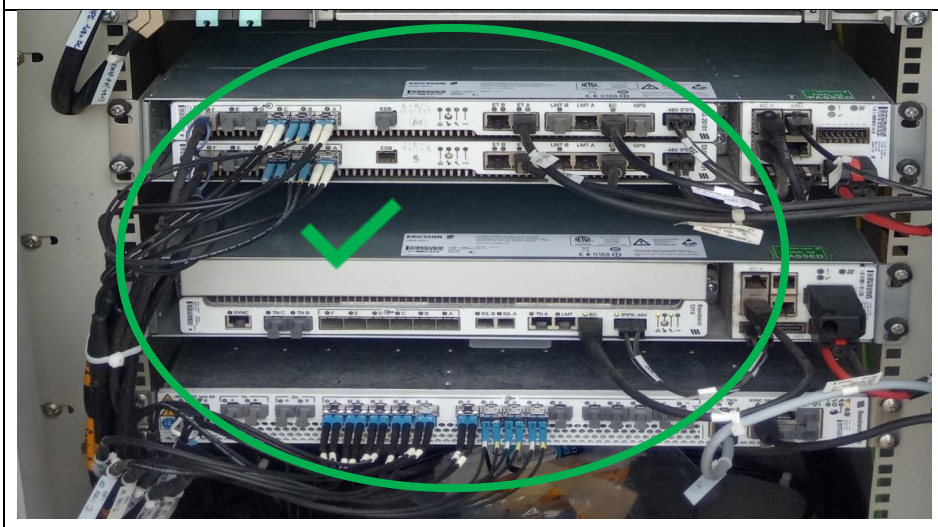
17. If RF module is installed on ground than all the points writing above for RF module will be performed now

18. BTS cleaning with blower

PM Photo	Pre PM Photo
	
PM Photo	**Pre PM Photo**
	

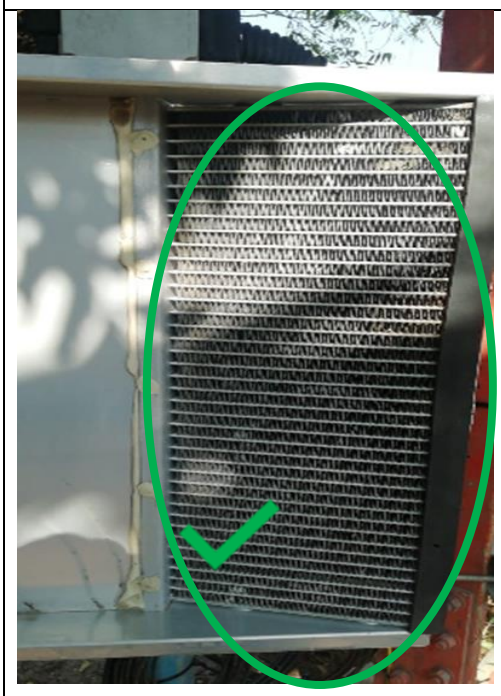
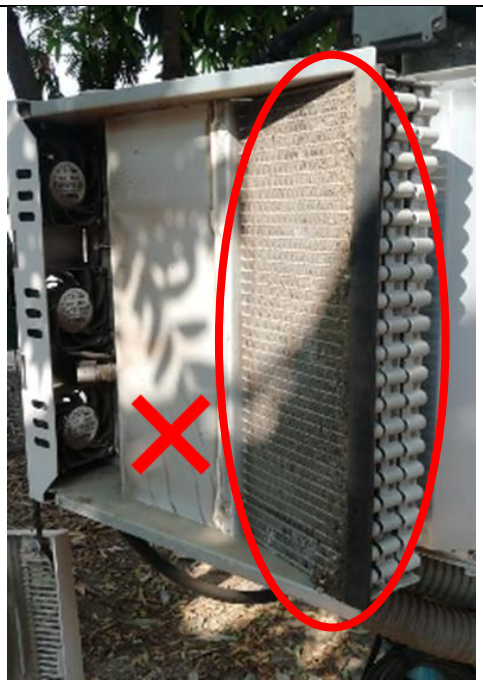
19. BTS cable connection checking & routing (I/D)

