

Prepared (also subject responsible if other) Pragadeesh		No.		
Approved	Checked	Date 07-05-2020	Rev Ver1.0	Reference

MOP of AM_DOWNSHIFT Alarm for Huawei

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Activity Description

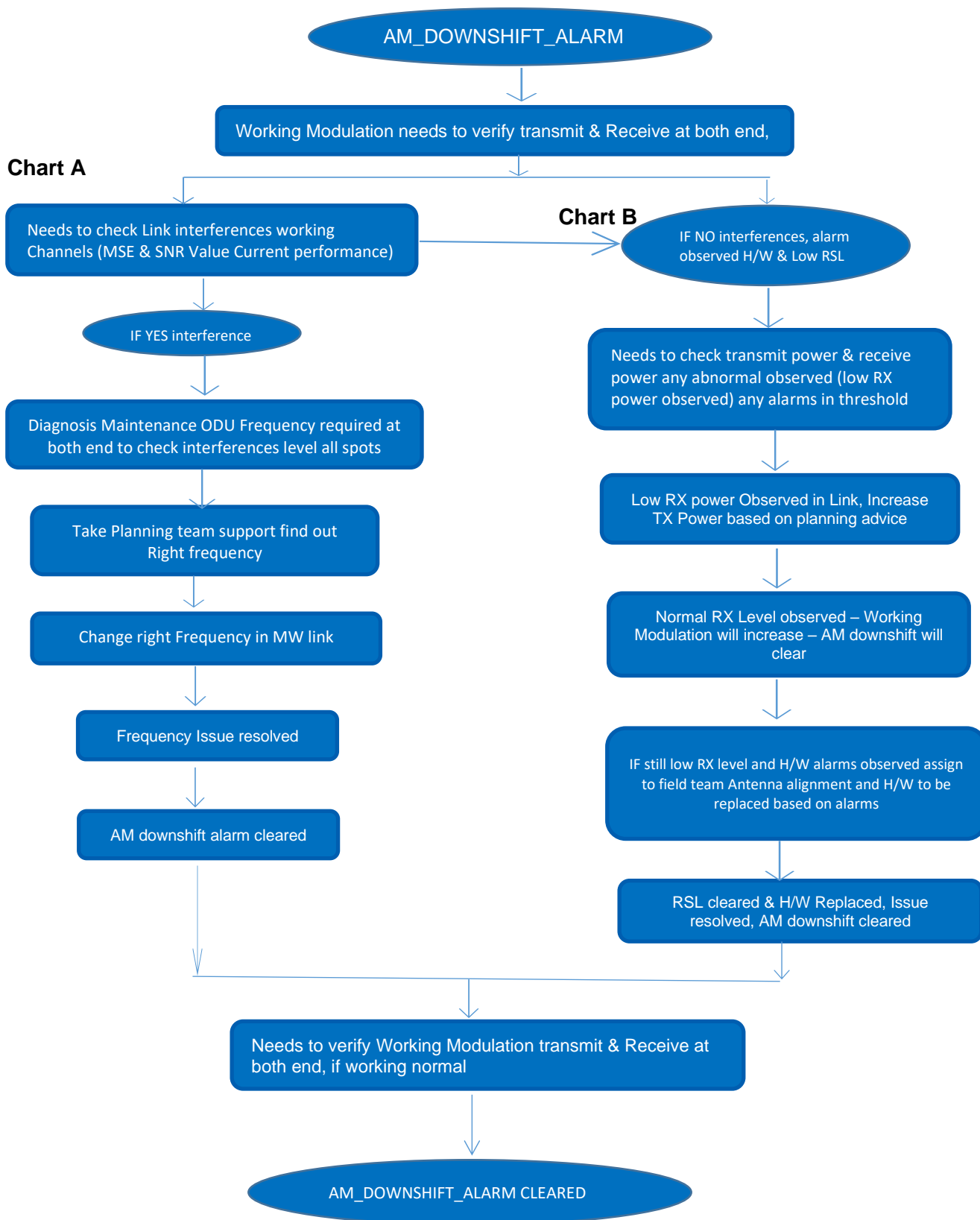
This activity is for E2E troubleshooting and alarm clearance of AM_DOWNSHIFT.

Attached is the details to be followed. As this need to be followed as guideline.

