

For Immediate Release

Information note to the Press (Press Release No. 60/2019)

Telecom Regulatory Authority of India

TRAI Releases Report on Independent Drive Tests (IDTs) conducted on Highways and Rail Routes

New Delhi, 20th August 2019: TRAI conducted Independent Drive Tests (IDTs) through its appointed agency on Three highways and Four rail routes. IDTs were conducted to assess the network quality provided by cellular mobile telephone service providers for voice service only. The Key Performance Indicators (KPIs) were assessed for the networks of all telecom service providers operating in the region. KPIs for voice services were Coverage; Call Setup Success Rate (CSSR); Drop Call Rate; Block Call Rate, Handover Success Rate; Rx Quality. The details of IDTs are given below: -

Highways: -

Highways	Period of Conducting IDT	Summary of Results of IDT
Dimapur to Joarhat	19 th February 2019	Annexure-A
Dwarka to Somnath	15 th March 2019	Annexure-B
Hosangabad to Jabalpur	27 th December, 2018	Annexure-C
Mumbai to Goa	17 th to 18 th January 2019	Annexure-D
Siliguri to Farakka	2 nd November 2018	Annexure-E

Railways: -

Rail route	Period of Conducting IDT	Summary of Results of IDT
Agartala to Lumding	21 st to 22 nd February 2019	Annexure-F
Ahmedabad to Bhuj	13 th December 2018	Annexure-G
Bhopal to Khajuraho	24 th October 2018	Annexure-H
Durgapur to Patna	21 st January 2019	Annexure-I
Falakata to Guwahati	4 th December 2018	Annexure-J

3. The key findings of Drive test are summarized below:


- (i) Dimapur to Joarhat: All the TSPs have met the benchmark of $\leq 2\%$ of Drop Call Rate except M/s BSNL (2G), Vodafone Idea Limited (VIL(Vodafone)) (2G), BSNL (3G) & VIL(Idea) (3G). All the service providers have met the benchmark of $\geq 95\%$ of CSSR except M/s BSNL (3G).
- (ii) Dwarka to Somnath: All the TSPs have met the benchmark of $\leq 2\%$ of Drop Call Rate except M/s BSNL (2G). All the service providers have met



the benchmark of $\geq 95\%$ of CSSR except M/s BSNL (3G) & (VIL(Vodafone)), 3G.

- (iii) Hosangabad to Jabalpur: All the TSPs have met the benchmark of $\leq 2\%$ of Drop Call Rate except M/s BSNL (2G), VIL(Idea), VIL(Vodafone) (2G), Airtel (3G), BSNL (3G), Tata (3G) & VIL(Idea) 3G. All the service providers have met the benchmark of $\geq 95\%$ of CSSR except M/s BSNL (3G).
- (iv) Mumbai to Goa: All the TSPs have met the benchmark of $\leq 2\%$ of Drop Call Rate except M/s BSNL (2G), Airtel (3G), BSNL (3G), VIL(Idea) (3G) and Jio (VoLTE). All the service providers have met the benchmark of $\geq 95\%$ of CSSR except BSNL (2G), BSNL (3G) and VIL(Vodafone) (3G).
- (v) Siliguri to Farakka: All the TSPs have met the benchmark of $\leq 2\%$ of Drop Call Rate except BSNL (2G), Airtel (3G) & VIL(Idea)(3G). All the service providers have met the benchmark of $\geq 95\%$ of CSSR except BSNL (2G) & BSNL (3G).
- (vi) Agartala to Lumding: None of the TSPs have met the benchmark of $\leq 2\%$ of Drop Call Rate. Only VIL(Vodafone) 2G & VIL(Vodafone) 3G have met the benchmark of $\geq 95\%$ of CSSR.
- (vii) Ahmedabad to Bhuj: All the TSPs have met the benchmark of $\leq 2\%$ of Drop Call Rate except M/s Airtel (2G), BSNL (2G) & Airtel (3G). All the service providers have met the benchmark of $\geq 95\%$ of CSSR.
- (viii) Bhopal to Khajuraho: All the TSPs have met the benchmark of $\leq 2\%$ of Drop Call Rate except M/s Airtel (2G), BSNL (2G), Airtel (3G), BSNL (3G), Tata (3G) & VIL(Vodafone)(4G). All the service providers have met the benchmark of $\geq 95\%$ of CSSR except M/s Airtel (3G), BSNL (3G) & VIL(Vodafone)(3G).
- (ix) Durgapur to Patna: Only Airtel (2G) has met the benchmark of $\leq 2\%$ of Drop Call Rate. All the service providers have met the benchmark of $\geq 95\%$ of CSSR except BSNL (2G) & BSNL (3G).
- (x) Falakata to Guwahati: All the TSPs have failed to meet the benchmark of $\leq 2\%$ of Drop Call Rate. All the service providers have met the benchmark of $\geq 95\%$ of CSSR except Airtel (2G), BSNL (2G), Idea (2G), Tata (3G) & VIL(Vodafone)(3G).

