

Nepal Telecommunications Authority

Report on Drive Test of Mobile Services
in
Kathmandu Valley

2026 September

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1. Test Duration

The Drive Test was carried out on the weekdays from September 15 to September 21, 2026 (BS 2083 Bhadra 30 to Asoj 5).

2. Test Mobile Networks

The drive tests were carried out to test the mobile networks of the following operators:

- Nepal Doorsanchar Company Ltd. (Nepal Telecom)
- Ncell Axiata Ltd. (Ncell)

3. Test Method

The drive test was carried out by a team of representatives from Nepal Telecommunications Authority, Nepal Telecom and Ncell Axiata Ltd. as per the Standard Operating Procedure for QoS measurement through Drive Test, related to the Telecommunication Service Quality Bylaws, 2079.

4. Drive Test Area

Budhanilkantha, Jorpati, Boudhha, Baneshwar, Thimi, Bhaktapur, Patan, Kirtipur, Swayambhu, Matatirtha, Balaju, Tokha, etc.

5. Drive Test Results

5.1 Nepal Telecom

5.1.1 Call and SMS Test

5.1.1.1 Call Setup Success Rate

SN	Drive Test KPI Item	Result	Unit	Call Attempts	Call Setup Failure	Formula
1	Call Setup Success Rate	99.31	%	291	2	(Successful Call Attempts / Total Call Requests) *100
Remarks:						

5.1.1.2 Call Drop Rate

SN	Drive Test KPI Item	Result	Unit	Successful Calls	Call Dropped	Formula
1	Call Drop Test	0	%	289	0	(Total number of dropped calls / Total number of successful calls) *100
Remarks:						

5.1.1.3 MOS

SN	Drive Test KPI Item	Result	Unit	Remarks	Formula
1	MOS	3.52			Algorithm: PESQ

5. 1. 1. 4 HO Success Rate

SN	Drive Test KPI Item	Result	Unit	No. of Successful Handover	Handover Failure	Formula
1	HO Success Rate	98.81	%	1905	23	(Number of successful handovers / Number of attempted handovers) *100
Remarks:						

5. 1. 1. 5 Call Connection Time

SN	Drive Test KPI Item	Result	Unit	Remarks	Formula
1	Call Connection Time	1.87	s	GSM, WCDMA, LTE	Average call connection time of all successful calls

5. 1. 1. 6 Grade of Service

SN	Drive Test KPI Item	Result	Unit	Number of call attempts	Number of failed or lost calls	Formula
1	Grade of Service	0.68	%	291	2	(No. of failed or lost calls due to radio or other reason / No. of call attempts) *100
Remarks:						

5. 1. 2 SMS Test

5. 1. 2. 1 SMS Success Rate

SN	Drive Test KPI Item	Result	Unit	Number of successfully delivered SMS	Number of SMSs delivered	Formula
1	SMS Success Rate	99.84	%	634	635	(Number of successfully delivered SMS / Total number of sent SMS) *100

5. 1. 3 Data Test

5. 1. 3. 1 PDP Context Activation Success Ratio

SN	Drive Test KPI Item	Result	Unit	PDP Activation Requests	No. of successful PDP activations	Formula
1	PDP Context Activation Success Ratio		%			(Number of successful PDP activations / Total PDP activation requests) *100

5. 1. 3. 2 Ping Test

SN	Drive Test KPI Item	Result	Unit	Remarks	Formula
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1	ping 32 bytes RTT	106.34	ms	International Ping	Average time of total successful ping requests
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5. 1. 3. 3 HTTP Browsing Display Success Rate

SN	Drive Test KPI Item	Result	Unit	HTTP browsing display requests	Successful HTTP browsing display	Formula
1	HTTP Browsing Display Success Rate	99.85	%	2090	2087	(Total number of successful HTTP browsing displays / Total number of HTTP browsing display requests) *100
Remarks:						

5. 1. 3. 4 Average HTTP Browsing Display Delay

SN	Drive Test KPI Item	Result	Unit	Remarks	Formula
1	Average HTTP Browsing Display delay	6,670	ms		Average time of total successful HTTP browsing displays

5. 1. 3. 5 Throughputs

SN	Drive Test KPI Item	Result	Unit	Attempts	Formula
1	Average Download Throughput - HTTP	26.78	Mbps	231	Average of all download attempts
2	Average Upload Throughput - HTTP	18.03	Mbps	288	Average of all upload attempts
3	Peak Download Throughput - HTTP	180.75	Mbps	231	Peak download value
4	Peak Upload Throughput - HTTP	60.75	Mbps	288	Peak upload value
Remarks:					