Alarm Name	AM_DOWNSHIFT Alarm
Alarm Description	The AM_DOWNSHIFT alarm indicates the downshift of the AM scheme. This alarm occurs after the AM mode is downshifted from the Highest-order modulation scheme to the lower-order modulation scheme. After the mode is upshifted from the lower -Order modulation scheme to highest -order modulation scheme, this alarm is cleared.
Possible Causes	<ol style="list-style-type: none">1. The external factors (for example, the climate) cause the degradation of the working channels.2. There are MW Link interferences around the working channels.3. The RFU/ODU at the transmit end has abnormal transmit power4. The RFU/ODU at the receive end has abnormal receive power

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Flow Chart



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Activity Details Flow Chart-A

The AM_DOWNSHIFT alarm indicates the downshift of the AM scheme. This alarm occurs after the AM mode is downshifted from the Highest-order modulation scheme to the lower-order modulation scheme. After the mode is upshifted from the lower -Order modulation scheme to highest -order modulation scheme, this alarm is cleared.

Current Alarms before activity

Severity ^	Alarm ID ^	Alarm Source ^	Name v	Occurrence Times ^	Location Information ^	Last Occurred (ST) ^	First Occurred (ST) ^	Cleared On (ST) ^
Major	13050	ERNAV9	AM_DOWNSHIFT	1	6-ISM6-1(ERNAVU)-RTNIF:1	02/25/2020 15:07:56	02/25/2020 15:07:56	

Current TX & RX Modulation it shows working low QAM

6-ISM6-1(ERNAVU)
26-ODU

Basic Parameters v
Protection: ☒ 1+0 ☐ 1+1
XPIC: ☐
Link ID: 1
Received Link ID: 1
IF v
IF Service Type: Hybrid(Native E1+ETH)
IF Channel: 28MHz
Bandwidth: 28MHz
AM Status: ☒
Guaranteed Capacity Modulation: 64QAM/136Mbit/s
Full Capacity Modulation: 256QAM/183Mbit/s
TX Modulation Mode: 64QAM
RX Modulation Mode: 256QAM

80-ODU
10-ISM6-2(ERNAV9)

Basic Parameters v
Protection: ☒ 1+0 ☐ 1+1
XPIC: ☐
Link ID: 1
Received Link ID: 1
IF v
IF Service Type: Hybrid(Native E1+ETH)
IF Channel: 28MHz
Bandwidth: 28MHz
AM Status: ☒
Guaranteed Capacity Modulation: 64QAM/136Mbit/s
Full Capacity Modulation: 256QAM/183Mbit/s
TX Modulation Mode: 256QAM
RX Modulation Mode: 64QAM

1. The external factors (for example, the climate) cause the degradation of the working channels.
2. There are MW Link interferences around the working channels.
3. The RFU/ODU at the transmit end has abnormal transmit power
4. The RFU/ODU at the receive end has abnormal receive power

Cause 1: The external factors (for example, the climate) cause the degradation of the working channels.

When the external factors (for example, the climate) cause the degradation of the working channels,
The downshift of the AM scheme is normal. Hence, no measures should be taken to handle the alarm.

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Cause 2: There are interferences around the working channels, Eliminate the interferences around the working channels.

Below mentioned steps to follow to find out frequency interferences and resolve interference issue.

- MSE & SNR current value
- How to perform ODU Frequency scan
- ODU Frequency scan report
- Find out right frequency
- Frequency change
- Modulation working normal

a. MSE & SNR current value

Then check the current performance for MSE or SNR value, if the MSE is lower than 32dB, it should be interference and needs to go for ODU Scan find out frequency interference level, if the MSE is higher than 32dB, than go to check other side MSE current value and go for ODU Scan.

Monitored Object Filter Criteria: All

Monitor Period: 15-Minute

Performance Event Type:

- ☐ Transmitted Optical Power
- ☐ Radio Transmitted Signal Level
- ☐ Cooling Current
- ☐ Received Optical Power
- ☐ Radio Received Signal Level
- ☐ Bias Current
- ☐ Working Temperature
- ☐ CPU/Memory Usage
- ☒ Others