4. The complete report is available at TRAI website www.analytics.trai.gov.in
In case of any clarification, please contact, Shri. Asit Kadayan, Advisor (QoS) at
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(S.K. Gupta)
Secretary
TRAI
2018/19

**Report on Independent Drive Test conducted in
Dimapur to Jorabat on 19th February 2019**

The drive test on the Highway Route of Dimapur to Jorabat was conducted for a period of one day on 19th February 2019 and covered a route of approximately 263 KMs. Cellular mobile telephone service providers included namely Airtel, BSNL and Vodafone Idea Limited (VIL)(Idea), VIL(Vodafone). Tests included 2G, 3G and VoLTE radio access technologies.

The summary of the Service Provider's performance on the key parameters based on Independent Drive Test is given here under: -

Voice Call	2G			
	Airtel	BSNL	VIL(Idea)	VIL(Vodafone)
Call Attempt	159	164	138	143
Blocked Call Rate (%)	1.26%	1.22%	0.00%	0.00%
CSSR% (Accessibility)	98.74%	98.78%	100.00%	100.00%
Drop Call Rate (%)	0.64%	2.47%	1.45%	4.20%
Mobility HOSR (%)	99.23%	94.74%	97.16%	95.07%
Rx Quality (%)	92.12%	95.13%	93.38%	95.24%

Voice Call	3G				VoLTE
	Airtel	BSNL	VIL(Idea)	VIL(Vodafone)	Airtel
Call Attempt	147	143	110	129	124
Blocked Call Rate (%)	2.04%	7.69%	0.00%	0.78%	2.36%
CSSR% (Accessibility)	97.96%	92.31%	100.00%	99.22%	97.64%
Drop Call Rate (%)	0.69%	2.27%	3.64%	1.56%	1.61%
Mobility HOSR (%)	99.81%	98.46%	99.81%	100.00%	100.00%
Rx Quality (%)	91.11%	94.32%	88.31%	89.10%	83.76%

**Report on Independent Drive Test conducted in
Dwarka to Somnath on 15th February 2019**

The drive test on the Highway Route of Dwarka to Somnath was conducted for a period of one day on 15th February 2019 and covered a route of approximately 233 KMs. Cellular mobile telephone service providers included namely Airtel, BSNL, Tata, Vodafone Idea Limited (VIL)(Idea), VIL(Vodafone) and Jio. Tests included 2G, 3G and VoLTE radio access technologies.

The summary of the Service Provider's performance on the key parameters based on Independent Drive Test is given here under:

Voice Call	2G				
	Airtel	BSNL	Tata	VIL(Idea)	VIL(Vodafone)
Call Attempt	178	191	166	168	193
Blocked Call Rate (%)	0.00%	0.52%	0.00%	0.60%	0.00%
CSSR% (Accessibility)	100.00%	99.48%	100.00%	99.40%	100.00%
Drop Call Rate (%)	0.56%	0.53%	0.60%	0.00%	0.00%
Mobility HOSR (%)	98.00%	82.08%	98.67%	99.33%	99.18%
Rx Quality (%)	98.47%	98.29%	97.95%	99.00%	98.70%