5. 1. 3. 6 Download Success Rate

SN	Drive Test KPI Item	Result	Unit	Total number of download requests	Successful download attempts	Formula
1	Download Success Rate - HTTP	90.04	%	231	208	(Successful download attempts / Total number of download requests) *100
Remarks:						

5. 1. 3. 7 Upload Success Rate

SN	Drive Test KPI Item	Result	Unit	Call Attempts	Call Setup Failure	Formula
1	Upload Success Rate - FTP	96.88	%	288	279	

Remarks:	(Successful upload attempts / Total number of upload requests) *100
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5. 1. 4 Coverage

5. 1. 4. 1 2G Coverage (Rx Level)

Range (dBm)	Count	Density (%)	Cumulative (%)
[-125, -105]	0	0	0
[-105, -92]	58	0.26	0.26
[-92, -82]	1,594	7.19	7.45
[-82, -72]	6,346	28.64	36.09
[-72, -20]	14,162	63.91	100.00

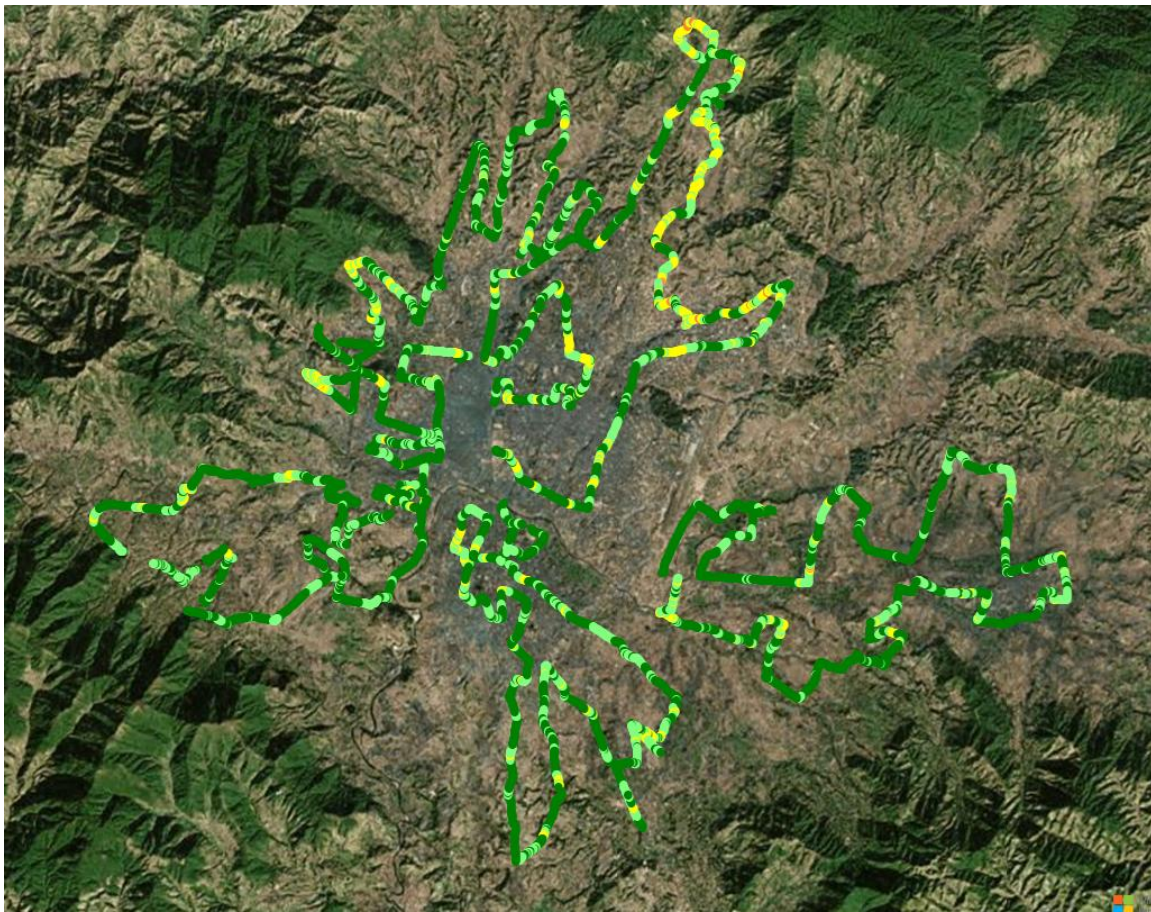


Figure 1: Map showing the 2G Coverage of NT

5. 1. 4. 2 3G Coverage (RSCP)