Select All Select None

Monitored Object	Performance Event	Monitor P...	Start Time	Value MAX	Value CUR	Value MIN	Status
TIRVK8-2-ISV3-1(TIRVK4)-RTNIF:1	TX_BWUTIL_EXCS(s)	15-Minute	05/07/2020 20:00:00	-	0	-	Valid
TIRVK8-2-ISV3-1(TIRVK4)-RTNIF:1	QAMWS2048(s)	15-Minute	05/07/2020 20:00:00	-	758	-	Valid
TIRVK8-2-ISV3-1(TIRVK4)-RTNIF:1	IF_MSE_CUR(dB)	15-Minute	05/07/2020 20:00:00	-26.90	-27.20	-28.50	Valid
TIRVK8-2-ISV3-1(TIRVK4)-RTNIF:1	IF_SNR_AVG(dB)	15-Minute	05/07/2020 20:00:00	-	27.40	-	Valid
TIRVK8-2-ISV3-1(TIRVK4)-RTNIF:1	IF_MSE_AVG(dB)	15-Minute	05/07/2020 20:00:00	-	-27.40	-	Valid

No. 11, Total: 16, Selected: 1, Update at: 05/07/2020 20:15:07

Query Reset Print Save As...

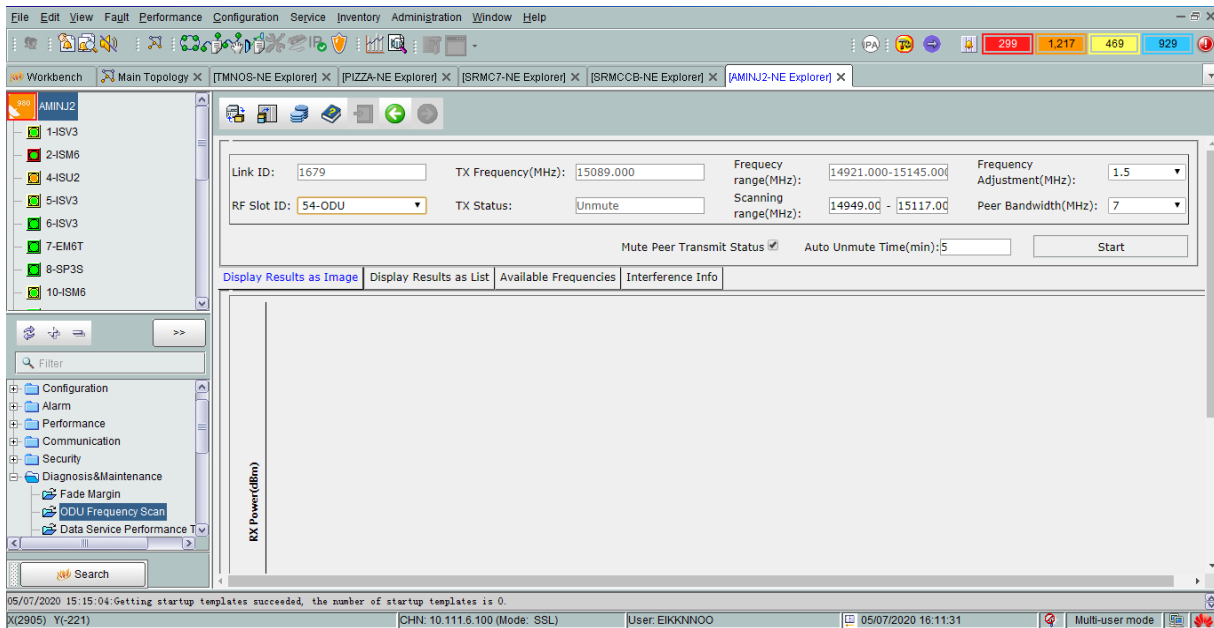
05/07/2020 19:51:47: Getting startup templates succeeded, the number of startup templates is 0.

X(252) Y(418) CHN: 10.111.6.100 (Mode: SSL) User: EIKKNNOO 05/07/2020 20:15:45 Multi-user mode