Voice Call	3G					VoLTE		
	Airtel	BSNL	Tata	VIL(Idea)	VIL(Vodafone)	Airtel	Jio	VIL(Vodafone)
Call Attempt	155	131	135	180	156	146	195	232
Blocked Call Rate (%)	1.29%	7.63%	3.70%	0.56%	7.05%	2.05%	0.00%	3.02%
CSSR% (Accessibility)	98.71%	92.37%	96.30%	99.44%	92.95%	97.95%	100.00%	96.98%
Drop Call Rate (%)	0.65%	2.48%	0.00%	0.56%	0.69%	1.40%	0.00%	1.33%
Mobility HOSR (%)	99.80%	97.97%	100.00%	98.33%	100.00%	100.00%	99.26%	100.00%
Rx Quality (%)	96.30%	92.65%	95.88%	96.03%	93.20%	92.02%	94.91%	80.06%



**Report on Independent Drive Test conducted in
Hosangabad to Jabalpur on 27th December 2018**

The drive test on the Highway Route of Hosangabad to Jabalpur was conducted for a period of one day on 27th December 2018 and covered a route of approximately 280 KMs. Cellular mobile telephone service providers included namely Airtel, BSNL, Tata, Vodafone Idea Limited (VIL)(Idea), VIL(Vodafone) and Jio. Tests included 2G, 3G and VoLTE radio access technologies.

The summary of the Service Provider's performance on the key parameters based on Independent Drive Test is given here under: -

Voice Call	2G				
	Airtel	BSNL	Tata	VIL(Idea)	VIL(Vodafone)
Call Attempt	258	295	275	304	293
Blocked Call Rate (%)	3.10%	1.02%	2.18%	3.29%	1.02%
CSSR% (Accessibility)	96.90%	98.98%	97.82%	96.71%	98.98%
Drop Call Rate (%)	0.40%	8.90%	0.74%	11.56%	4.48%
Mobility HOSR (%)	99.20%	97.78%	97.90%	99.60%	96.91%
Rx Quality (%)	97.65%	97.69%	97.84%	95.22%	96.46%

Voice Call	3G					VoLTE	
	Airtel	BSNL	Tata	VIL(Idea)	VIL(Vodafone)	Airtel	Jio
Call Attempt	265	273	258	272	272	222	260
Blocked Call Rate (%)	2.26%	6.59%	3.88%	0.37%	1.47%	1.80%	0.00%
CSSR% (Accessibility)	97.74%	93.41%	96.12%	99.63%	98.53%	98.20%	100.00%
Drop Call Rate (%)	4.25%	7.45%	2.02%	3.69%	1.87%	0.92%	0.00%
Mobility HOSR (%)	99.73%	97.02%	100.00%	99.62%	99.62%	99.94%	99.49%
Rx Quality (%)	95.76%	93.67%	95.42%	93.95%	93.51%	86.59%	87.83%



**Report on Independent Drive Test conducted in
Mumbai to Goa on 17th to 18th January 2019**

The drive test on the Highway Route of Mumbai to Goa was conducted for a period of two day on 17th to 18th January 2019 and covered a route of approximately 550 KMs. Cellular mobile telephone service providers included namely Airtel, BSNL, Tata, Vodafone Idea Limited (VIL)(Idea), VIL(Vodafone) and Jio. Tests included 2G, 3G and VoLTE radio access technologies.

The summary of the Service Provider's performance on the key parameters based on Independent Drive Test is given here under: -

Voice Call	2G				
	Airtel	BSNL	Tata	VIL(Idea)	VIL(Vodafone)
Call Attempt	419	442	413	419	449
Blocked Call Rate (%)	2.63%	12.67%	0.97%	2.63%	2.00%
CSSR% (Accessibility)	97.37%	87.33%	99.03%	97.37%	98.00%
Drop Call Rate (%)	1.96%	6.22%	1.71%	1.23%	1.36%
Mobility HOSR (%)	97.52%	86.75%	99.23%	95.68%	95.42%
Rx Quality (%)	97.36%	94.44%	97.73%	96.32%	95.84%