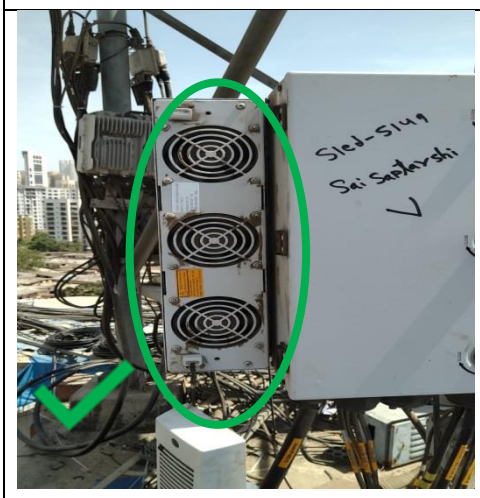
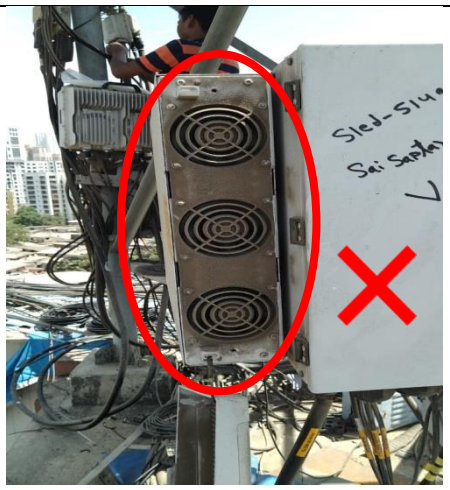
Post PM Photo	Pre PM Photo
	

Post PM Photo


20. If BTS is Airscale type than filter cleaning, fan cleaning, door lock checking

- For modules with fans, keep the fans free of leaves and debris
- When cleaning the fans, first remove the power connector from the fan or disable power to the module (depending on the variant)
- For all modules, keep air inlets and outlets free of obstructions to maintain proper air circulation and prevent overheating of the BTS
- Keep the BTS environment clean of dust.

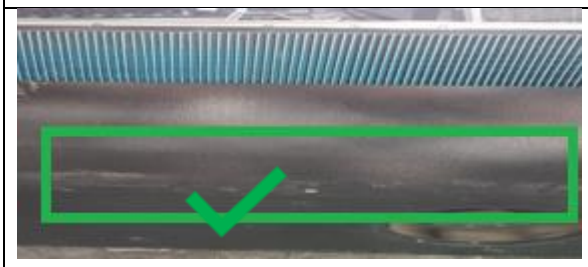
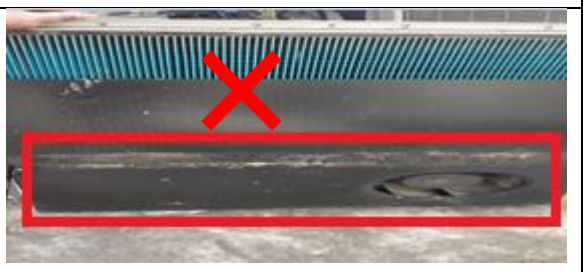
Filter cleaning – Good PM Photo	Filter cleaning – Bad PM Photo
	

Fan cleaning – Post PM Photo	Fan cleaning – Pre PM Photo
	

Door lock checking - Good PM Photo	Door lock checking - Bad PM Photo
	

Door lock checking – Post PM Photo	Door lock checking – Bad PM Photo
	

21. If Huawei NodeB is installed in IP55/APM cabinet (outdoor) than filter cleaning, fan cleaning, door lock checking

Filter cleaning – Good PM Photo	Filter cleaning – Bad PM Photo
	

Fan cleaning – Post PM Photo	Fan cleaning – Pre PM Photo
	

Door lock checking - Good PM Photo	Door lock checking - Bad PM Photo
	

22. If Huawei NodeB is installed indoor in TOCO provider cabinet- fan cleaning, cabinet cleaning, if any indoor hygiene issue raise TT to infra provider