Range (dBm)	Count	Density (%)	Cumulative (%)
[-125, -105]			
[-105, -95]			
[-95, -87]			

[-87, -77]			
[-77, -20]			

5. 1. 4. 3 4G Coverage (RSRP)

Range (dBm)	Count	Density (%)	Cumulative (%)
[-125, -105]	414	1.84	1.84
[-105, -95]	3,504	15.55	17.38
[-95, -87]	5,002	22.19	39.58
[-87, -77]	6,565	29.13	68.71
[-77, -20]	7,052	31.29	100

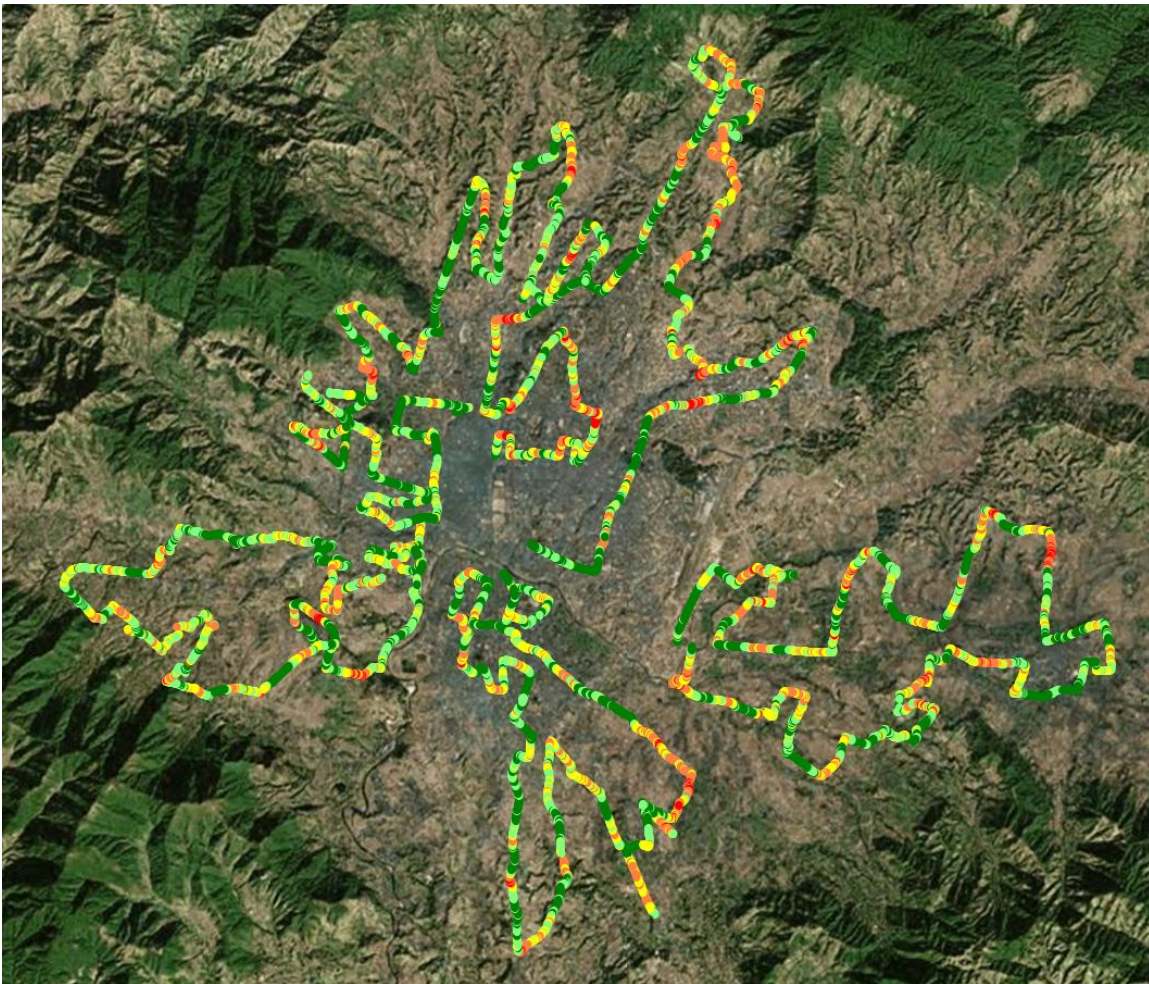


Figure 2: Map showing the 4G coverage of NT

5. 2 Ncell

5. 2. 1 Call and SMS Test

5. 2. 1. 1 Call Setup Success Rate

SN	Drive Test KPI Item	Result	Unit	Call Attempts	Call Setup Failure	Formula