Voice Call	3G					VoLTE
	Airtel	BSNL	Tata	VIL(Idea)	VIL(Vodafone)	Jio
Call Attempt	369	401	347	378	454	436
Blocked Call Rate (%)	1.36%	8.48%	2.59%	3.17%	5.07%	1.38%
CSSR% (Accessibility)	98.64%	91.52%	97.41%	96.83%	94.93%	98.62%
Drop Call Rate (%)	2.20%	7.90%	1.48%	2.46%	1.16%	3.26%
Mobility HOSR (%)	99.24%	93.56%	99.17%	98.29%	98.71%	99.04%
Rx Quality (%)	89.54%	94.25%	97.44%	89.09%	87.73%	94.37%



**Report on Independent Drive Test conducted in
Siliguri to Farakka on 2nd November 2018**

The drive test on the Highway Route of Siliguri to Farakka was conducted for a period of one day on 2nd November 2018 and covered a route of approximately 296 KMs. Cellular mobile telephone service providers included namely Airtel, BSNL, Tata, Vodafone Idea Limited (VIL)(Idea), VIL(Vodafone) and Jio. Tests included 2G, 3G and VoLTE radio access technologies.

The summary of the Service Provider's performance on the key parameters based on Independent Drive Test is given here under: -

Voice Call	2G				
	Airtel	BSNL	Tata	VIL(Idea)	VIL(Vodafone)
Call Attempt	269	251	261	254	264
Blocked Call Rate (%)	0.74%	14.34%	0.77%	0.00%	1.14%
CSSR% (Accessibility)	99.26%	85.66%	99.23%	100.00%	98.86%
Drop Call Rate (%)	1.12%	3.26%	1.93%	0.39%	0.38%
Mobility HOSR (%)	95.93%	96.86%	96.64%	99.68%	98.47%
Rx Quality (%)	94.49%	95.18%	93.76%	97.52%	95.50%

Voice Call	3G				VoLTE
	Airtel	BSNL	VIL(Idea)	VIL(Vodafone)	Jio
Call Attempt	268	268	269	243	244
Blocked Call Rate (%)	3.36%	15.30%	0.00%	3.70%	0.82%
CSSR% (Accessibility)	96.64%	84.70%	100.00%	96.30%	99.18%
Drop Call Rate (%)	2.32%	0.88%	7.81%	0.43%	0.00%
Mobility HOSR (%)	99.63%	98.20%	99.52%	99.79%	99.59%
Rx Quality (%)	89.80%	95.17%	93.48%	92.69%	83.42%



**Report on Independent Drive Test conducted in
Agartala to Lumding on 21st to 22nd February 2019**

The drive test on the Railway Route of Agartala to Lumding was conducted for a period of one day on 21st to 22nd February 2019 and covered a route of approximately 410 KMs. Cellular mobile telephone service providers included namely Airtel, BSNL, Tata and Vodafone Idea Limited (VIL)(Idea), VIL(Vodafone). Tests included 2G and 3G technologies.

The summary of the Service Provider's performance on the key parameters based on Independent Drive Test is given here under: -

Voice Call	2G			
	Airtel	BSNL	VIL(Idea)	VIL(Vodafone)
Call Attempt	241	212	169	183
Blocked Call Rate (%)	6.64%	8.02%	5.92%	2.19%
CSSR% (Accessibility)	93.36%	91.98%	94.08%	97.81%
Drop Call Rate (%)	6.22%	11.79%	8.81%	7.82%
Mobility HOSR (%)	81.47%	94.71%	99.19%	92.31%
Rx Quality (%)	83.82%	91.09%	85.39%	85.64%

Voice Call	3G				VoLTE
	Airtel	BSNL	VIL(Idea)	VIL(Vodafone)	Airtel
Call Attempt	244	174	160	166	206
Blocked Call Rate (%)	9.02%	21.26%	6.25%	2.41%	8.25%
CSSR% (Accessibility)	90.98%	78.74%	93.75%	97.59%	91.75%
Drop Call Rate (%)	8.11%	24.09%	12.67%	4.94%	10.58%
Mobility HOSR (%)	97.91%	86.20%	99.81%	99.56%	99.85%
Rx Quality (%)	75.93%	86.92%	81.37%	82.39%	73.51%



**Report on Independent Drive Test conducted in
Ahmedabad to Bhuj on 13th December 2018**

The drive test on the Railway Route of Ahmedabad to Bhuj Gaya was conducted for a period of one day on 13th December 2018 and covered a route of approximately 355 KMs. Cellular mobile telephone service providers included namely Airtel, BSNL, Tata and Vodafone Idea Limited (VIL)(Idea), VIL(Vodafone). Tests included 2G and 3G technologies.

