



Independent Quality of Service Survey Railway Tracks

January ~ June 2025

Enforcement Division
PTA | F-5/1, Islamabad

Quality of Service Survey

1. Background:

In order to enhance mobile service quality for railway passengers, PTA has conducted its first-ever Quality of Service (QoS) survey along two of Pakistan's busiest railway corridors i.e. Lahore–Rawalpindi and Peshawar–Rawalpindi. These routes are vital for daily intercity travel, serving thousands of passengers. The objective of this survey was to evaluate and improve voice and data services during transit, ensuring better connectivity for users who rely on mobile networks for communication, work, and entertainment while on the move.

2. NETWORK COVERAGE – 4G

During the survey, while conducting data tests in technology auto detect mode, 4G signal strength samples were recorded. Track wise compliance of 90% Confidence Level of signal strength is shown in Table 2.1: 4G Signal Confidence Level- Technology Auto Detect Mode.

4G Signal Confidence Level- Technology Auto Detect Mode								
Railway Route	Confidence Level (%)				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Peshawar–Rawalpindi	83.9%	67.6%	88.7%	83.6%	No	No	No	No
Lahore–Rawalpindi	59.9%	44.2%	52.6%	48.6%	No	No	No	No

Table 2.1: 4G Signal Confidence Level 90%- Technology Auto Detect Mode

3. MOBILE BROADBAND SERVICE – DATA SPEED

In order to measure the performance of Mobile Broadband Services, Data Download and Upload tests were performed. Test results are shown in Table 3.1: Download Data Throughput and Table 3.2: Upload Data Throughput respectively.

Download Data Throughput >4Mbps								
Railway Route	Download Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Peshawar–Rawalpindi	14.29	3.94	4.66	12.70	First	Fourth	Third	Second
Lahore–Rawalpindi	11.56	5.22	5.05	6.62	First	Third	Fourth	Second

Table 3.1: Download Data Throughput

Upload Data Throughput >1Mbps								
Railway Route	Upload Data Throughput [Mbps]				Operator Position			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Peshawar–Rawalpindi	12.97	4.35	9.02	10.65	First	Fourth	Third	Second
Lahore–Rawalpindi	5.89	3.25	4.20	4.67	First	Fourth	Third	Second

Table 3.2: Upload Data Throughput

4. MOBILE BROADBAND SERVICE – LATENCY

Latency, while not a traditional KPI (non-service KPI), is a vital metric for Mobile Broadband Performance, as it directly affects user experience. Latency Test Statistics are shown in Table 4.1: Latency Test Results

Network Latency <75 millisecond								
Railway Route	Latency [milliseconds]				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Peshawar–Rawalpindi	129	86	144	158	No	No	No	No
Lahore–Rawalpindi	171	N/A	377	294	No	No	No	No

Table 4.1: Latency Test Results

5. MOBILE BROADBAND SERVICE – WEB PAGE LOADING

Web Page Loading Time is an important Quality of Experience (QoE) metric, which provides valuable insights into the performance of CMOs in delivering seamless web browsing experiences. Results of testing are shown in Table 5.1: Web Page Loading Time.

Webpage Loading Time <5 second								
Railway Route	Webpage Loading Time [seconds]				Compliant (Yes/No)			
	Jazz	Telenor	Ufone	ZonG	Jazz	Telenor	Ufone	ZonG
Peshawar–Rawalpindi	3.12	1.43	1.22	8.74	Yes	Yes	Yes	No
Lahore–Rawalpindi	3.6	1.0	1.8	4.6	Yes	Yes	Yes	Yes

Table 5.1: Web Page Loading Time

6. VOICE SERVICE

4 x QoS KPIs (i.e. Call Setup Success Rate, Call Setup Time, Call Completion Rate and Mean Opinion Score) have been measured while testing voice services on the survey routes. Compliance on each railway track is shown in Table 6.1: Voice QoS KPIs Compliance Level.

KPI		CSSR (%)	CCT (sec)	CCR (%)	MOS
Jazz	PSH~RWP	95.24%	3.12	95.00%	3.37
	RWP~LHR	91.00%	3.37	93.41%	3.69
Telenor	PSH~RWP	74.19%	3.11	93.48%	3.36
	RWP~LHR	70.49%	4.88	90.70%	3.71
Ufone	PSH~RWP	92.19%	5.86	88.14%	3.44
	RWP~LHR	93.51%	6.49	95.83%	3.79
ZonG	PSH~RWP	89.66%	2.76	86.54%	3.15
	RWP~LHR	89.16%	5.71	93.24%	3.24

*Call Setup Success Rate (CSSR >=98%), Call Connection Time (CCT <=7.5), Call Completion Ratio (CCR > 98), Mean Opinion Score (MOS >=3) *Non-Compliant KPI's are highlighted"*

Table 6.1: Voice QoS KPIs Compliance Level

7. SMS SERVICE

2 x SMS QoS KPIs (i.e. Success Rate and Delivery Time) have been measured while testing SMS services in the surveyed cities. The compliance in each surveyed city is shown in Table 7.1: SMS QoS KPIs Compliance Level.