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1	Call Setup Success Rate	100.00	%	264	0	(Successful Call Attempt / Total Call Request) *100
Remarks:						

5. 2. 1. 2 Call Drop Rate

SN	Drive Test KPI Item	Result	Unit	Successful Calls	Call Dropped	Formula
1	Call Drop Test	0.38	%	263	1	(Total number of dropped calls / Total number of successful call) *100
Remarks:						

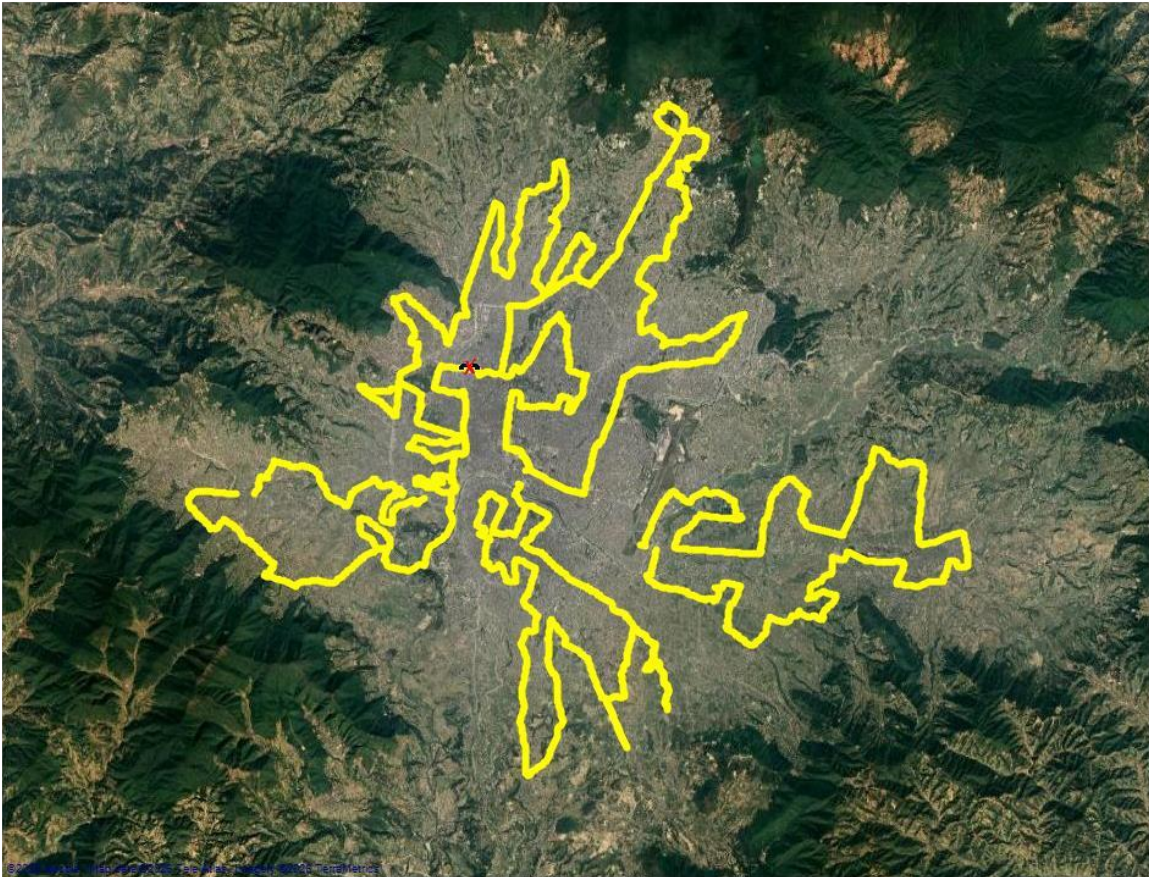


Figure 3: Map showing the location of Call Drop of NCell

5. 2. 1. 3 MOS

SN	Drive Test KPI Item	Result	Unit	Remarks	Formula
1	MOS	4.29			Algorithm: POLQA

5. 2. 1. 4 HO Success Rate

SN	KPI Item	Result	Unit	No. of Successful Handover	Handover Failure	Formula
1	HO Success Rate	99.67	%	2128	7	