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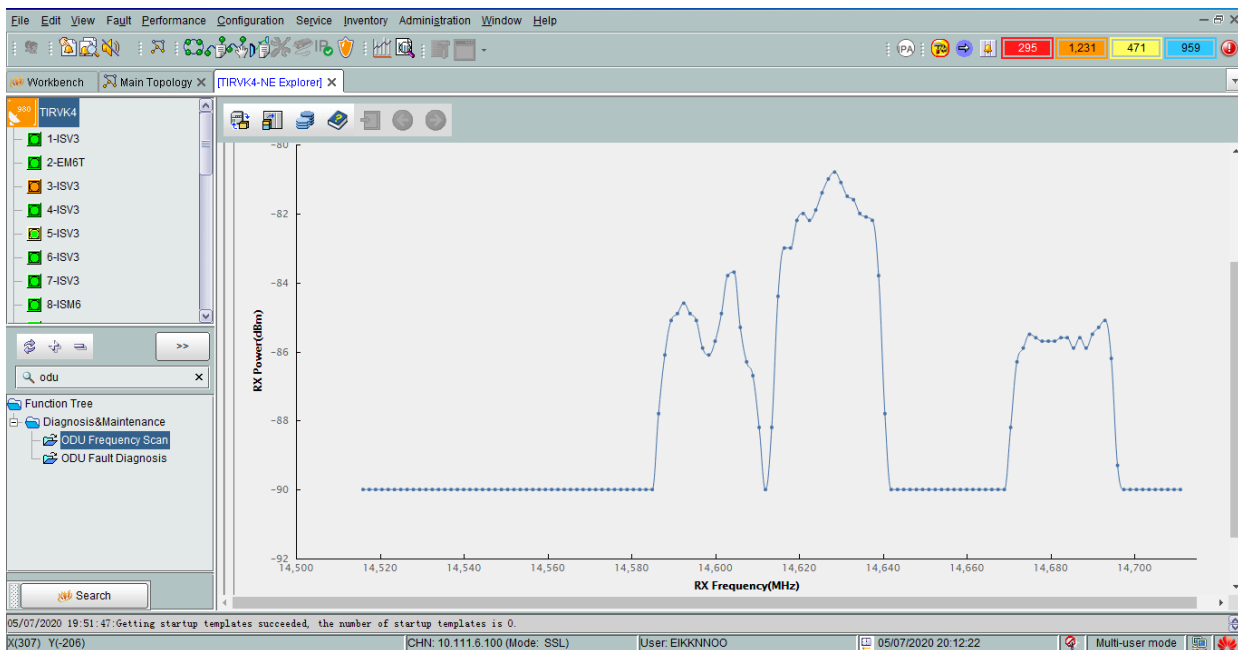
b. How to perform ODU Frequency scan

Select the Diagnosis & Maintenance and expand the link, click ODU FREQUENCY Scan to Select the ODU which is connected to corresponding link and mute peer end transmitter to select AUTO UNMUTE TIME should be 5 MINS.



c. ODU Frequency scan report

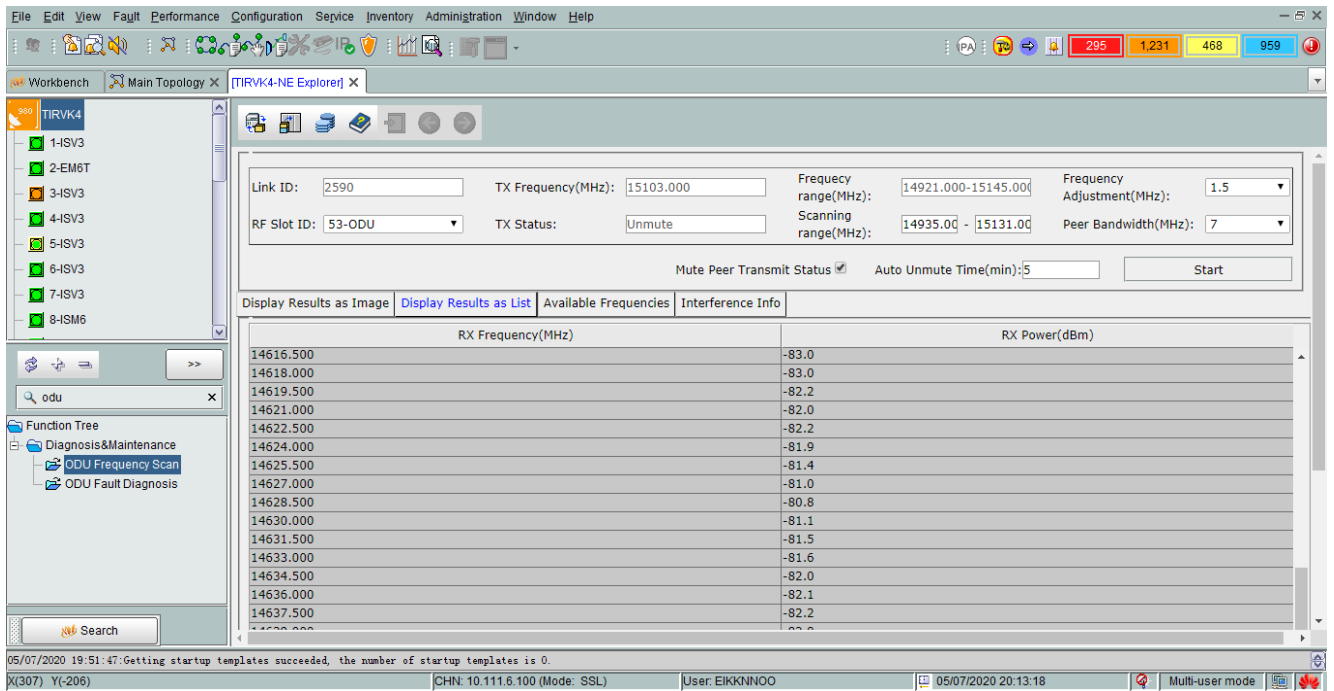
Both end frequency scan report required to find the frequency interference level and also to get right frequency



