

For Immediate Release

Information note to the Press (Press Release No. 21/2018)

Telecom Regulatory Authority of India

**TRAI Releases Report on Independent Drive Test conducted in
Aizwal, Itanagar and Guwahati cities**

New Delhi 9th February 2018: Telecom Regulatory Authority of India (TRAI) is regularly monitoring the performance of Telecom Service Providers (TSPs) against the prescribed benchmarks for the various Quality of Service (QoS) parameters laid down by the Authority. TRAI through its agency conducted Independent Drive Tests (IDT) in the city of Aizwal and Itanagar in NE License Service Area and Guwahati in Assam Licence service area. Drive tests were conducted to assess the network quality provided by cellular mobile telephone service providers for voice and data services. The details of drive tests conducted in the above cities are given below:-

S.No	City	Licensed Service	Period of Conducting IDT	Summary of Results of IDT
1)	Aizwal	NE	24 th Oct to 26 th Oct 2017	Annexure-A
2)	Itanagar	NE	1 st Nov to 3 rd Nov 2017	Annexure-B
3)	Guwahati	Assam	15 th Nov to 21 st Nov 2017	Annexure-C

2. The Key Performance Indicators (KPIs) were assessed for voice services are Network Coverage, Call Setup Success Rate; Drop Call Rate; Block Call Rate, Handover Success Rate and Rx Quality. The KPIs for data services were Download and Upload Throughputs, Web Browsing Delay, Video Streaming Delay and Latency.

3. 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 Tel. No. +91-11-2323-0404 or at email.id: advqos@traigov.in


(U.K. Srivastava)
Secretary I/C
TRAI

**Report on Independent Drive Test conducted in
Aizwal from 24th to 26th October 2017**

The drive test in the city of Aizwal in NE LSA was conducted for a period of 3 days during 24th Oct to 26th Oct, 2017. It covered a route of approximately 250 KMs and data tests conducted on 5 hotspots. Cellular mobile telephone service providers included namely Aircel, Airtel, BSNL, Idea, Vodafone and Jio. Tests included 2G, 3G, 4G and CDMA 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				
	Aircel	Airtel	BSNL	Idea	Vodafone
Call Attempt	481	490	493	418	480
Blocked Call Rate (%)	5.4%	1.0%	7.3%	0.2%	2.7%
CSSR% (Accessibility)	94.6%	99.0%	92.7%	99.8%	97.3%
Drop Call Rate (%)	6.2%	4.5%	8.5%	6.0%	3.0%
Mobility HOSR (%)	86.2%	95.6%	86.7%	99.6%	98.8%
Rx Quality (%)	87.3%	88.3%	92.7%	93.8%	93.3%

Voice Call	3G					VoLTE
	Aircel	Airtel	BSNL	Idea	Vodafone	Jio
Call Attempt	479	459	510	415	445	425
Blocked Call Rate (%)	2.7%	5.4%	2.0%	0.7%	2.7%	4.0%
CSSR% (Accessibility)	97.3%	94.6%	98.0%	99.3%	97.3%	96.0%
Drop Call Rate (%)	11.8%	4.8%	7.0%	7.0%	7.6%	1.7%
Mobility HOSR (%)	96.8%	100.0%	93.0%	99.8%	99.9%	99.5%
Rx Quality (%)	80.4%	61.8%	93.1%	89.9%	81.5%	71.7%

Data Services	2G				
	Aircel	Airtel	BSNL	Idea	Vodafone *
Download Throughput (Kbps)	60.5	98.6	95.3	131.3	108.9
Upload Throughput (Kbps)	50.8	120.1	95.2	147.8	116.2
Web Browsing Delay (sec)	18.3	19.5	23.2	24.5	23.5
Latency (msec)	395	280	374	513	-

Data Services	3G					4G			
	Aircel	Airtel	BSNL	Idea	Vodafone*	Airtel	Idea	Jio	Vodafone*
Download Throughput (Mbps)	1.0	2.1	0.5	1.2	0.1	1.6	3.8	10.5	0.2
Upload Throughput (Mbps)	0.5	1.6	0.6	0.8	1.5	3.7	4.8	5.9	5.1
Web Browsing Delay (sec)	13.1	11.8	12.3	13.4	16.1	8.9	9.6	6.1	14.6
Video Streaming Delay (sec)	8.9	2.7	4.3	5.1	7.7	1.8	2.8	4.3	3.8
Latency (msec)	339	379	143	212	-	102	188	153	-

* Vodafone has disabled ping on its network

**Report on Independent Drive Test conducted in
Itanagar from 1st to 3rd November 2017**

The drive test in the city of Itanagar in NE LSA was conducted for a period of 3 days during 1st Nov to 3rd Nov, 2017. It covered a route of approximately 250 KMs and data tests conducted on 5 hotspots. Cellular mobile telephone service providers included namely Aircel, Airtel, BSNL, Idea, Vodafone and Jio. Tests included 2G, 3G, 4G and CDMA 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				
	Aircel	Airtel	BSNL	Idea	Vodafone
Call Attempt	391	383	395	366	384
Blocked Call Rate (%)	4.6%	0.0%	2.0%	2.7%	7.6%
CSSR% (Accessibility)	95.4%	100.0%	98.0%	97.3%	92.4%
Drop Call Rate (%)	1.3%	3.1%	0.5%	0.6%	3.1%
Mobility HOSR (%)	95.5%	99.0%	87.9%	99.8%	99.4%
Rx Quality (%)	97.40%	97.19%	96.95%	97.62%	96.83%