Remarks:	(Number of successful handovers / Number of attempted handovers) *100
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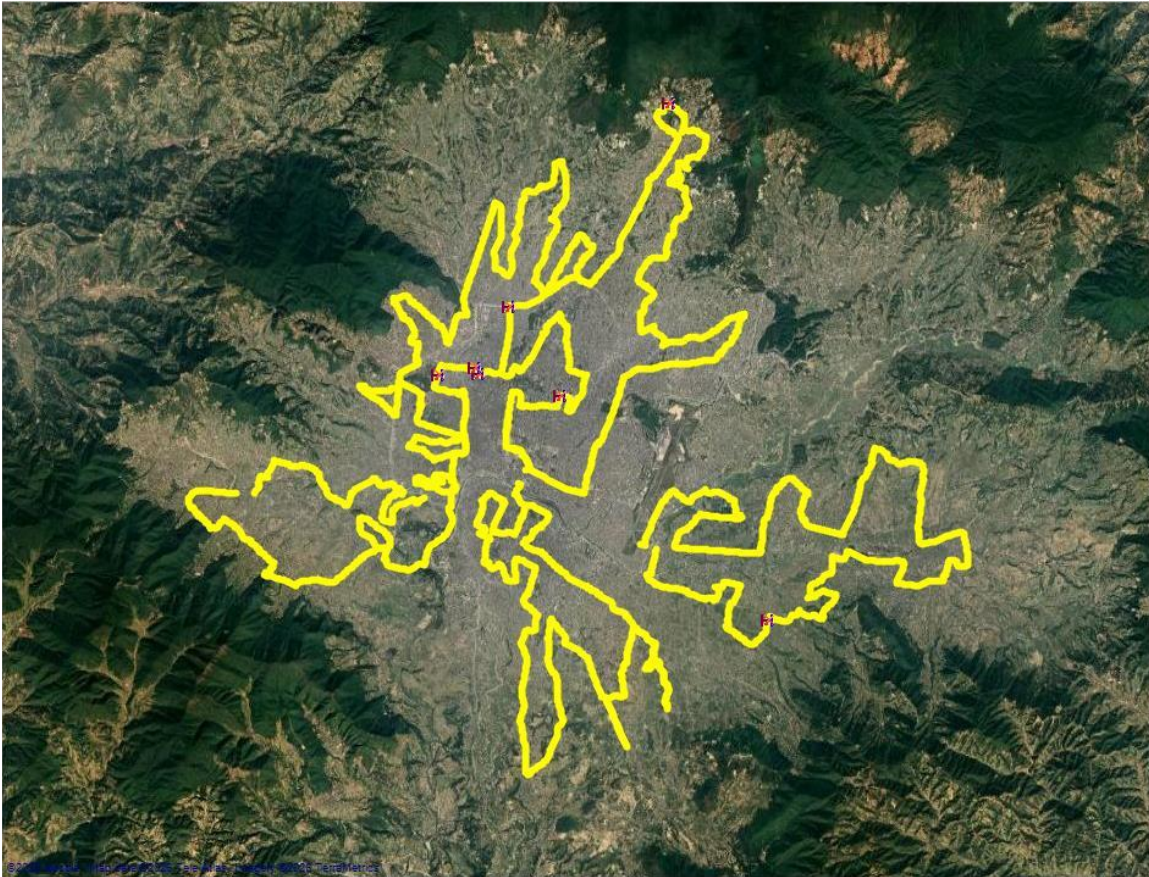


Figure 4: Map showing the locations of Handover Failures of NCell

5. 2. 1. 5 Call Connection Time

SN	Drive Test KPI Item	Result	Unit	Remarks	Formula
1	Call Connection Time	2.75	s		Average call connection time of all successful calls

5. 2. 1. 6 Grade of Service

SN	Drive Test KPI Item	Result	Unit	Number of call attempts	Number of failed or lost calls	Formula
1	Grade of Service	0.00	%	264	0	(No. of failed or lost calls due to radio or other reason / No. of call attempts) *100
Remarks:						

5. 2. 2 SMS Test

5. 2. 2. 1 SMS Success Rate

SN	Drive Test KPI Item	Result	Unit	Number of successfully delivered SMS	Number of SMSs delivered	Formula
1	SMS Success Rate	83.56	%	859	1028	(Number of successfully delivered SMS / Total number of sent SMS) *100
Remarks: During the Drive Test, there was an issue with a test range SIMs which were configured for other multiple tests on the SMC end and not for general customer SIMs. Now the issue has been solved.						