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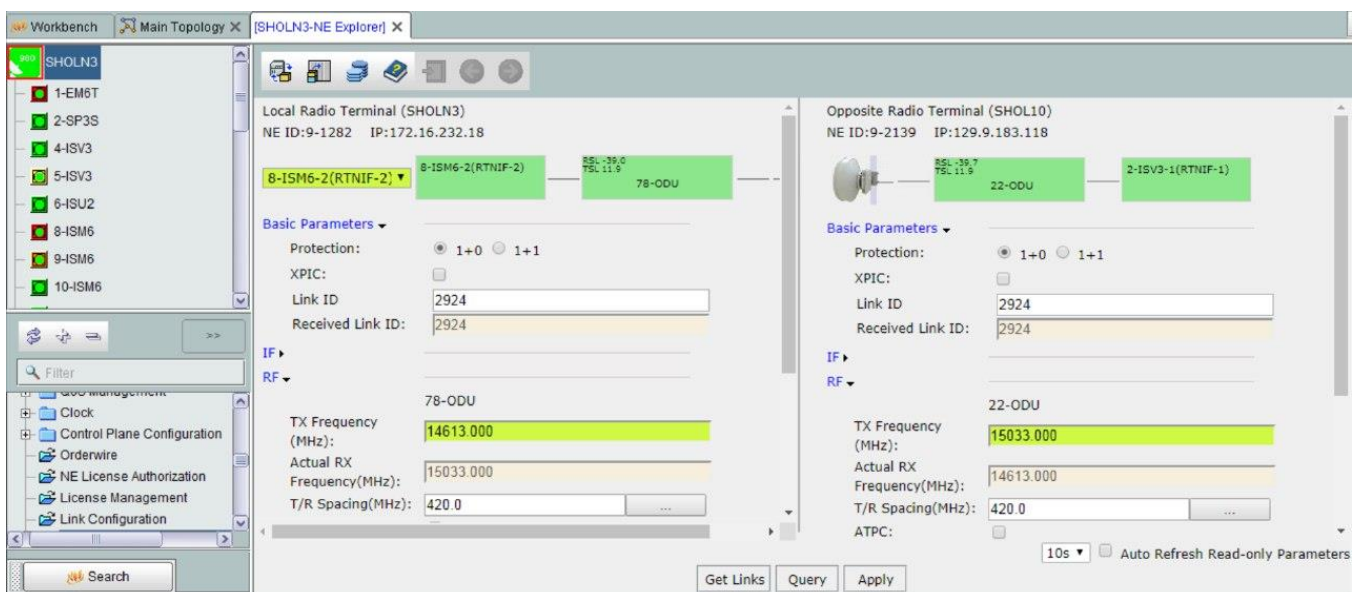
d. Find out right frequency

ODU Frequency scan report required both end it shows all frequency interference level to find out right frequency with planning to support



e. Frequency change

Take planning team support with ODU scan report to find out right Frequency and change frequency as show below snap.