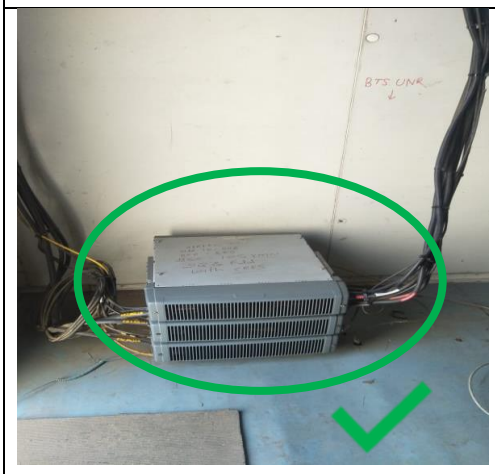
Fan Post PM Photo	Fan Pre PM Photo
	

Cabinet cleaning - Post PM Photo	Cabinet cleaning – Pre PM Photo
	

23. If FSMF BTS type- unused ports IP seal is checked, 2HU cover is checking for proper fitting

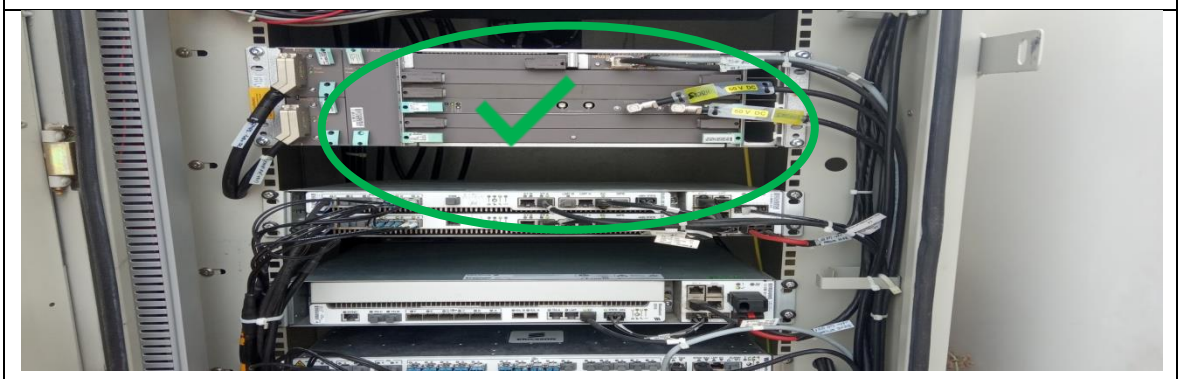
FSMF Fan Post PM Photo	FSMF Fan Pre PM Photo
	

Unused ports IP seal - Post PM Photo	Unused ports IP seal – Pre PM Photo
	

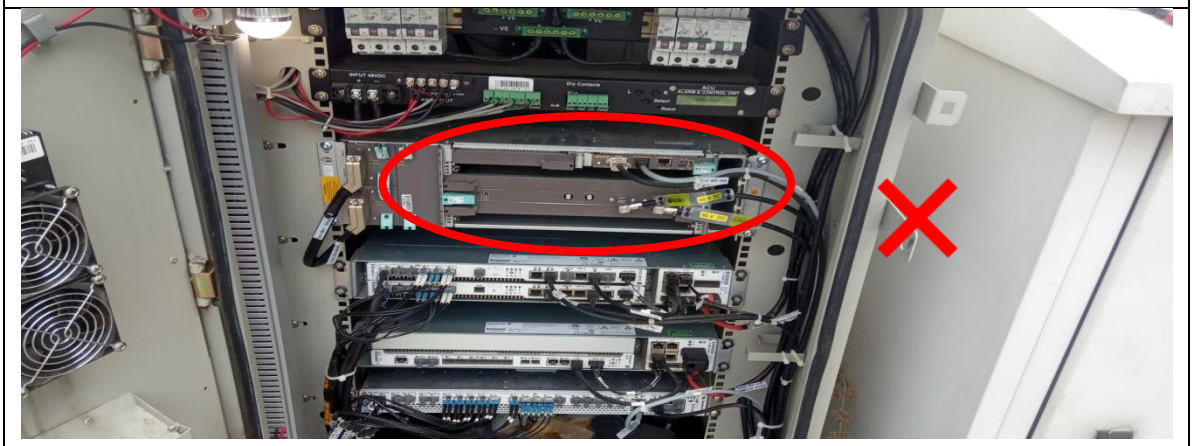
2HU cover is checking for proper fitting – Post PM Photo	2HU cover is checking for proper fitting – Pre PM Photo
	