5. 2. 3 Data Test

5. 2. 3. 1 PDP Context Activation Success Ratio

SN	Drive Test KPI Item	Result	Unit	PDP Activation Requests	Number of successful PDP activations	Formula
1	PDP Context Activation Success Ratio		%			(Number of successful PDP activations / Total PDP activation requests) *100

5. 2. 3. 2 Ping Test

SN	Drive Test KPI Item	Result	Unit	Remarks	Formula
1	ping 32 bytes RTT	98.75	ms	Ping success rate = 98.75% with 9 pings failed out of 1521.	Average time of total successful ping requests

5. 2. 3. 3 HTTP Browsing Display Success Rate

SN	Drive Test KPI Item	Result	Unit	HTTP browsing display requests	Successful HTTP browsing display	Formula
1	HTTP Browsing Display Success Rate	98.94	%	1889	1869	(Total number of successful HTTP browsing displays / Total number of HTTP browsing display requests) *100

5. 2. 3. 4 Average HTTP Browsing Display Delay

SN	Drive Test KPI Item	Result	Unit	Remarks	Formula
1	Average HTTP Browsing Display Delay	13,720	ms		Average time of total successful HTTP browsing displays

5. 2. 3. 5 Throughputs

SN	Drive Test KPI Item	Result	Unit	Attempts	Remarks
1	Average Download Throughput - HTTP	15.31	Mbps		Average of all download attempts
2	Average Upload Throughput - HTTP	8.55	Mbps		Average of all upload attempts
3	Peak Download Throughput - HTTP	66.06	Mbps		Peak download value
4	Peak Upload Throughput - HTTP	48.73	Mbps		Peak upload value
Remarks:					

5. 2. 3. 6 Download Success Rate

SN	Drive Test KPI Item	Result	Unit	Total number of download requests	Successful download attempts	Formula
1	Download Success Rate - HTTP	75.94	%	133	101	(Successful download attempts / Total number of download requests) *100
Remarks: Failures observed in areas within a short distance with high congestion.						

5. 2. 3. 7 Upload Success Rate

SN	Drive Test KPI Item	Result	Unit	Call Attempts	Call Setup Failure	Formula
1	Upload Success Rate - HTTP	94.96	%	139	132	(Successful upload attempts / Total number of upload requests) *100
Remarks:						

5. 2. 4 Coverage

5. 2. 4. 1 2G Coverage (Rx Level)

Range (dBm)	Count	Density (%)	Cumulative (%)
[-125, -105]		0	0
[-105, -92]	2740	2.52	2.52
[-92, -82]	21,677	19.90	22.42
[-82, -72]	34,667	31.83	54.25
[-72, -20]	49,835	45.75	100.00