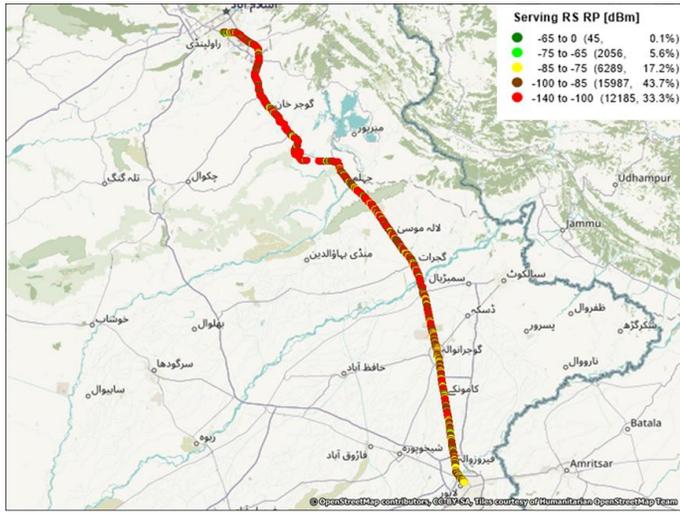
Operator	Jazz		Telenor		Ufone		ZonG	
SMS KPI	SR	DT	SR	DT	SR	DT	SR	DT
Peshawar-Rawalpindi	90.3%	3.15	83.9%	4.15	96.9%	3.40	90.5%	3.70
Lahore-Rawalpindi	89.6%	3.07	92.9%	3.97	90.0%	4.04	86.7%	4.77

SMS QoS KPIs: Success Rate (SR =>99%), Delivery Time (DT<=12)

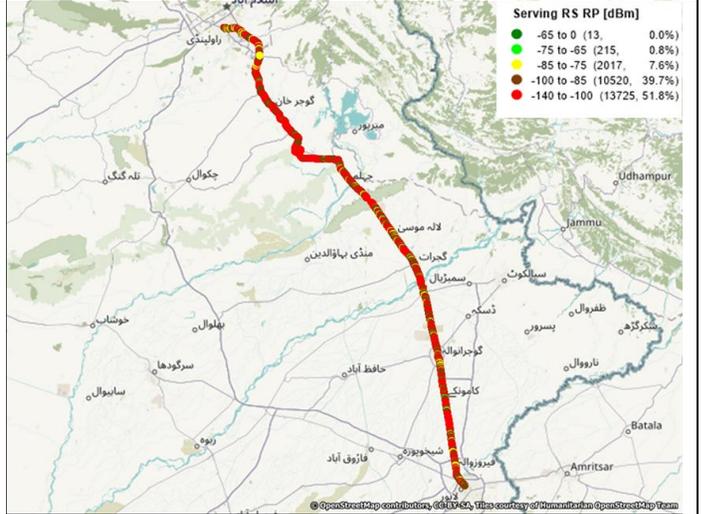
Table 7.1: SMS QoS KPIs Compliance Level

