

Subcommittee Report
On
Random Sample Analysis
of
Drive Test Log Files of Mobile services

Cluster:
Ratnanagar

Submitted to:
Nepal Telecommunications Authority (NTA)
Jamal, Kathmandu

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1. INTRODUCTION

Based on the QoS by Law, 2073, Nepal Telecommunications Authority mandates mobile service operators to perform quality of service (QoS) assessment of their mobile network through drive test. The operators are specified with different clusters and routes to perform the test for each trimester. The operators are required to submit drive test reports and drive test log-files for each of the clusters provided. NTA is responsible for the inspection and investigation of the reports such submitted.

For the first trimester of 2079/80 the clusters specified by the Authority were as follows:

S. N.	Cluster/ Route
1.	Ratnanagar
2.	Kawasoti
3.	Bharatpur
4.	Hetauda
5.	East-West highway(from Lamahi to Pathlaiya)

The Authority asked the mobile service operators to perform the drive test in mentioned cluster above and specified the paths (route) to be travelled for the purpose of the test.

As per the decision of the NTA management, the subcommittee decided to perform the analysis on log-files of the Ratnanagar Cluster.

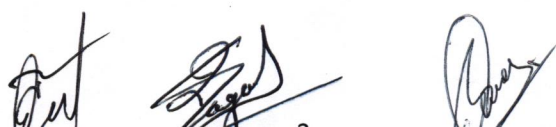
2. OBJECTIVE

The main objective of this analysis is to confirm that the methodology followed by the operators for the test is in accordance with the methodology specified by the Authority and also to compare the results obtained with the result provided by the operators themselves.

3. STRUCTURE OF WORKING COMMITTEE

For the purpose of this assignment, the following working committee has been formed by Nepal Telecommunication Authority (NTA).

- | | |
|---|------------------|
| a) Dinesh Mainali, Deputy Director, NTA | Coordinator |
| b) Radhe Shyam Yagol, Assistant Director, NTA | Member |
| c) Jnanendra Khatiwada, Telecom Expert (External) | Member |
| d) Biwek Nath Mahaseth, Assistant Director, NTA | Member Secretary |



4. WORKING METHODOLOGY

Following methodology is used by the subcommittee for the analysis of drive test log files submitted by the mobile service operators.

1. The log files of each operators are collected.
2. Nemo WindCatcher Post-processing tool with support for multi-vendor log file post-processing option is used for the post-processing and analysis of log files.
3. Different aspects of the drive test such as routes, timing, methodologies etc. are analyzed.
4. The results obtained through the analysis carried out by the subcommittee is compared with the results submitted by the operators.
5. The report is prepared based on the findings of the subcommittee.

5. LOG FILES ANALYSIS OF NEPAL TELECOM

5.1 Tools and Log Files

Nepal Telecom uses following Tool for the Drive Test and Analysis.

Tool Used for Drive Test: GENEX Probe

Tool Used for Analysis (by the operator): GENEX Probe

5.2 Results

Table No. 5.1 summarizes the result from analysis of log-files provided by Nepal Telecom for Ratnanagar cluster. It also shows the result submitted by Nepal Telecom themselves.

Table No. 5.1: Summary of analysis of log-files provided by Nepal Telecom for Ratnanagar cluster

SN	Drive Test KPI Item	Unit	NTA Threshold	Value Specified by NT	Value Calculated by NTA
1	Call Setup Success Rate	%	≥ 99	99.08	99.08
2	Call Drop Rate	%	≤ 2	0	0
3	MOS	value	≥ 3	N/A	N/A
4	HO success rate	%	Not Set	100	100
5	Voice Call Setup Time (MO/MT)-Call Connection Time	s	≤ 5	6.37	6.37
6	Grade of Service (Call Block Rate)	%	≤ 2	0	0
7	SMS Delivery Success Rate (within 2minutes)	%	Not Set	83.99	83.99

8	PDP Context Activation Success Ratio	%	Not Set	100	100
9	Ping 32 bytes RTT	ms	≤250	184.98	184.98
10	HTTP Browsing Display Success Rate	%	Not Set	97.17	97.17
11	HTTP Browsing Display Delay Avg	ms	Not Set	16664.77	16664.77
12	Download Average Throughput (FTP)*	Mbps	Not Set	4.72	4.72
13	Upload Average Throughput (FTP)*	Mbps	Not Set	1.02	1.02
14	Download Throughput (FTP)- Peak*	Mbps	Not Set	86.38	86.38
15	Upload Throughput (FTP)- Peak*	Mbps	Not Set	45.22	45.22
16	Download Success Rate-(FTP)	%	≥80	90.91	90.91
17	Upload Success Rate-(FTP)	%	≥70	100	100
18	Rx level (2G) – (level -82dBm)	%	Not Set	93.16	93.16
19	RSCP (3G) – (level -87dBm)	%	Not Set	41.35	41.35
20	RSCP(3G)-(level->-95dBm)	%	Not Set	75.25	75.25
21	RSRP (4G) – (level -87dBm)	%	Not Set	13.91	13.91
22	RSRP(4G)-(level -110dBm)	%	Not Set	67.33	76.06
23	RSRP(4G)(level -95dBm)	%	Not Set	26.7	26.7