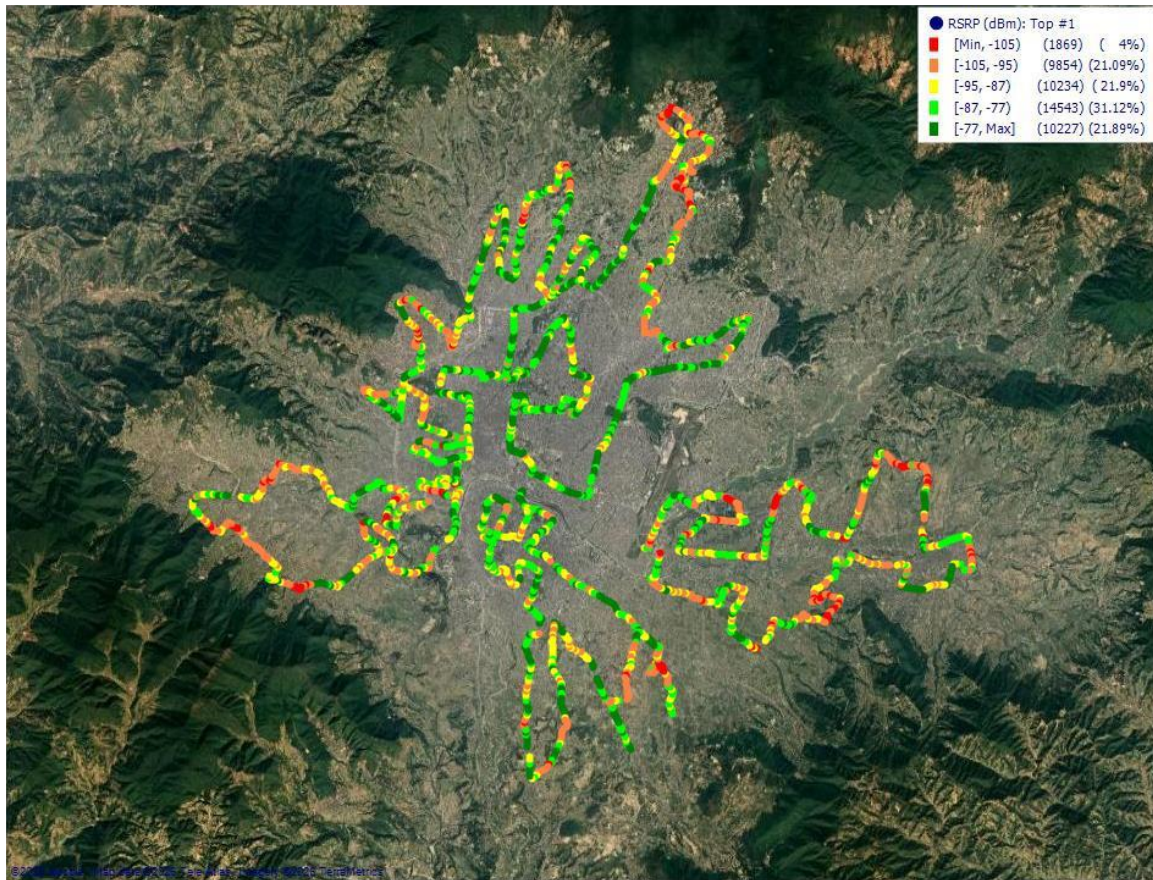


Figure 5: Map showing 2G Coverage of NCell

5. 2. 4. 2 3G Coverage (RSCP)

Range (dBm)	Count	Density (%)	Cumulative (%)
[-125, -105]			
[-105, -95]			
[-95, -87]			
[-87, -77]			
[-77, -20]			

5. 2. 4. 3 4G Coverage (RSRP)

Range (dBm)	Count	Density (%)	Cumulative (%)
[-125, -105]	1869	4.00	4.00
[-105, -95]	9854	21.09	25.09
[-95, -87]	10,234	21.90	46.99
[-87, -77]	14,543	31.12	78.11
[-77, -20]	10,227	21.89	100.00