4G Signal Strength – Rawalpindi ~ Lahore Railway Track

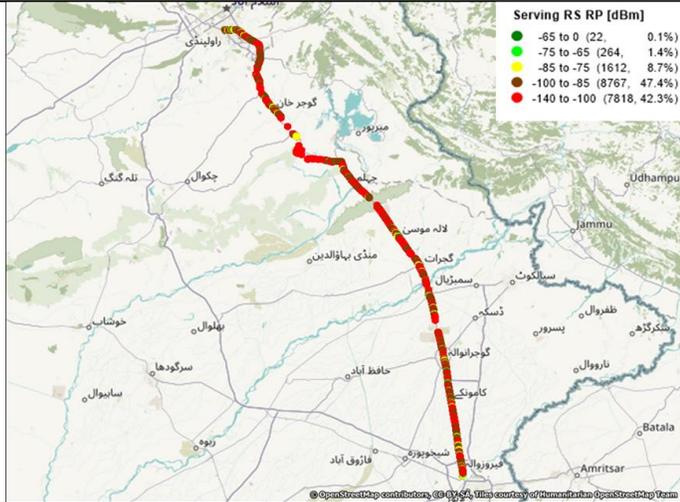
Jazz



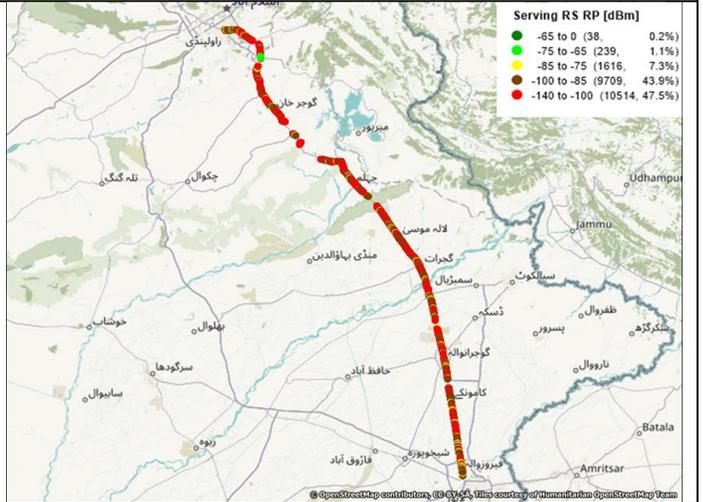
Telenor



Ufone

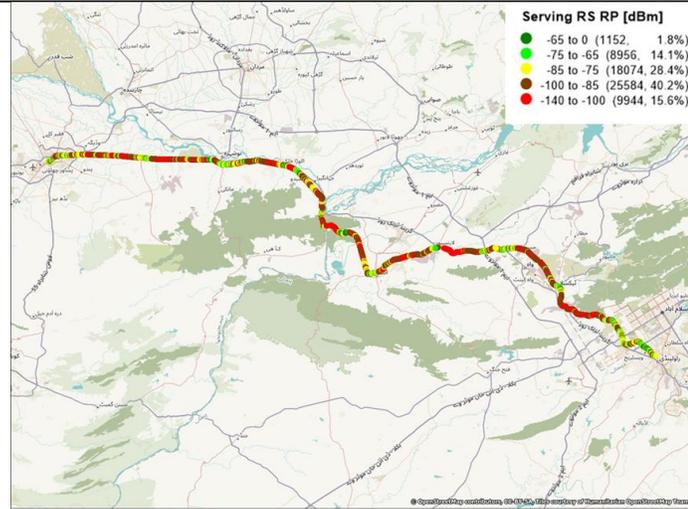


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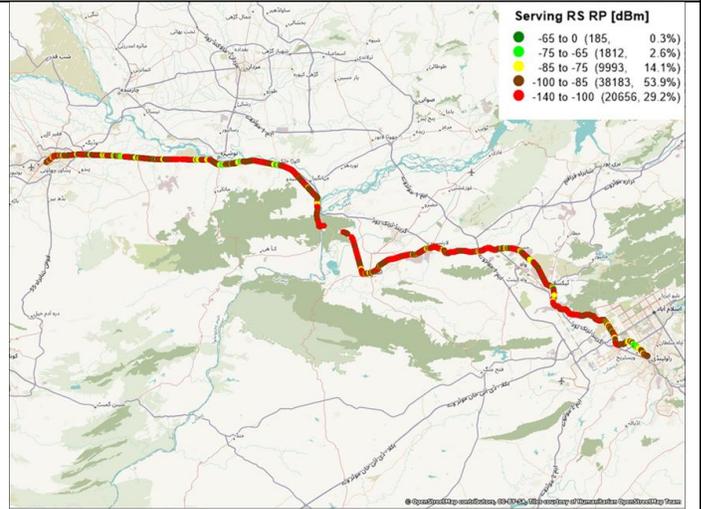


4G Signal Strength – Peshawar ~ Rawalpindi Railway Track

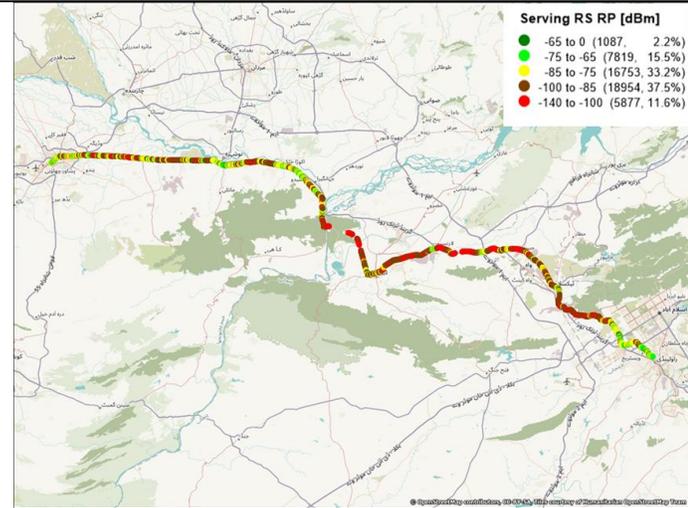
Jazz



Telenor



Ufone



Zong