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f. Modulation working normal

After changed the Frequency to check full Capacity Modulation status

Workbench Main Topology X [SHOLN3-NE Explorer] X

Local Radio Terminal (SHOLN3)
NE ID:9-1282 IP:172.16.232.18

Opposite Radio Terminal (SHOL10)
NE ID:9-2139 IP:129.9.183.118

8-ISM6-2(RTNIF-2) 8-ISM6-2(RTNIF-2) 78-ODU 22-ODU 2-1SV3-1(RTNIF-1)

Basic Parameters

Protection: ☒ 1+0 ☐ 1+1

XPIC: ☐

Link ID: 2924

Received Link ID: 2924

IF

IF Service Type: Hybrid(Native E1+ETH)

IF Channel: 56MHz

Bandwidth: 56MHz

AM Status: ☒

Guaranteed Capacity Modulation: 64QAM/273Mbit/s

Full Capacity Modulation: 512QAMLight/422Mbit/s

Modulation: 512QAMLight/422Mbit/s

Get Links Query Apply

10s Auto Refresh Read-only Parameters

To check TX Modulation and RX Modulation for both end, it shows full Capacity Modulation, AM downshift alarm got Cleared.

Workbench Main Topology X [SHOLN3-NE Explorer] X

Capacity Modulation

Full Capacity Modulation: 512QAMLight/422Mbit/s

TX Modulation Mode: 512QAMLight

RX Modulation Mode: 512QAMLight

Guaranteed E1 Capacity: 4

Data Service Bandwidth(Mbit/s): 264.006-413.098

Enable E1 Priority: Disabled

RF

TX Frequency (MHz): 14613.000

Actual RX Frequency(MHz): 15033.000

T/R Spacing(MHz): 420.0

ATPC: ☐

TX Power(dBm): 12.0

Get Links Query Apply

10s Auto Refresh Read-only Parameters

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Activity Details Flow Chart-B

Further checking alarm Low RSL observed

Severity	Alarm ID	Alarm Source	Name	Occurrence Times	Location Information	Last Occurred (ST)	First Occurred (ST)	Cle
Critical	631	VANDA2	MW_LOF	1	5-ISV3-1(RTNIF-1)-RTNIF:1	04/27/2020 05:53:30	04/27/2020 05:53:30	
Critical	638	VANDA2	RADIO_RSL_LOW	1	25-ODU-1(RTNRF-1)-RTNRF:1	04/27/2020 05:53:32	04/27/2020 05:53:32	
Major	13050	VANDA2	AM_DOWNSHIFT	1	5-ISV3-1(RTNIF-1)-RTNIF:1	04/27/2020 05:53:32	04/27/2020 05:53:32	
Minor	12989	VANDA2	RADIO_FADING_MARGIN_INSUFF	1	25-ODU-1(RTNRF-1)-RTNRF:1	04/27/2020 11:53:47	04/27/2020 11:53:47	
Major	13050	VANDA2	AM_DOWNSHIFT	1	1-ISM6-1(MUDI25)-RTNIF:1	05/04/2020 23:39:02	05/04/2020 23:39:02	05/04/20
Minor	13418	VANDA2	DROPRATIO_OVER	55	4-ISU2-1(RTNIF-1)-COS:AF3	05/07/2020 22:08:34	05/06/2020 11:25:07	05/07/20
Minor	13418	VANDA2	DROPRATIO_OVER	651	4-ISU2-1(RTNIF-1)-COS:AF4	05/07/2020 22:31:00	05/06/2020 10:44:52	

Details Location Information: 25-ODU-1(RTNRF-1)-RTNRF:1 Additional Information: Remarks:	Troubleshooting Alarm Description: Radio receive level too low Reason and Advice: Click here for details Reason: (1)Certain other alarms occur at the opposite station; (2)The transmit or receive power of the RF unit at the local station does not match the transmit or receive power of the opposite station; (3)The transmit power of the opposite station is low; (4)The local RF unit is faulty; (5)Signal fading on the radio link is heavy. Reason Type:
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Low receiving power level snap further to check LB

Local Radio Terminal (ITC2) NE ID:9-1365 IP:129.9.186.123 Basic Parameters Protection: <input checked="" type="radio"/> 1+0 <input type="radio"/> 1+1 Link ID: <input type="text" value="1"/> Received Link ID: <input type="text" value="1"/> IF ▶	Opposite Radio Terminal (ERNAVU) NE ID:9-1461 IP:172.16.16.187 Basic Parameters Protection: <input checked="" type="radio"/> 1+0 <input type="radio"/> 1+1 Link ID: <input type="text" value="1"/> Received Link ID: <input type="text" value="1"/> IF ▶
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To check MW LB and current RSL level and TX power and take planning team input to increase TX power.