* Application Layer Throughput

5.3 Remarks

- Only minor deviation is observed between the data submitted by Nepal Telecom and the data obtained by the subcommittee.
- Due to the sudden technical problem occurrence with POLQA testing tools as mentioned in the attached mail ,NT is not able to submit MOS log file .
- NT has not met the threshold specified for Call Connection Time.
- The KPI like RSRP (4G) (level -87dBm), RSRP(4G)(level -95dBm) and HTTP Browsing Display Delay Average service quality should be improved.

6. LOG FILES ANALYSIS REPORT OF NCELL

6.1 Tools and Log Files

Ncell uses following Tool for the Drive Test and Analysis.

Tool Used for Drive Test: TEMS

Tool Used for Analysis (by the operator): ACTIX

6.2 Results

Table No. 6.1 as shown below summarizes the result from analysis of log-files provided by Ncell for Ratnanagar cluster. It also shows the result submitted by Ncell themselves.

Table No. 6.1: Summary of analysis of log-files provided by Ncell for Ratnanagar cluster

S.N.	Drive Test KPI Item	Unit	NTA Threshold	Value Specified by Ncell	Value Calculated by NTA
1	Call Setup Success Rate	%	≥ 99	99.39	99.39
2	Call Drop Rate	%	≤ 2	0.00	0
3	MOS	value	≥ 3	4.01	4.01
4	HO success rate	%	Not Set	99.94	99.94
5	Voice Call Setup Time (MO/MT)-Call Connection Time	s	≤ 5	7.22	5.05
6	Grade of Service (Call Block Rate)	%	≤ 2	0.61	0.61
7	SMS Delivery Success Rate (within 2minutes)	%	Not Set	99.39	99.39
8	PDP Context Activation Success Ratio	%	Not Set	N/A	N/A
9	Ping 32 bytes RTT	ms	≤ 250	104.75	90.85
10	HTTP Browsing Display Success Rate	%	Not Set	99.05	99.05
11	HTTP Browsing Display Delay Avg	ms	Not Set	9150	8784.21
12	Download Average Throughput (FTP)*	Mbps	Not Set	16.24	16.37
13	Upload Average Throughput (FTP)*	Mbps	Not Set	9.08	8.85
14	Download Throughput (FTP)- Peak*	Mbps	Not Set	77.71	77.7
15	Upload Throughput (FTP)- Peak *	Mbps	Not Set	33.66	33.66
16	Download Success Rate-(FTP)	%	≥ 80	91.75	91.75
17	Upload Success Rate-(FTP)	%	≥ 70	96.97	96.97
18	Rx level (2G) – (level -82dBm)	%	Not Set	54.07	61.90
19	RSCP (3G) – (level -87dBm)	%	Not Set	58.43	58.43
20	RSCP(3G)-(level->-95dBm)	%	Not Set	N/A	N/A
21	RSRP (4G) – (level -87dBm)	%	Not Set	23.12	24.9
22	RSRP(4G)-(level -110dBm)	%	Not Set	95.78	95.2
23	RSRP(4G)(level -95dBm)	%	Not Set	-	46.6

* Application Layer Throughput

6.3 Remarks

- Only minor deviation is observed between the data submitted by Ncell and the data obtained by the subcommittee.
- NCELL has not met the threshold specified for Call Connection Time.

7. RECOMMENDATIONS

Based on the study and analysis of log files and report of Drive Test conducted by Nepal Doorsanchar Company Ltd. and Ncell Axiata Ltd. in Ratnanagar cluster, the committee would like to recommend that both NT and Ncell shall be instructed to provide service quality in that cluster to meet threshold value of the KPIs (Call Connection Time) specified by the Authority within next one month and inform the Authority accordingly. Similarly both NT and Ncell shall be instructed to improve KPI like RSRP (4G)(level -87dBm), RSRP(4G)(level -95dBm) and HTTP Browsing Display Delay Average service quality and both operator shall be instructed to provide log file and value of all KPIs as listed in table 5.1 and 6.1 respectively in next trimester.