Voice Call	3G					VoLTE
	Aircel	Airtel	BSNL	Idea	Vodafone	Jio
Call Attempt	398	386	408	392	398	374
Blocked Call Rate (%)	10.6%	2.3%	0.98%	0.77%	6.03%	2.41%
CSSR% (Accessibility)	89.4%	97.7%	99.0%	99.2%	94.0%	97.6%
Drop Call Rate (%)	2.5%	1.9%	1.7%	2.3%	4.0%	0.5%
Mobility HOSR (%)	97.9%	100.0%	96.2%	100.0%	100.0%	99.55%
Rx Quality (%)	96.21%	66.96%	96.42%	95.28%	83.40%	81.03%

* BSNL CDMA not measured for Voice test as there is only 3 site is radiating in Itanagar.



Data Services	2G					CDMA
	Aircel 2G	Airtel 2G	BSNL 2G	Idea 2G	Vodafone 2G	BSNL
Download Throughput (Kbps)	65.6	11.8	87.5	163.6	115.9	92.5
Upload Throughput (Kbps)	73.3	93.1	90.8	164.7	120.5	55.9
Web Browsing Delay (sec)	21.1	18.9	17.0	28.4	22.2	50.9
Latency (msec)	291	401	405	430	-	868

Data Services	3G					4G			
	Aircel	Airtel	BSNL	Idea	Vodafone	Airtel	Idea	Jio	Vodafone
Download Throughput (Mbps)	1.7	3.4	3.2	1.4	0.8	10.9	9.9	0.8	0.7
Upload Throughput (Mbps)	1.0	1.6	1.1	0.9	0.7	2.1	6.3	6.4	8.0
Web Browsing Delay (sec)	12.6	10.6	12.1	15.8	15.3	6.7	8.4	13.1	13.8
Video Streaming Delay (sec)	3.2	6.2	5.9	3.3	12.2	1.8	1.4	4.6	3.2
Latency (msec)	262	346	218	339	-	183	182	Fail	-

**Report on Independent Drive Test conducted in
Guwahati from 15th to 21st November 2017**

The drive test in the city of Guwahati in Assam LSA was conducted for a period of 5 days during 15th Nov to 21st Nov, 2017. It covered a route of approximately 530 KMs and data tests conducted on 5 hotspots. Cellular mobile telephone service providers included namely Aircel, Airtel, BSNL, Idea, Vodafone and Jio. Tests included 2G, 3G, 4G and CDMA 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				
	Aircel	Airtel	BSNL	Idea	Vodafone
Call Attempt	973	948	848	865	997
Blocked Call Rate (%)	2.1%	1.1%	1.5%	0.8%	0.4%
CSSR% (Accessibility)	97.9%	98.9%	98.5%	99.2%	99.6%
Drop Call Rate (%)	2.0%	1.4%	1.6%	0.5%	1.2%
Mobility HOSR (%)	98.9%	99.3%	95.6%	99.2%	99.1%
Rx Quality (%)	97.75%	95.64%	97.59%	98.33%	93.67%

Voice Call	3G					VoLTE
	Aircel	Airtel	BSNL	Idea	Vodafone	Jio
Call Attempt	924	920	928	854	909	856
Blocked Call Rate (%)	1.2%	2.0%	2.0%	0.9%	0.6%	0.7%
CSSR% (Accessibility)	98.8%	98.0%	98.0%	99.1%	99.4%	99.3%
Drop Call Rate (%)	1.5%	1.4%	2.0%	1.1%	1.1%	0.2%
Mobility HOSR (%)	99.8%	100.0%	97.1%	99.9%	100.0%	99.5%
Rx Quality (%)	96.60%	82.90%	97.48%	94.34%	93.31%	89.02%

Data Services	2G					CDMA
	Aircel	Airtel	BSNL	Idea	Vodafone *	BSNL CDMA
Download Throughput (Kbps)	132.2	133.1	158.0	135.8	169.9	405.7
Upload Throughput (Kbps)	81.8	122.1	83.3	162.8	163.3	137.2
Web Browsing Delay (sec)	41.4	36.5	40.9	42.8	41.2	24.4
Latency (msec)	449	241	424	502	-	224

Data Services	3G					4G			
	Aircel	Airtel	BSNL	Idea	Vodafone*	Airtel	Idea	Jio	Vodafone*
Download Throughput (Mbps)	1.5	2.7	3.2	2.1	2.6	10.2	8.3	2.7	8.9
Upload Throughput (Mbps)	1.9	1.6	0.6	2.0	1.9	4.8	5.2	1.4	8.8
Web Browsing Delay (sec)	11.8	11.3	10.3	12.1	11.1	6.2	7.2	11.4	6.8
Video Streaming Delay (sec)	3.7	2.6	3.5	1.5	1.3	1.7	1.0	7.7	0.8
Latency (msec)	132	308	189	200	-	123	157	128	-

* Vodafone has disabled ping on its network

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