24. Ericsson BTS and RF module cleaning and power cable connection check

TN -6P fan cleaning – Post PM photo	TN -6P fan cleaning – Pre PM photo
	

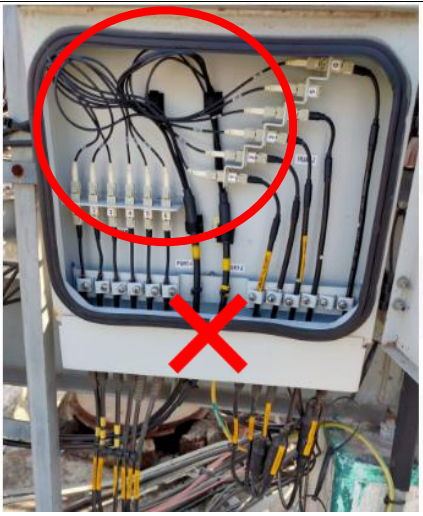
Dummy availability - Post PM photo


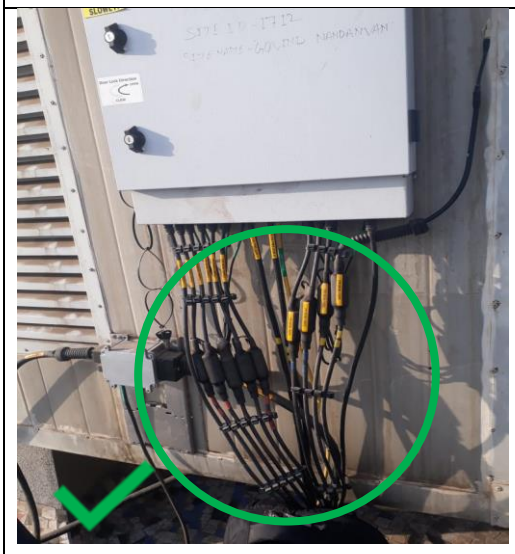
Dummy availability - Pre PM photo

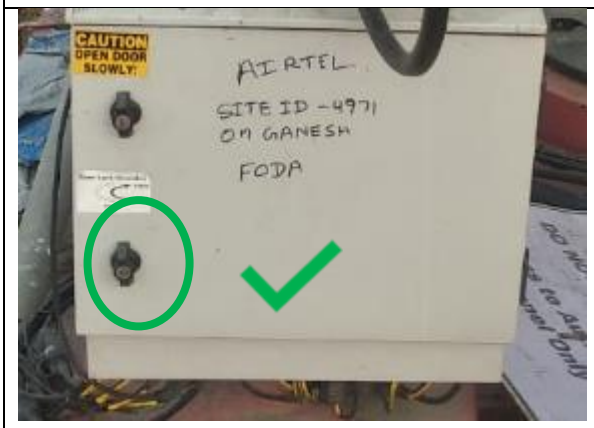


PARSWA cabinet filter cleaning - PM photo

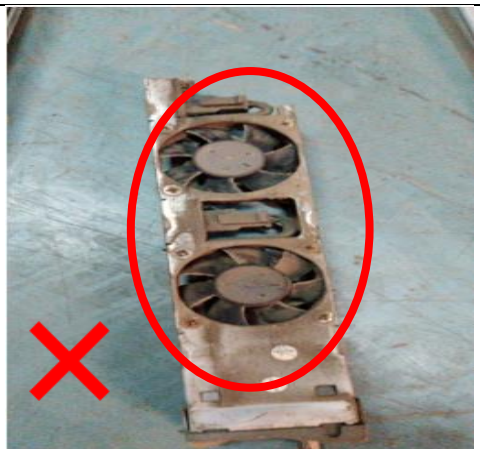
25. Foda cleaning, cable routing, door lock checking

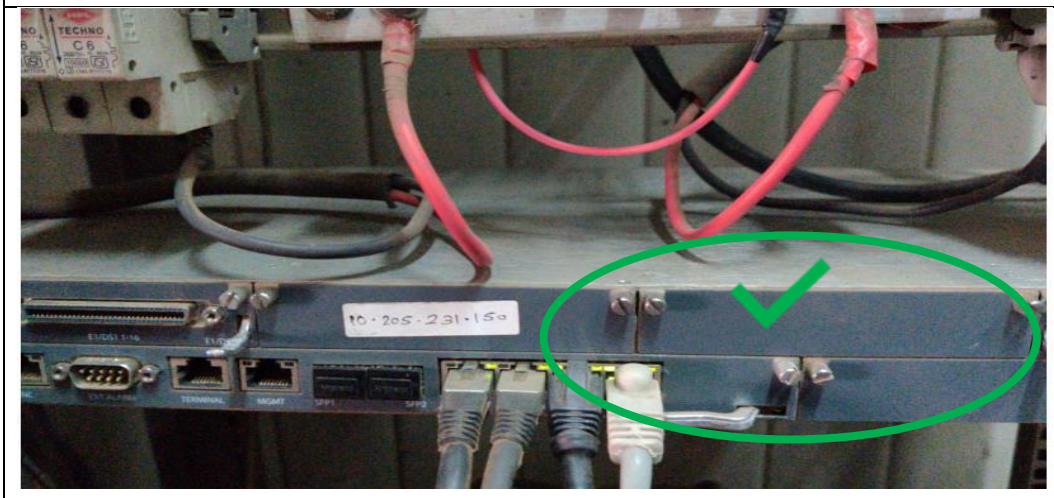
Foda cleaning - Good PM Photo	Foda cleaning - Bad PM Photo
	