The summary of the Service Provider's performance on the key parameters based on Independent Drive Test is given here under: -

Voice Call	2G				
	Airtel	BSNL	Tata	VIL(Idea)	VIL(Vodafone)
Call Attempt	189	205	182	204	204
Blocked Call Rate (%)	1.06%	2.44%	0.55%	0.49%	0.49%
CSSR% (Accessibility)	98.94%	97.56%	99.45%	99.51%	99.51%
Drop Call Rate (%)	2.67%	2.50%	0.55%	0.00%	1.48%
Mobility HOSR (%)	96.49%	89.63%	94.79%	98.81%	96.24%
Rx Quality (%)	93.39%	96.95%	94.58%	96.46%	95.30%

Voice Call	3G				
	Airtel	BSNL	Tata	VIL(Idea)	VIL(Vodafone)
Call Attempt	194	182	185	195	196
Blocked Call Rate (%)	1.55%	3.85%	2.16%	2.05%	1.02%
CSSR% (Accessibility)	98.45%	96.15%	97.84%	97.95%	98.98%
Drop Call Rate (%)	2.09%	1.71%	1.66%	0.00%	0.00%
Mobility HOSR (%)	99.94%	96.21%	99.77%	99.84%	98.71%
Rx Quality (%)	94.13%	91.15%	93.42%	94.07%	94.17%



**Report on Independent Drive Test conducted in
Bhopal to Khajuraho on 24th October 2018**

The drive test on the Railway Route of Bhopal to Khajuraho was conducted for a period of one day on 24th October 2018 and covered a route of approximately 376 KMs. Cellular mobile telephone service providers included namely Airtel, BSNL, Tata, Vodafone Idea Limited (VIL)(Idea), VIL(Vodafone) and Jio. Tests included 2G, 3G and VoLTE radio access technologies.

The summary of the Service Provider's performance on the key parameters based on Independent Drive Test is given here under: -

Voice Call	2G				
	Airtel	BSNL	Tata	VIL(Idea)	VIL(Vodafone)
Call Attempt	228	178	233	170	226
Blocked Call Rate (%)	0.88%	3.93%	2.15%	1.18%	0.00%
CSSR% (Accessibility)	99.12%	96.07%	97.85%	98.82%	100.00%
Drop Call Rate (%)	2.65%	12.28%	0.88%	0.60%	0.44%
Mobility HOSR (%)	97.73%	97.40%	98.42%	100.00%	98.55%
Rx Quality (%)	93.60%	96.28%	93.26%	93.03%	93.74%

Voice Call	3G					VoLTE
	Airtel	BSNL	Tata	VIL(Idea)	VIL(Vodafone)	Jio
Call Attempt	230	208	224	181	194	220
Blocked Call Rate (%)	6.09%	9.62%	2.23%	3.87%	8.25%	1.82%
CSSR% (Accessibility)	93.91%	90.38%	97.77%	96.13%	91.75%	98.18%
Drop Call Rate (%)	3.24%	7.45%	2.28%	1.15%	3.37%	0.00%
Mobility HOSR (%)	99.68%	98.17%	99.61%	99.89%	100.00%	98.34%
Rx Quality (%)	92.58%	91.29%	92.52%	88.56%	88.51%	74.43%

**Report on Independent Drive Test conducted in
Durgapur to Patna on 21st January 2019**

The drive test on the Railway Route of Durgapur to Patna was conducted for a period of one day on 21st January 2019 and covered a route of approximately 400 KMs. Cellular mobile telephone service providers included namely Airtel, BSNL, Tata, Vodafone Idea Limited (VIL)(Idea), VIL(Vodafone) and Jio. Tests included 2G, 3G and VoLTE radio access technologies.

The summary of the Service Provider's performance on the key parameters based on Independent Drive Test is given here under: -

Voice Call	2G				
	Airtel	BSNL	Tata	VIL(Idea)	VIL(Vodafone)
Call Attempt	183	171	175	197	161
Blocked Call Rate (%)	1.09%	6.43%	0.57%	4.06%	1.86%
CSSR% (Accessibility)	98.91%	93.57%	99.43%	95.94%	98.14%
Drop Call Rate (%)	1.66%	8.13%	2.30%	6.35%	5.70%
Mobility HOSR (%)	93.17%	91.37%	94.61%	95.83%	97.01%
Rx Quality (%)	93.45%	91.95%	92.50%	87.51%	88.43%

Voice Call	3G					VoLTE
	Airtel	BSNL	Tata	VIL(Idea)	VIL(Vodafone)	Jio
Call Attempt	193	161	183	156	139	186
Blocked Call Rate (%)	2.07%	9.94%	2.73%	4.49%	1.44%	0.00%
CSSR% (Accessibility)	97.93%	90.06%	97.27%	95.51%	98.56%	100.00%
Drop Call Rate (%)	7.41%	10.34%	8.99%	8.72%	5.84%	2.15%
Mobility HOSR (%)	97.72%	91.42%	98.81%	99.41%	97.53%	99.35%
Rx Quality (%)	88.05%	89.38%	84.94%	80.96%	84.09%	78.01%



**Report on Independent Drive Test conducted in
Falakata to Guwahati on 4th December 2018**

The drive test on the Railway Route of Falakata to Guwahati was conducted for a period of one day on 4th December 2018 and covered a route of approximately 285 KMs. Cellular mobile telephone service providers included namely Airtel, BSNL, Tata, Vodafone Idea Limited (VIL)(Idea), VIL(Vodafone) and Jio. Tests included 2G, 3G and VoLTE radio access technologies.

The summary of the Service Provider's performance on the key parameters based on Independent Drive Test is given here under: -

Voice Call	2G				
	Airtel	BSNL	Tata	VIL(Idea)	VIL(Vodafone)
Call Attempt	184	223	48	202	173
Blocked Call Rate (%)	2.17%	4.48%	8.33%	1.98%	6.36%
CSSR% (Accessibility)	97.83%	95.52%	91.67%	98.02%	93.64%
Drop Call Rate (%)	2.78%	6.10%	2.27%	4.55%	5.56%
Mobility HOSR (%)	96.32%	82.11%	97.13%	97.99%	97.88%
Rx Quality (%)	80.99%	88.95%	90.43%	90.18%	88.38%

Voice Call	3G				VoLTE
	Airtel	BSNL	VIL(Idea)	VIL(Vodafone)	Jio
Call Attempt	190	230	159	207	211
Blocked Call Rate (%)	8.95%	23.91%	16.98%	4.83%	0.95%
CSSR% (Accessibility)	91.05%	76.09%	83.02%	95.17%	99.05%
Drop Call Rate (%)	2.31%	16.00%	4.55%	4.57%	5.74%
Mobility HOSR (%)	99.07%	89.93%	100.00%	98.76%	98.71%
Rx Quality (%)	84.66%	90.03%	86.43%	85.14%	74.80%

Definitions

Call Attempt: An attempt to achieve a connection to device attached to a telecommunication network.

Block Call $\leq 3\%$: A call that is not connected because there is no free channel in radio access network to serve a call attempt.

CSSR (Call Setup Success Rate) $\geq 95\%$: Ratio of Established Calls to Call Attempts.

Drop Call Rate $\leq 2\%$: An ability to maintain a call once it has been correctly established.

Hand over Success Rate (HOSR) $\geq 95\%$: Ratio between successful handovers to handover requested. (Handover is a process by which a mobile telephone call is transferred from one base station to another as the subscriber passes the boundary of a cell).

Rx Quality $> 95\%$: Measure of quality of voice.

Download Throughput: Data transmission rate for downloading a test file from a test server to a test device.

Upload Throughput: Data transmission rate for uploading a test file from a test device to test server.

Web browsing delay (secs): Average time taken to fully load the website tested.

Video Steaming delay (secs): Average time taken to fully download the video tested.

Latency (m secs): Time taken for a packet to reach the receiving endpoint after transmitted from the sending point.