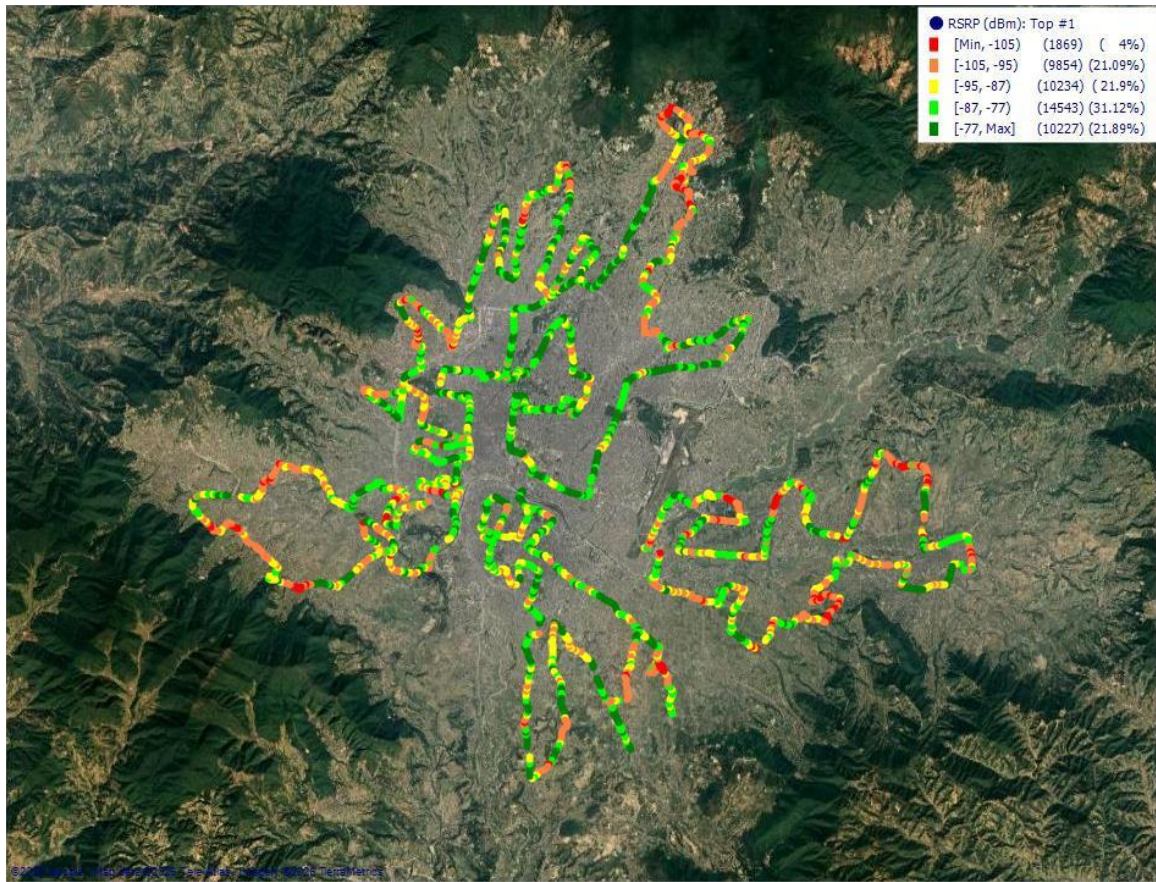


Figure 6: Map showing the 4G Coverage of NCell

6. Drive Test KPIs Summary

SN	Key Performance Indicator	Unit	Threshold	NT Result	Ncell Result
1	Call Setup Success Rate	%	≥ 97	99.31	100.00
2	Call Drop Rate	%	≤ 2	0.00	0.38
3	MOS		≥ 3	3.52	4.29
4	HO Success Rate	%	≥ 98	98.81	99.67
5	Call Setup Time	s	≤ 7	1.87	2.75
6	Grade of Service	%	≤ 2	0.68	0.00
7	SMS Delivery Success Rate (within 2 minutes)	%	≥ 99.5	99.84	83.56
8	PDP Context Activation Success Ratio	%			
9	Latency	ms	National ≤ 75 International ≤ 350	106.34	93.42
10	HTTP Browsing Display Rate	%	≥ 99	99.85	98.94
11	Average HTTP Browsing Display Delay	ms		6,670	13,720
12	Average Download Throughput (FTP)	Mbps	Urban: 20 Rural/Highway: 10	26.78	15.31
13	Average Upload Throughput (FTP)	Mbps	Urban: 10 Rural/Highway: 5	18.03	8.55

14	Peak Download Throughput (FTP)	Mbps		180.75	66.06
15	Peak Upload Throughput (FTP)	Mbps		60.75	456.06
16	Download Success Rate (FTP)	%	≥ 80	90.04	75.94
17	Upload Success Rate (FTP)	%	≥ 80	96.88	94.96
18	Rx Level (2G) – (Level -82 dBm)	%	$\geq 85, \geq 75, \geq 65$	92.55	77.58
19	RSCP (3G) - (Level -87 dBm)	%	$\geq 85, \geq 75, \geq 65$		
20	RSRP (4G) – (Level -95 dBm)	%	$\geq 85, \geq 75, \geq 65$	82.62	74.91

- The values of non-compliant QoS parameters are colored in red.

7. Conclusion:

Based on the drive test report, Nepal Telecom's 4G service should be improved in Dhapakhel, Imadol and Budhanilkantha areas, whereas Ncell's 4G service needs improvement in Matatirtha, Balambu, Budhanilkantha, Imadol, Gundu and Changunarayan areas.

Note:

1. *Statistics presented above represent the network conditions of the operators at the specified places during the period of the drive test; the network conditions in other areas can differ.*
2. *This report is prepared based on the reports submitted by the respective operators. The drive test and post-processing tools used in this test belong to the respective operators.*