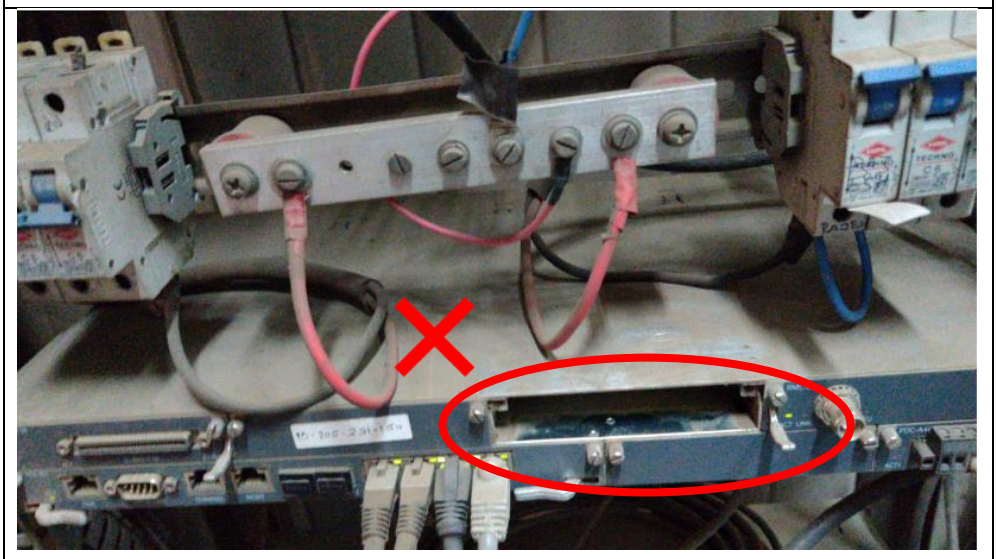
Cable routing - Good PM Photo	Cable routing - Bad PM Photo
	

Door lock checking – Post PM Photo	Door lock checking – Bad PM Photo
	

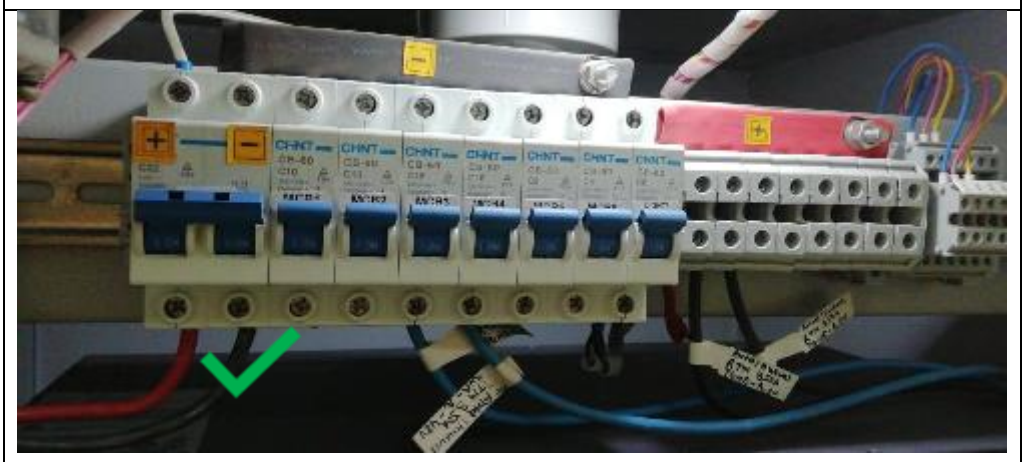
26. Transmission IDU fan cleaning, dummy availability - if IDU is installed outdoor than IP55/65 or APM cabinet filter cleaning

Tx IDU fan cleaning – Post PM photo	Tx IDU fan cleaning – Pre PM photo
	

Dummy availability - Post PM photo


Dummy availability - Pre PM photo


27. Transmission IDU power connection checking- power should be, 1 critical and other non-critical

Post power connection photo


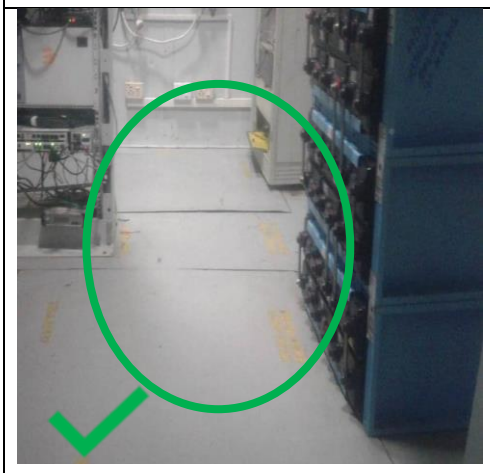
28. Transmission IDU is cleaned with blower (After taking proper Outage Approval)

Post PM Photo	Pre PM Photo
	

TX IDU Cleaning - Post PM Photo	TX IDU Cleaning - Pre PM Photo
	

29. Site hygiene should be Good

Post PM Photo	Pre PM Photo
	
Site Hygiene Good	Site Hygiene Not Good

Post PM Photo	Pre PM Photo
	

30. If active alarm is not closed due to unavailable of material or any other reason - it is informed to ZTM

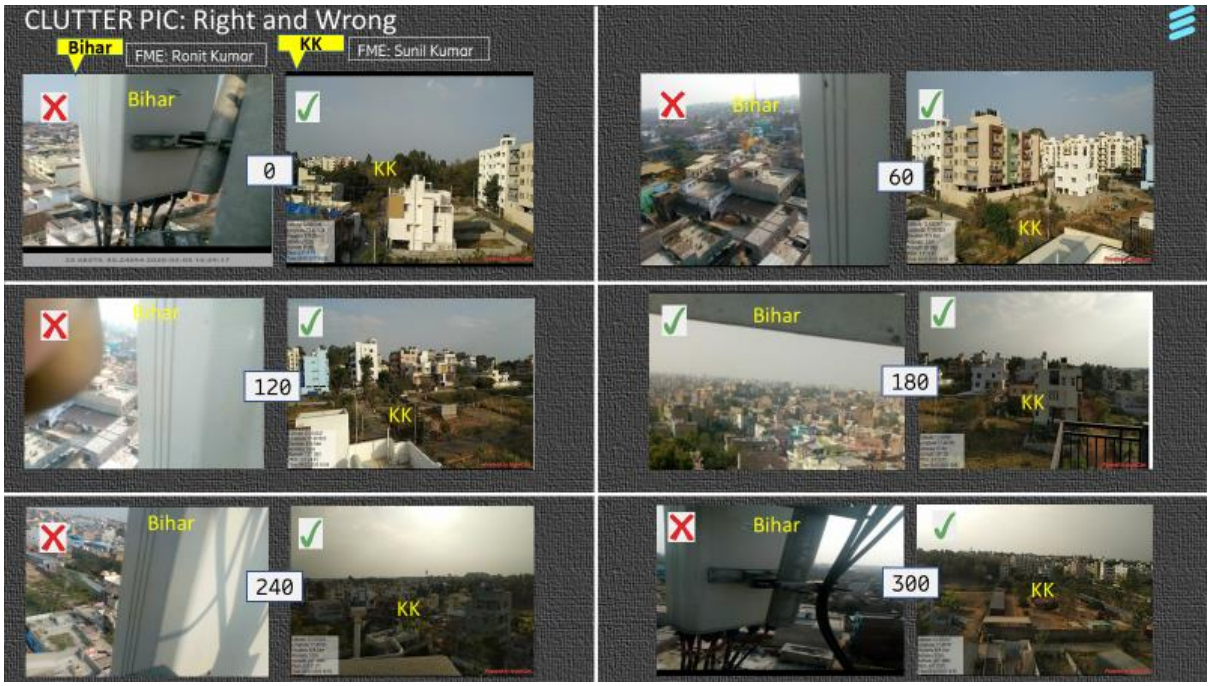
31. Verify infra punch point - if gap observed, raise TT to infra provider and inform ZTM

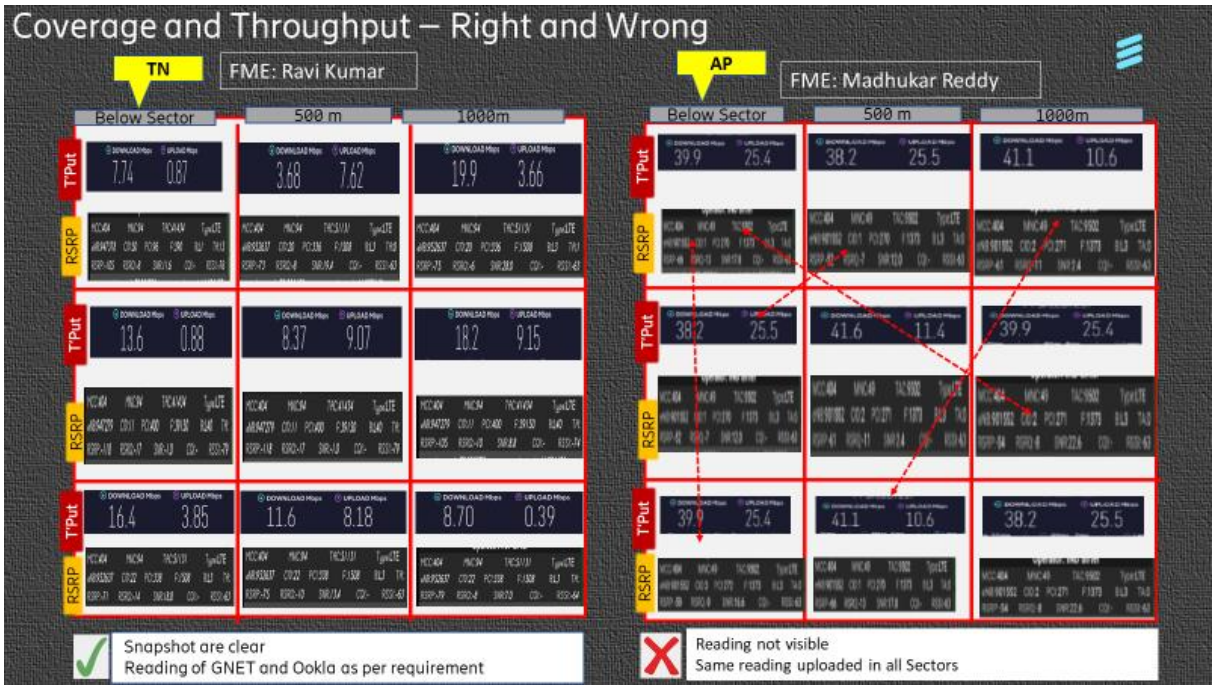
    Check infra - power plant condition, Battery bank condition, earthing, lightning arrestor, vegetation, fire extinguisher, safety board, electrical cable routing, tower condition, DG set

32. FEAT PM entry is started as per checklist
    Photos are taken and uploaded to FEAT
    FEAT PM checklist is submitted

33. FME will login to BTS & TX and check for alarm. If found any alarm, he should rectify

34. WFM PM WO is resolved


CLUTTER PIC: Right and Wrong
Bihar
FME: Ronit Kumar
KK
FME: Sunil Kumar
Bihar
0
KK
Bihar
60
KK
Bihar
120
KK
Bihar
180
KK
Bihar
240
KK
Bihar
300
KK


Coverage and Throughput – Right and Wrong
TN
FME: Ravi Kumar
AP
FME: Madhukar Reddy
Below Sector
500 m
1000m
TPut
RSRP
7.74 0.87
3.68 7.62
19.9 3.66
13.6 0.88
8.37 9.07
18.2 9.15
16.4 3.85
11.6 8.18
8.70 0.39
39.9 25.4
38.2 25.5
41.1 10.6
38.2 25.5
41.6 11.4
39.9 25.4
39.9 25.4
41.1 10.6
38.2 25.5
Snapshot are clear
Reading of GNET and Ookla as per requirement
Reading not visible
Same reading uploaded in all Sectors