Name	Channel	Tx Site Name	Rx Site Name	BER10e6 Tx Power (dBm)	BER10e6 Rx Level (dBm)	Tx Frequency (MHz)	Rx Frequency (MHz)
ERNAVU-ITC2	15 GHz_56_MHz_2	ERNAVU	ITC2	8	-32.96	14669	15089

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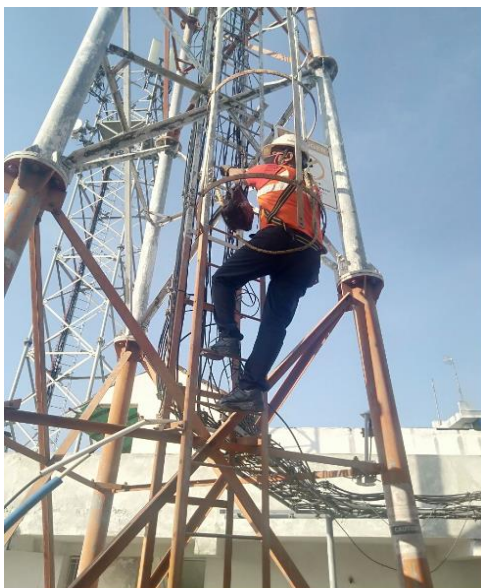
as per Planning team guidelines to Increase TX power both end, Low RSL cleared and–Working Modulation will increase – AM downshift alarm got cleared, if not cleared assign to FME Antenna alignment.

If still low RSL not cleared and working low modulation means, further Antenna alignment required raised WO to Field Engineer, FME will check alarm and take required spares with Rigger further Antenna alignment,

FME will raise PTW, CEL will approve PTW further Rigger will check Antenna Alignment and fine-tune the MW Antenna to achieve level.

RSL achieved and Link working full Capacity modulation – AM downshift got cleared.

Site –A end Antenna alignment



Site –A end Antenna alignment



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After clearing RSL or Hardware alarms needs to check working TX Modulation and RX Modulation mode should be full Capacity AM down shift alarm cleared.

Full Capacity TX and RX Modulation Mode

Local Radio Terminal (APOGRE)
NE ID:162-42969 IP:129.9.167.217

1-ISM6-1(RTNIF-1)
1-ISM6-1(RTNIF-1)
RSL-32.5
TSL 8.1
21-ODU

Basic Parameters
IF
IF Service Type: Hybrid(Native E1+ETH)
IF Channel Bandwidth: 56MHz
AM Status: ☒
Guaranteed Capacity Modulation: 64QAM/273Mbit/s
Full Capacity Modulation: 2048QAM/501Mbit/s
TX Modulation Mode: 2048QAM
RX Modulation Mode: 2048QAM

NE ID:164-28132 IP:172.16.229.162

RSL-33.1
TSL 8.0
21-ODU
1-ISV3-1(RTNIF-1)

Basic Parameters
IF
IF Service Type: Hybrid(Native E1+ETH)
IF Channel Bandwidth: 56MHz
AM Status: ☒
Guaranteed Capacity Modulation: 64QAM/273Mbit/s
Full Capacity Modulation: 2048QAM/501Mbit/s
TX Modulation Mode: 2048QAM
RX Modulation Mode: 2048QAM
Guaranteed E1

AM_ DOWNSHIFT alarm got cleared

Major	13050	WASHE4	AM_DOWNSHIFT	4	05/07/2020 23:45:34	10-ISV3-1(RTNIF-1)-RTNIF:1	05/07/2020 03:24:52	05/07/2020 23:45:42
Major	13050	AYAPPA	AM_DOWNSHIFT	2567	05/07/2020 23:44:29	12-ISV3-1(RTNIF-1)-RTNIF:1	05/06/2020 12:06:25	
Major	13050	RAMAP3	AM_DOWNSHIFT	2128	05/07/2020 23:44:46	4-ISM6-2(RAMAP6)-RTNIF:1	05/06/2020 11:52:27	05/07/2020 23:44:58

Location Information: 10-ISV3-1(RTNIF-1)-RTNIF:1
Additional Information:
Remarks:

Troubleshooting
Alarm Description: AM modulation downshift
Reason and Advice: [Click here for details](#)
Reason:
(1)The external factors (for example, bad weather) cause the degradation of the channels;
(2)Interference signals exist around the channels;
(3)The transmit power of the RF unit at the transmit station is abnormal;
(4)The receive power of the RF unit at the receive station is abnormal.
Reason Type: