

REPORT

ON

AUDIT & ASSESSMENT OF QUALITY OF SERVICE

OF

**BASIC SERVICE (WIRELINER),
BASIC SERVICE (WIRELESS) &
CELLULAR MOBILE TELEPHONE SERVICE**

AND

BROADBAND SERVICE

FOR

WEST ZONE - GUJARAT CIRCLE

Report Period: September – November 2008

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PREFACE

TRAI' s mission is to create and nurture conditions for growth of telecommunications in the country in a manner and at a pace, which will enable India to play a leading role in emerging global information society. One of the main objectives of Telecom Regulatory Authority of India (TRAI) is to provide a fair and transparent policy environment, which promotes a level playing field and facilitates for fair competition.

In pursuance of above objective TRAI has issued from time to time a large number of regulations, orders and directives to deal with issues coming before it and provided the required direction to the evolution of Indian telecom industry in a multi operator, multi service open competitive market. In continuation to that efforts, TRAI has selected through bidding process Audit Agency to audit and assess the Quality of Service (QoS) rendered by the service providers namely Basic Services (wireline), Basic Services (wireless) & Cellular Mobile Telephone Services and Broadband Services.

The Audit would assess the Quality of Service of telecom operators by auditing the service level records maintained by the operators, conducting drive tests as well as live measurements and comparing them with quality of service benchmarks stipulated by TRAI.

The Audit for various circles within the Zones have been distributed across various quarterly periods. TCIL Auditors carried out Audits in Gujarat Circle, West Zone in the period of September – November 2008. This report details the performance of various service providers in Gujarat circle against Quality of Services benchmarks for various parameters laid down by TRAI in respective regulations for Basic Services (wireline), Basic Services (wireless) & Cellular Mobile Telephone Services and Broadband Services.

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CHAPTER – 1

BACKGROUND

1.1 Introduction

TRAI' s mission is to create and nurture conditions for growth of telecommunications in the country in a manner and at a pace, which will enable India to play a leading role in emerging global information society. One of the main objectives of Telecom Regulatory Authority of India (TRAI) is to provide a fair and transparent policy environment, which promotes a level playing field and facilitates fair competition.

In pursuance of above objective TRAI has issued from time to time a large number of regulations, orders and directives to deal with issues coming before it and provided the required direction to the evolution of Indian telecom market from a Government owned monopoly to a multi operator multi service open competitive market.

The directions, orders and regulations issued cover a wide range of subjects including tariff, interconnection and quality of service as well as governance of the Authority.

The purpose of laying down Quality of Service Parameters is to:

- i) Create conditions for consumer satisfaction by making known the quality of service, which the service provider is required to provide, and the user has a right to expect.
- ii) Measure the Quality of Service provided by the Service Providers from time to time and to compare them with the norms so as to assess the level of performance.
- iii) Generally protect the interests of consumers of telecommunication services.

TRAI has been carrying out regular reviews of the status of quality of service of the networks of all operators. In continuation to these efforts TRAI has selected through bidding process Audit Agency to audit and assess the Quality of Service rendered by the service providers namely basic (wireline), basic (wireless), cellular mobile telephone service and broadband service.

The objective assessment of Quality of Services(QoS) has been carried out by TCIL for all the Basic Service (Wireline), Basic Service (Wireless) & Cellular mobile Telephone Service and Broadband service Providers during the period starting from September 2008 to November 2008 in Gujarat Circle. The report provides the critical findings of the Audit by providing: -

- ◆ “Service provider performance report” based on 3-days live assessment and one month data audit the Basic Service (Wireline), Basic Service (Wireless) & Cellular mobile Telephone Service and broadband service, which highlight the performance of various operators against the benchmark specified by TRAI, during the month in which the Audit was carried out by TCIL.
- ◆ “Parameter wise critical findings” for the Basic Service (Wireline), Basic Service (Wireless) & Cellular mobile Telephone Service and broadband service. This indicates parameter wise observations and findings from different activities carried out during the Audit process by TCIL.

1.2 Scope of Work

The audit and assessment of Quality of Service is conducted for BSNL, private basic service providers, unified access service providers, cellular mobile service providers and ISPs (providing broadband service) in Gujarat Service areas in the Western Zone for basic service (wireline), basic (wireless) and cellular mobile telephone service and broadband service.

The detailed scope of work is given below:-

- i) Verification of the data submitted by the service providers to TRAI as part of QoS monitoring reports i.e. quarterly Performance Monitoring Reports (PMRs) and monthly Point of Interconnect (POI) Congestion Reports with reference to the records maintained by the service provider.
- ii) Verification of the performance of service providers against the Quality of Service benchmarks laid down by TRAI using live measurement for 3 days during the month in which the audit and assessment is carried out.
- iii) Verification of the performance of service providers against the Quality of Service benchmarks laid down by TRAI using the data for the entire month during which the live measurement is carried out.
- iv) Drive tests of the mobile networks of service providers.
- v) Live testing of the efficiency of the call center / customer care help line.

1.3 Methodology

1.3.1 Basic Service (Wireline):

The Network parameter of the QoS TRAI regulations is observed / verified for the 3 days for nearly 5% of the telephone exchanges covering 10% of the SDCA in a Service area. The network parameter for the entire month is also collected from the operator as per the requirement. There are operators who have unified NMS/NOC from where the entire data can be seen. At the same time on several occasions the data had to be collected from the respective exchange as the centralized monitoring is not available. The data related to Billing and Customer care is checked for the previous month and verified with the customer by calling the customer by the auditing officers in presence of operator. The process of registration and handling of the complaints was also studied for the various operators. Call centre number was called for measuring the efficiency of the call centre in two sessions, 50 calls in each session.

1.3.2 Basic Service (Wireless) and Cellular Mobile Telephone Services:

All the MSC, BSC and BTS data for the relevant details were collected either from the centralized NOC or through a remote access to the NOC. The Radio parameters of the QoS TRAI Regulations were audited/observed/verified from the data collected from OMC-R. The Drive test was conducted for the highways, commercial complex and residential areas and for the areas from which TRAI has received the complaints. The POI and other network parameter was audited/observed/verified from the data collected from the OMC-S. The data related to Billing and Customer care is checked for the previous month and verified with the customer by calling the customer by the auditing officers in presence of operator. The process of registration and handling of the complaints was also studied for the various operator. Call centre number was even called for measuring the efficiency of the call centre. The Inter operator congestion was checked by calling the operators during the time specified in the tender. TCBH is taken as 19:00 Hrs as per the maximum traffic for three days observed.

1.3.3 Broadband Services:

5% of the POPs in 10% of the SDCA were audited for the relevant details from the centralized NOC or through a remote access to the NOC. The network parameter was also checked from the centralized NOC. MRTG, Cactii and Sandvine software were used for monitoring link utilisation. Smoke Ping and Ping Test were used for monitoring Network Latency. The data related to Billing and Customer care was checked for the previous month and verified with the sample of customers by calling them and taking their feedback. The process of registration and handling of the complaints was also studied for the various operators. Test Calls were made to the Helpline number of the Call Centre of different ISPs for measuring the efficiency of the call centre during the peak hours as per the TRAI benchmark.

CHAPTER – 2

REFERENCE DOCUMENTS / SOFTWARE / TOOLS USED

The following documents shall be followed and consulted while conducting the Audit and Assessment of Quality of Services of basic services (wireline), basic service (wireless) & cellular mobile telephone services and broadband services:

1. TRAI Regulations documents
 - a. Regulations on Quality of Service of Basic and Cellular Mobile Telephone Services, 2005
 - b. Quality of Service of Broadband Service Regulations 2006.
2. Quarterly Performance Monitoring Report (PMR) for the quarter ending June 2008, provided by TRAI.
3. TRAI Tender document no. II (Audit)
4. Manufacturer's operating and configuration manual where ever made available.
5. The following Systems /Tools were used while conducting the Audit and Assessment of QoS of Basic (Wireless) and Cellular Mobile Services.
 - a. Drive Test Tools
 - b. OMC-R & OMC-S
 - c. MSC
6. The following Software /Tools were used while conducting the Audit and Assessment of QoS of Broadband Services.
 - MRTG, Cactii and Sandvine for link utilisation.
 - Smoke Ping and Ping Test for Latency calculations.
 - Internet Explorer and Speed test tools for testing download speed.
 - FTP and ping Test for packet loss.

CHAPTER – 3

OPERATORS AUDITED

3.1 BASIC SERVICE (WIRELIN)

Sl.	Service Provider	Zone	Circle/ Service Area
1	Bharat Sanchar Nigam Ltd. (BSNL)	West	Gujarat
2	Bharti Airtel Ltd	West	Gujarat
3	Tata Teleservices (TTSL)	West	Gujarat
4	Reliance Communications Ltd.	West	Gujarat

Nearly 5 % of the exchanges were audited as per the scope of works.

3.2 BASIC SERVICE (WIRELESS) AND CELLULAR MOBILE SERVICES

Sl.	Name of service Provider	Zone	Circle/ Service Area
1	Idea Cellulars	West	Gujarat
2	Vodafone Essar Limited	West	Gujarat
3	Bharat Sanchar Nigam Ltd. (BSNL)	West	Gujarat
4	Bharti Airtel Ltd	West	Gujarat
5	Reliance Communications Ltd	West	Gujarat
6	Tata Teleservices (TTSL)	West	Gujarat

All the MSC's and BSS systems were considered for audit and assessment.

3.3 BROADBAND SERVICES

Sl.	Name of service Provider	Zone	Circle/ Service Area
1	Bharat Sanchar Nigam Ltd. (BSNL)	West	Gujarat
2	Bharti Airtel Ltd.	West	Gujarat
3	Tata Communications (VSNL)	West	Gujarat
4	You Telecom India Pvt Ltd	West	Gujarat
5	Hathway Cable & Datacom Pvt. Ltd.	West	Gujarat
6	Sify Limited	West	Gujarat
7	Reliance Communications Ltd.	West	Gujarat

5% of the POPs of ISP spread over in 10% SDCAs in specified service area are covered.

CHAPTER – 4

SERVICES / SYSTEMS AUDITED

The following Services are audited as per the documents under reference in chapter – 2.

1. Basic Service (Wireline)
2. Basic Service (Wireless) and Cellular Mobile Telephone Services
3. Broadband Service
4. RF Coverage

The following Systems are audited as per the documents under reference in chapter – 2.

1. PSTN Exchanges
2. Mobile Switching Centre.
3. Broadband PoPs
4. Billing Applications
5. Customer Care applications

Facilities that are audited as per the documents under reference in chapter – 2

1. Billing documents.
2. Customer Care records.

The following field verifications was conducted as per the documents under reference in chapter – 2.

1. RF network coverage
2. Inter Operator Congestion
3. Billing Complaints
4. Network Complaints
5. Customer Care efficiency

The live calling has been made to assess the quality of services for Inter Operator Congestion, Billing Complaints, Network Complaints and Customer Care efficiency.

CHAPTER – 5


PMR DATA VERIFICATION REPORT
PERIOD: APRIL – JUNE 2008


Verification of quarterly Performance Monitoring Report (PMR) submitted by operator to TRAI with Quality of Services (QoS) records maintained by Operator.

5.1 Basic Service (Wireline) (PMR Period : April – June 2008)

S.N.	Parameters	Benchmarks	AIRTEL		BSNL		RELIANCE		TTSL	
			PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL
1	Provision of a telephone after registration of demand 100 % cases within 7 days (subject to technical feasibility)	100%	96%	96%	96.73%	96.73%	100%	100%	99.20%	99.20%
2	Fault incidences (No. of faults/100 subscribers /month)	<3	3%	2.90%	5.9%	5.9%	*		4.3%	4.3%
3	Fault repair by next working day By next working day	> 90%	98%	98%	91.50%	91.50%	98.42%	98.42%	94.24%	94.24%
4	Mean Time To Repair (MTTR)	< 8Hrs	7.2	7.2	7.9	7.9	4.93	4.93	6.3	6.3
5	Call Completion Rate within a local network Should be better than 55%	> 55%	59%	59%	63.08%	63.08%	*		91.67%	91.67%
6	Metering and billing credibility Disputed Bills over bills issued	<0.1%	0%	0.02%	0.06%	0.06%	*		0.07%	0.07%
7	Customer Care (Promptness in attending to customers requests) 95% of requests									
	- Shifts (< 3 days)	95%	98%	98%	97%	97%	96.70%	96.70%	93.58%	93.58%
	- Closures (< 24 Hrs)	95%	100%	99.75%	99.97%	99.97%	97.31%	97.31%	91.4%	91.4%
	- Additional Facility (< 24 Hrs)	95%	97%	99.98%	99.98%	99.98%	98.65%	98.65%	97%	97%

S.N.	Parameters	Benchmarks	AIRTEL		BSNL		RELIANCE		TTSL	
			PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL
8	Response Time to the customer for assistance									
	(i) % age of calls answered (electronically):									
	within 20 seconds	80%	100%	100%	100%	100%	96%	96%	100%	100%
	within 40 seconds	95%	100%	100%	100%	100%	98%	98%	100%	100%
	(ii) % age of calls answered by operator(voice to voice):									
	within 60 seconds	80%	78%	86.20%	99.62%	99.62%	100%	100%	91%	91%
	within 90 seconds	95%	83%	91.26%	99.62%	99.62%	100%	100%	94%	94%
9	Time taken for refund of deposits after closure (100% within 60 days)	100%	100%	100%	100%	100%	100%	100%	100%	100%

 Indicates deviation from benchmark of TRAI.

 Discrepancy found

NA – Not Applicable

Observation:

The PMR data was verified with the data provided by the operators. The data was found to be as per the detail provided in the table above.

Airtel:

Airtel is meeting most of the benchmarks except for Provision of a telephone after registration of demand within 7 days and Response time to the customer for assistance. However some minor discrepancies have been found in the data submitted to TRAI.

BSNL

BSNL is meeting most of the benchmarks except for Provision of a telephone after registration of demand within 7 days and Fault Incidences.

Reliance

Reliance is meeting most of the benchmarks. However, Reliance has not submitted the data for the parameters at Sl. No. 2, 5 & 6 in PMR to TRAI.


TTSL

TTSL has shown many deviations in the benchmark for QOS parameters.

5.2 Basic Service (Wireless) and Cellular Mobile Telephone Services (PMR Period : April – June 2008)

S.N.	Parameters	Benchmarks	GSM OPERATORS								CDMA OPERATORS			
			Airtel		Idea		BSNL		Vodafone		TTSL		Reliance	
			PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL
1	Network Performance													
1.1	Accumulated down time of Community Isolation	< 24Hrs	16.30	16.30	2.22	2.22	8:00	8:00	17:41	11:41	3:14	3:14	0:58	0:58
1.2	Call set-up Success Rate (within licensee's own network) (%)	> 95%	96.67%	96.67%	98.96%	98.96%	99.23%	99.23%	98.9%	99.9%	98.77%	98.77%	99.25%	99.25%
1.3	Service Access Delay (Sec)	9 – 20 Sec	10.41	10.41	13.19	13.19	2.21	2.21	16.49	16.5	5.30	5.3	3.64	3.64
1.4	Blocked Call Rate													
	(i) SDCCH Congestion (%)	< 1%	0.94%	0.94%	0.9%	0.9%	0.71%	0.71%	0.38%	0.39%	0%	0%	0%	0%
	(ii) TCH Congestion (%)	< 2%	0.97%	0.97%	0.5%	0.5%	1.89%	1.89%	0.81%	0.81%	0.01%	0.01%	0%	0%
	(iii) Cell exceeding 80% TCH utilization (Nos)													
1.5	Call Drop Rate (%)	< 3%	1.34%	1.34%	1.78%	1.78%	1.58%	1.58%	0.9%	0.9%	0.46%	0.46%	0.81%	0.81%
1.6	Percentage of connections with good voice quality (%)	> 95%	96.19%	96.19%	97.4%	97.4%	95%	95%	98.6%	98.6%	99.11%	99.11%	98.68%	98.68%
1.8	POI Congestion (%)	< 0.5%	-	13.2%	-	0%	0%	0%	-	18.35%	0%	0%	0.1%	0.1%
2	Customer Help Lines:													
2.1	Response time to the customer for assistance													
	(i) % age of calls answered (electronically)													
	within 20 seconds (%)	80%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99.3%	99.3%
	within 40 seconds (%)	95%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	99.3%	99.3%
	(ii) % age of calls answered by operator (voice to voice):													
	Within 60 seconds (%)	80%	97.4%	97.4%	93%	93%	82%	82%	99.03%	99.03%	93.7%	93.7%	77.45%	77.45%
	Within 90 seconds (%)	95%	98.9%	98.9%	98%	98%	95%	95%	99.87%	99.87%	95.1%	95.1%	85.16%	85.16%

S.N.	Parameters	Benchmarks	GSM OPERATORS								CDMA OPERATORS			
			Airtel		Idea		BSNL		Vodafone		TTSL		Reliance	
			PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL
3	Billing Complaints													
3.1	Billing complaints per 100 bills issued (%)	<0.1%	0%	0%	0.067%	0.067%	0.03%	0.03%	0.05%	0.05%	0.07%	0.07%	0.07%	0.07%
3.2	% of billing complaints resolved within 4 weeks (%)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
3.3	Period of all refunds / payments due to customers from the date of resolution of complaints as in (ii) above (weeks)	< 4 Weeks	<4 Weeks	<4 Weeks	<4 Weeks	<4 Weeks	<4 Weeks	<4 Weeks	<15 Days	<15 Days	<4 Weeks	<4 Weeks	<4 Weeks	<4 Weeks

 Indicates deviation from benchmark of TRAI.

 Discrepancy found

NA – Not Applicable

Observation:

The PMR data was verified with the data provided by the operators. The data was found to be as per the detail provided above.

Airtel

Airtel is meeting most of the benchmarks except for the POI congestion. However, Airtel is filing POI congestion report on monthly basis.

Idea

Idea is meeting all the benchmarks. However, Idea is filing POI congestion report on monthly basis.

BSNL

BSNL is meeting all the benchmarks.

Vodafone

Vodafone is meeting most of the benchmarks except for the POI congestion. However, some minor discrepancy is found in the PMR filled to TRAI. Vodafone is filing POI congestion report on monthly basis.

TTSL

TTSL is meeting all the benchmarks.

Reliance

Reliance is meeting most of the benchmarks except for the Response time to the customer for assistance.


5.3 Broadband Service (PMR Period : April – June 2008)


S.N.	Parameters	Benchmark	Hathway		BSNL		Reliance*		SIFY*		YOU Telecom		Bharti		VSNL	
			PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL
1	Service Provisioning/ Activation Time	100% in =<15 working days														
1.1	No. of connections registered		2770	2770	30974	30974	20402	20402	16838	16838	2814	2814	1560	1560	3047	3047
1.2	%age of connections provided within 15 days of registration of demand	100%	93.26%	93.26%	100%	100%	72%	72%	100%	100%	100%	100%	99%	99%	100%	100%
1.3	%age of connections provided after 15 days of registration of demand		6.63%	6.63%	0%	0%	28%	28%	0%	0%	0%	0%	1%	1%	0%	0%
1.4	No. of customers to whom credit is given for delayed connections		0	0	0	0	Nil	Nil	0	0	Nil	Nil	0	0	0	0
1.5	Total no. of connections provided during the period		2516	2516	28227	28227	85659	85659	16838	16838	2814	2814	1560	1560	2886	2886
1.6	Total no. of working connections at the period		21577	21577	155266	155266	85659	85659	16143	16143	2814	2814	10232	10232	23121	23121
2	Faults Repair / Restoration Time															
2.1	Total no. of faults registered		24784	24784	36537	36537	40150	40150	47501	47501	4743	4743	2124	2124	54318	54318
2.2	%age of faults repaired by next working day	>90%	90.99%	90.99%	93.80%	93.80%	97%	96.66%	87%	87%	96.44%	96.44%	98%	98%	91%	91%
2.3	%age of faults repaired within 3 working days	=>99%	99.13%	99.13%	99.70%	99.70%	99%	99%	94%	94%	99.26%	99.26%	100%	100%	98%	98%
2.4	No. of customers to whom rent rebate is given in minimum monthly charges or equivalent usage allowance for delay in fault repair		0	455	0	134		34		108	34	34	11	11	40444	40444
	a. Rent Rebate of 7 days		145	145	60	60	11	11	88	88	29	29	11	11	39258	39258
	b. Rent Rebate of 15 days		108	108	19	19	11	11	20	20	3	3	0	0	998	998
	c. Rent Rebate of One Month		202	202	55	55	12	12	0	0	2	2	0	0	188	188

S.N.	Parameters	Benchmark	Hathway		BSNL		Reliance*		SIFY*		YOU Telecom		Bharti		VSNL	
			PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL
3	Billing Performance															
3.1	Total no. of bills issued		2231	2231	398782	398782	183672	183672	0	Sify is using prepaid module, hence no bills issued	67871	67871	63066	63066	35869	35869
3.2	No. of bills disputed		0	0	682	682	309	309	0		181	181	14	14	532	532
3.3	%age of bills disputed	<2%	0%	0%	0.20%	0.20%	0.17%	0.17%	0		0.26%	0.26%	0%	0%	1.07%	1.07%
3.4	%age of complaints resolved within 4 weeks	100% within 4 weeks	NA	NA	100%	99.97%	100%	100%	0		100%	100%	100%	100%	100%	100%
3.5	%age of cases to whom refund of deposits is made within 60 days of closures	100% within 60 days	100%	100%	100%	100%	100%	100%	0		95.61%	95.61%	100%	100%	100%	100%
4	Response Time to the Customer for assistance															
4.1	Total no. of calls received by operators (Voice to voice)		54670	54670	87786	87786	764870	764870	70978	70978	121792	121792	227665	227665	1331964	1331964
4.2	%age of calls answered by operator (Voice to voice) within 60 sec	>60%	60%-80%	60%-80%	75.60%	75.60%	86%	86%	86%	86%	89.01%	89.01%	86%	86%	84.64%	84.64%
4.3	%age of calls answered by operator (Voice to voice) within 90 sec	>80%	80%-90%	80%-90%	87.10%	87.10%	91%	91%	94%	94%	91.41%	91.41%	91%	91%	91.57%	91.57%
5	Bandwidth utilisation/throughout															
5.1	No. of intra network links (POP to ISP Gateway nodes)		Dark Fibre/Ethernet	Dark Fibre/Ethernet	BRAS -23, T1-24, T2-666, DSLAM 5456	BRAS -23, T1-24, T2-666, DSLAM 5456	84	84	400	400	3	3	7	7	16	16
5.2	No. of intra network links having Bandwidth utilisation >90% during peak hours (TCBH)		0	0	1	1	28	0	1.33	1.33	-	-	0	0	0	0
5.3	No. of Upstream links for International connectivity (ISP Gateway nodes to IGSP/NIXI node/NAP)		1at Baroda + 1at Surat	1at Baroda + 1at Surat	IGW-97, STM1s & NIXI3GE	IGW-97, STM1s & NIXI3GE	62	90	28	28	4	4	NA	NA	11stm1 19stm4 3stm16 3gig	11stm1 19stm4 3stm16 3gig

S.N.	Parameters	Benchmark	Hathway		BSNL		Reliance*		SIFY*		YOU Telecom		Bharti		VSNL	
			PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL
5.4	No. of Upstream links for International connectivity having bandwidth utilisation >90% during peak hours (TCBH)		NA	1 at Surat	1	1	0	0	Nil	Nil	-	-	NA	NA	Nil	Nil
5.5	Total International bandwidth available from ISP Node to IGSP/NIXI/NAP in Mbps		18	18 baroda + 90 Surat	IGW-15085.44 Mbps&NIXI 3000Mbps	IGW-15085.44Mbps&NIXI 3000Mbps	44580	44580	3088.66	3088.66	89.33	89.33	NA	NA	21980	21980
5.6	Total International bandwidth during peak hours (TCBH) in Mbps (Enclose MRTG)		NA	Surat = 81	12383.1	12383.1	24125	24125	2057.33	2057.33	69.66	69.66	NA	NA	17057	17057
5.7	%age International bandwidth utilisation during peak hours (TCBH) in Mbps (enclose MRTG)	<80%	NA	92% for Surat	79.40%	79.40%	54%	54%	85%	85%	77.99%	77.99%	NA	NA	76.70%	76.70%
5.8	Broadband Connection Speed available (download) from ISP node to user	>80%	>=85%	>=85%	88.40%	88.40%	>90%	>90%	95%	95%	85%	85%	99%	99%	>80%	>80%
6	Service Availability / Uptime (for all users) in %age	>98% w.e.f. Quarter Ending Sep. 07														
6.1	Total Operational Hours		6699336	6699336	2184	2184	78723360	1312056 hrs	2184	2184	22524080	22524080	728	728	2118504	2118504
6.2	Total downtime in hours		144432	144432	2.07	2.07	5143900	85732 hrs	0	0	278429	278429	5	5	7045	7045
6.3	Service availability/uptime (for all users) in %age	>98%	98.00%	98.00%	99.70%	99.70%	99.78%	99.78%	100%	100%	98.8%	98.8%	99%	99%	98.82%	98.82%
7	Packet loss (for wired broadband access) in %age	<1%	<1%	<1%	0.90%	0.90%	0.96%	0.96%	<1%	<1%	<1%	<1%	0%	0%	0%	0%

S.N.	Parameters	Benchmark	Hathway		BSNL		Reliance*		SIFY*		YOU Telecom		Bharti		VSNL	
			PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL	PMR	Verified by TCIL
8	Network latency (for wired broadband access)															
8.1	User reference point at POP/ISP Gateway node to IGSP/NIXI	<120 ms	<100ms	<100ms	87.6ms	87.6ms	22.9ms	22.9 ms	<45ms	<45ms	40ms	40ms	86ms	86ms	<80ms	<80ms
8.2	User reference point at ISP Gateway node to IGSP/NIXI	<350 ms	<350ms	<350ms	289.7ms	289.7 ms	256.9ms	256.9 ms	<300ms	<300ms	300ms	300ms	215ms	215ms	<180 ms	<180ms
8.3	User reference point at ISP Gateway node to international nearest NAP port abroad (satellite)	<800 ms	NA	NA	NA	NA	NA	NA	Nil	Nil	NA	NA	NA	NA	NA	NA

 Indicates deviation from benchmark of TRAI.

 Discrepancy found

NA – Not Applicable

Observation:

The PMR data was verified with the data provided by the operators. The data was found to be as per the detail provided above.

Hathway

Hathway is meeting most of the benchmark except for %of connections provided within 15 days of registration of demand and Bandwidth Utilisation particularly for Surat.

BSNL

BSNL is meeting all the benchmarks. However, Bandwidth Utilisation/throughput , Service Availability/Uptime, Packet Loss and Network Latency parameters are based on all India figures.

Reliance

Reliance is meeting most of the benchmark except for %of connections provided within 15 days of registration of demand. However, discrepancies have been found in the Bandwidth Utilisation parameter and Reliance reported data for Service Uptime are in Minutes, where as it should be in Hours.

Reliance is submitting the PMR on all India basis, hence data is verified on All India basis not for Gujarat Circle particularly.

Sify

Sify is meeting most of the benchmark except for Fault Repair/Restoration time. Sify claims that all its retail broadband customers are prepaid and hence there are no bills issued.

SIFY is submitting the PMR on all India basis, hence data is verified on All India basis not for Gujarat Circle particularly.

You Telecom

You Telecom is meeting most of the benchmark except for %age of cases to whom refund of deposits is made within 60 days of closures.

Bharti

Bharti is meeting most of the benchmark except for %of connections provided within 15 days of registration of demand.

TATA Communications (VSNL)


VSNL is meeting most of the benchmark except for Fault Repair/Restoration time i.e. for % of Faults repaired within 3 working days.

However, QOS Parameters no. 2.4, 4, 5, 7 & 8 represents all India figures and rest are representing Central region (Gujarat & MP) figures.

CHAPTER -6**LIVE ASSESSMENT OF QoS OF DIFFERENT SERVICES****3 DAYS DATA****6.1 LIVE ASSESSMENT : BASIC SERVICE (WIRELINE)**

Service Provider Performance Report based on 3-days Live measurement data collected during audit period September – November 2008.

S.N.	Parameters	Benchmarks	AIRTEL	BSNL	RELIANCE	TTSL
1	Call Completion Rate within a local network					
	Should be better than 55%	> 55%	62.97%	59.13%	76.73%	56.05%
2	Response Time to the customer for assistance					
2.1	% age of calls answered (electronically)					
	within 20 seconds	80%	100%	100%	100%	100%
	within 40 seconds	95%	100%	100%	100%	100%
2.1	% age of calls answered by operator(voice to voice):					
	within 60 seconds	80%	76%	95%	94%	94%
	within 90 seconds	95%	94%	100%	100%	100%

 Indicates deviation from benchmark of TRAI.

NA – Not Applicable

NOTE:

BSNL: 160 Exchanges from the SSA/SDCA of Ahmedabad, Vadodhara, Surat, Bharuch, Mehsana, Palanpur, Rajkot, and Jamnagar were audited.

For all other operators, Centralized data was provided for all the exchanges.

6.1.1 Observation & Findings : Live Measurement – Basic Service (Wireline)

AIRTEL

Airtel is meeting the benchmarks of “better than 55%” for Call Completion Ratio within a local network during the 3-days live measurement.

Airtel is meeting the benchmark provided by TRAI for Response Time to Customer for Assistance (Electronically) for both the parameters 20 Seconds & 40 Seconds for electronically. However, Airtel is marginally deviating from the benchmarks provided by TRAI for both the parameters 60 Seconds & 90 Seconds for Voice to Voice.

BSNL

For BSNL, 160 Exchanges from the SSA/SDCA of Ahmedabad (Central-gujarat), Vadodhara (Central-gujarat), Surat (South-gujarat), Bharuch (South-gujarat), Mehsana (North-gujarat), Palanpur (North-gujarat), Rajkot (West-gujarat-Saurashtra), and Jamnagar (West-gujarat-Saurashtra) were audited. BSNL is meeting the benchmarks provided by TRAI during the 3-days live assessment for Call Completion Rate (CCR).

BSNL is meeting the benchmark provided by TRAI for Response Time to Customer for Assistance for both the parameters 20 Seconds & 40 Seconds for electronically and both the parameters 60 Seconds & 90 Seconds for Voice to Voice.

RELIANCE

Reliance is complying the benchmarks of TRAI during the 3- days live Measurement for Call Completion Rate (CCR) within a local network.

Reliance is meeting the benchmark provided by TRAI for Customer Assistance for both the parameters 20 Seconds & 40 Seconds for Electronically and both the parameters 60 Seconds & 90 Seconds for Voice to Voice.

TTSL

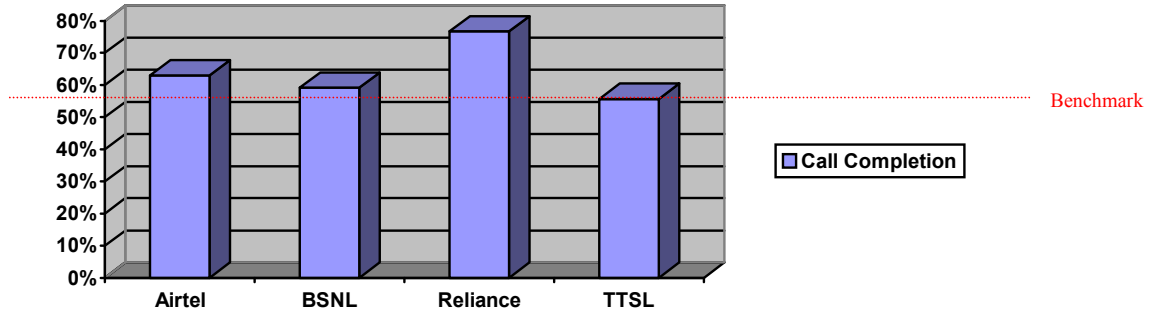
TTSL is complying the benchmarks provided by TRAI for Call Completion Rate (CCR) within a local network during the 3-days live measurement.

TTSL is meeting the benchmark provided by TRAI for Customer Assistance for both the parameters 20 Seconds & 40 Seconds for Electronically and both the parameters 60 Seconds & 90 Seconds for Voice to Voice during 3-days live measurements.

6.1.2 Data Analysis & Graphical Representations – 3 Days Live Assessment – Basic Service (Wireline)

1.0 Call Completion Rate within a local network:

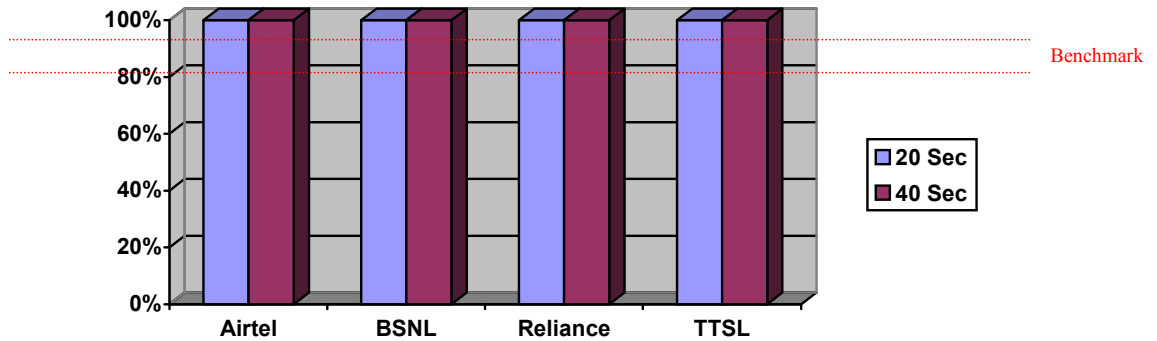
Should be better than 55%: All the operators meeting the benchmark .



2.0 Response time to the customer for assistance:

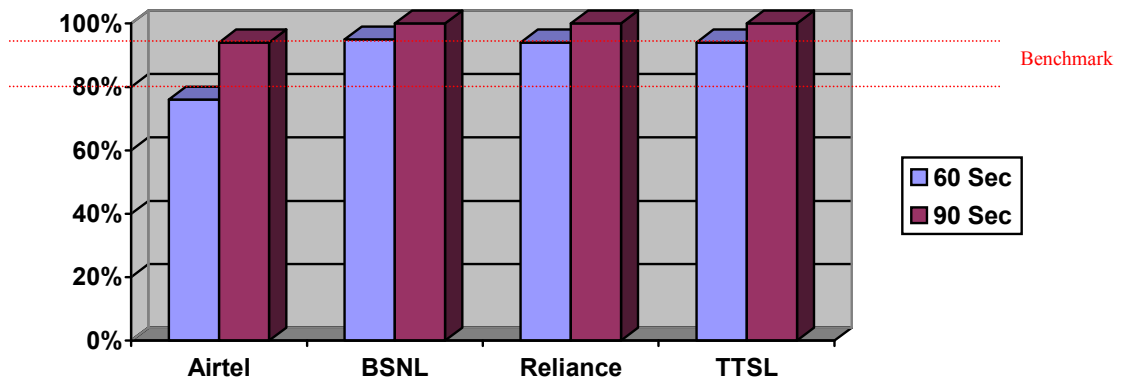
(i) % age of calls answered by operator (Electronically)

- **Within 20 seconds (>80%):** All the operators meet the benchmark.
- **Within 40 seconds (>95%):** All the operators meet the benchmark.



(ii) % age of calls answered by operator (Voice to Voice)


- **Within 60 seconds (>80%):** All the operator meet the benchmark except Airtel(76%)
- **Within 90 seconds (>95%):** All the operators meet the benchmark except Airtel (94%)



6.2 LIVE ASSESSMENT : BASIC (WIRELESS) AND CELLULAR MOBILE SERVICES

Service Provider Performance Report based on 3-days Live measurement data collected during audit period September – November 2008

S.N.	Parameters	Benchmark	GSM OPERATORS				CDMA OPERATORS	
			Airtel	Idea	BSNL	Vodafone	TTSL	Reliance
1	Network Performance							
1.2	Call set-up Success Rate (within licensees own network) (%)	> 95%	96.48%	99.33	99.48%	98.33%	99.25	99.57%
1.3	Service Access Delay (Sec)	9 – 20 Sec	4.9	13.11	9.55	10.41	11.8	13.15
1.4	Blocked Call Rate							
	(i) SDCCH Congestion (%)	< 1%	0.06%	0.80%	0.15%	0.13%	0.00%	0.00%
	(ii)TCH Congestion (%)	< 2%	0.20%	0.08%	1.92%	0.19%	0.00%	0.40%
	(iii) Cell exceeding 80% TCH utilization (Nos)		3284	3655	1363	263	10.6	1.6
1.5	(i) Call Drop Rate (%)	< 3%	1.87%	1.96%	2.69%	0.96%	0.41%	0.83%
	(ii) Cell exceeding 3% TCH drop (Nos)		2110	3138	1737	88	20.6	11.6
	(iii) Cell exceeding 3% TCH drop (%)		14.94%	28.6%	30.03%	0.55%	2.5%	1.12%
1.6	Percentage of connections with good voice quality (%)	> 95%	96.32%	97.2%	82.89%	97.55%	96.36%	98.9%
1.7	Service Coverage							
	In door (>= -75dBm)		84.7%	70.8%	61.59%	98%	99.6%	99.79 %
	In-vehicle (>= -85dBm)		99.1%	95.2%	36.3%	99.96%	99.97%	99.85%
	Out door- in city (>= -95dBm)		99.96%	100%	2.09%	100%	99.97%	99.99%
1.8	POI Congestion (%)	0.05%	2.81%	0.0%	0.0013%	0.0%	0.0%	0.0%
2	Customer Help Lines:							
2.1	Response time to the customer for assistance							
	(i) % age of calls answered (electronically) :							
	within 20 seconds (%)	> 80%	100%	100%	100%	99.31%	100%	99.47%
	within 40 seconds (%)	> 95%	100%	100%	100%	100%	100%	99.47%
	(ii) % age of calls answered by operator (voice to voice):							
	Within 60 seconds (%)	> 80%	80%	70%	86%	99.1%	95%	80.88%
	Within 90 seconds (%)	> 95%	100%	80%	96%	99.9%	100%	87.73%

 Indicates deviation from benchmark of TRAI.

NA – Not Applicable

6.2.1 Observation & Findings : Live Measurement – Basic (Wireless) & Cellular Mobile Services

AIRTEL

Airtel is meeting the benchmarks of “better than 95%” for Call Setup Success Rate during the 3-days live measurement.

Airtel is not meeting the benchmark of “less than 0.05%”, in the case of Point of Congestion (POI).

Airtel is meeting the benchmark provided by TRAI for Response Time to Customer for Assistance (Electronically) for both the parameters 20 Seconds & 40 Seconds for electronically. Also, Airtel is meeting the benchmarks provided by TRAI for both the parameters 60 Seconds & 90 Seconds for Voice to Voice.

IDEA

Idea with score 99.33% meeting the benchmarks of “better than 95%” for Call Setup Success Rate during the 3-days live measurement.

Idea is meeting the benchmark provided by TRAI for Response Time to Customer for Assistance (Electronically) for both the parameters 20 Seconds & 40 Seconds for electronically. However, Idea is marginally deviating from the benchmarks provided by TRAI for both the parameters 60 Seconds & 90 Seconds for Voice to Voice.

BSNL

BSNL with score 99.48% meeting the benchmarks of “better than 95%” for Call Setup Success Rate during the 3-days live measurement.

BSNL (82.89%) is not meeting the benchmark of “more than 95%” for connection with good voice quality.

BSNL is meeting the benchmark provided by TRAI for Response Time to Customer for Assistance (Electronically) for both the parameters 20 Seconds & 40 Seconds for electronically. Also, BSNL is meeting the benchmarks provided by TRAI for both the parameters 60 Seconds & 90 Seconds for Voice to Voice.

VODAFONE

Vodafone is meeting all the parameters during the 3-days live measurement.

TTSL

TTSL is meeting all the parameters during the 3-days live measurement.

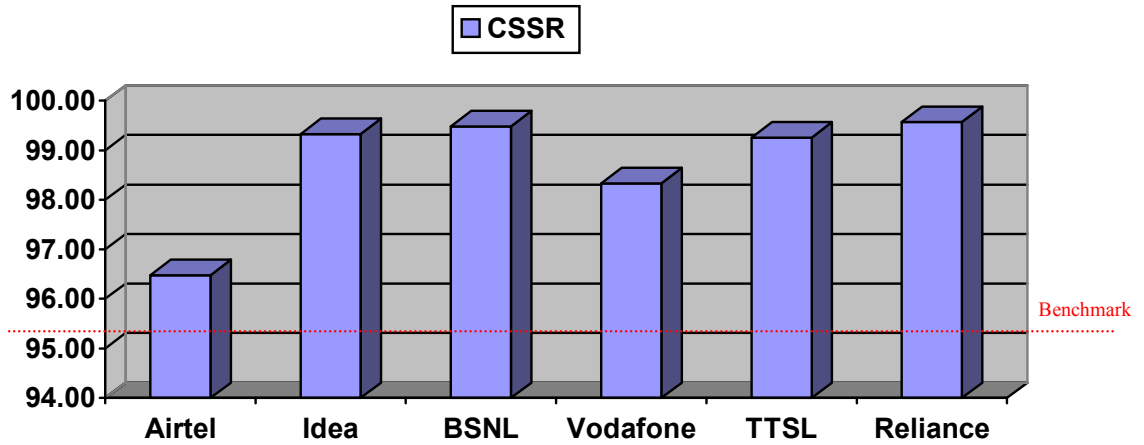
RELIANCE

Reliance is meeting all the parameters during the 3-days live measurement except for Response Time to Customer for Assistance (Voice to Voice) within 90 Seconds parameter.

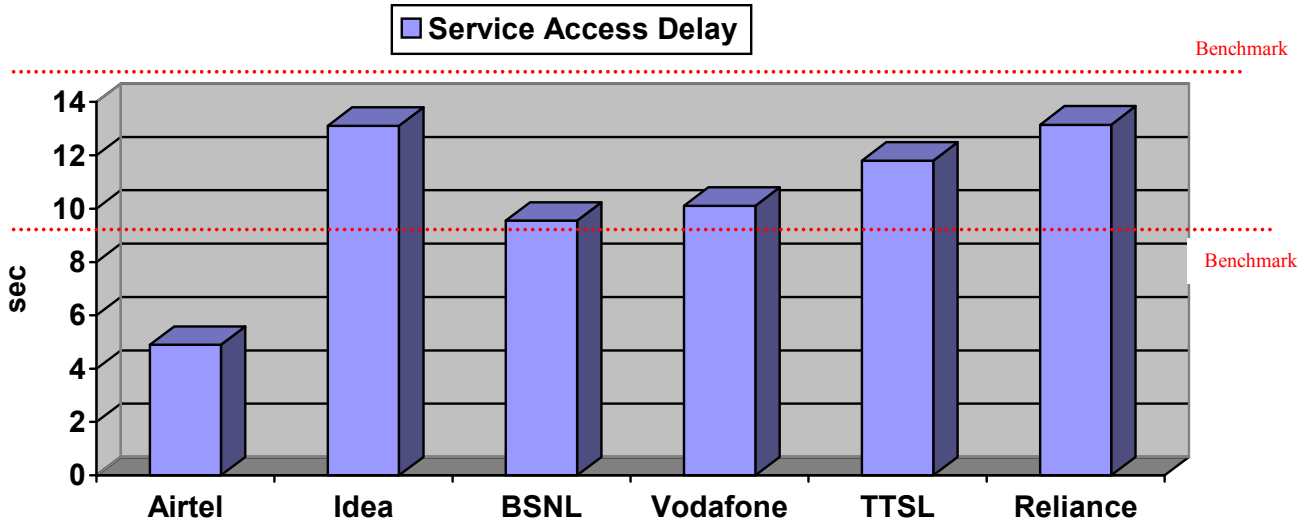
6.2.2 Data Analysis & Graphical Representations – 3 Days Live Assessment – Basic (Wireless) & Cellular Mobile Services

A) NETWORK PERFORMANCE

I. Call setup success rate: All operator meet TRAI benchmarks (>95 %)

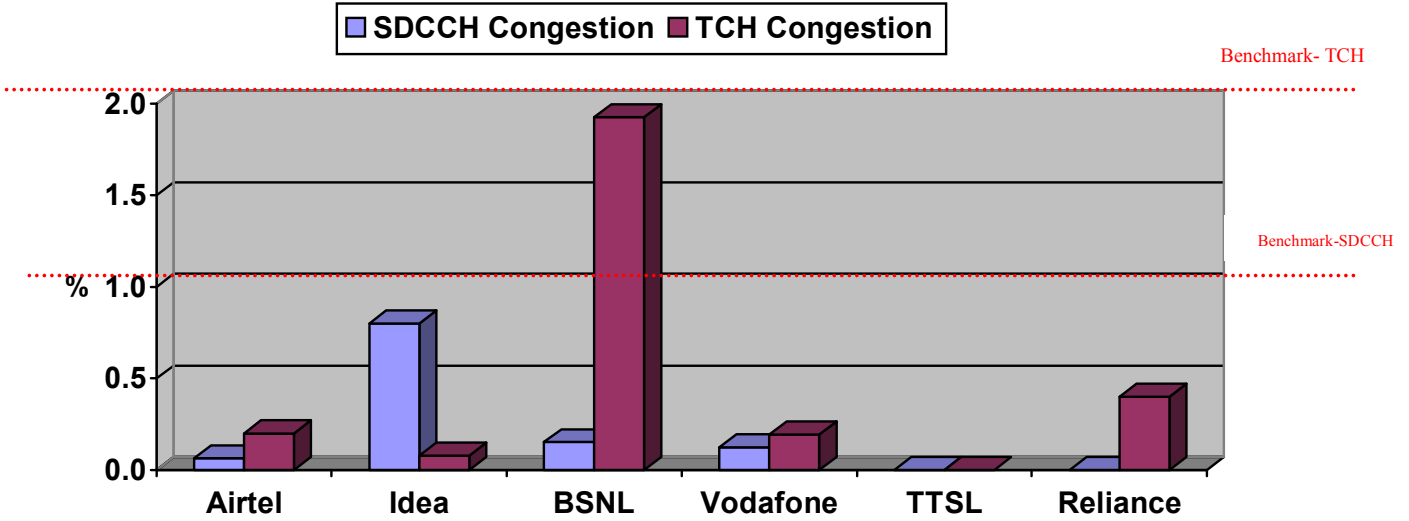


II. Service access delay: All operators meet the benchmark (>9 to <20 sec). Here Airtel is below the lower limit set as benchmark.

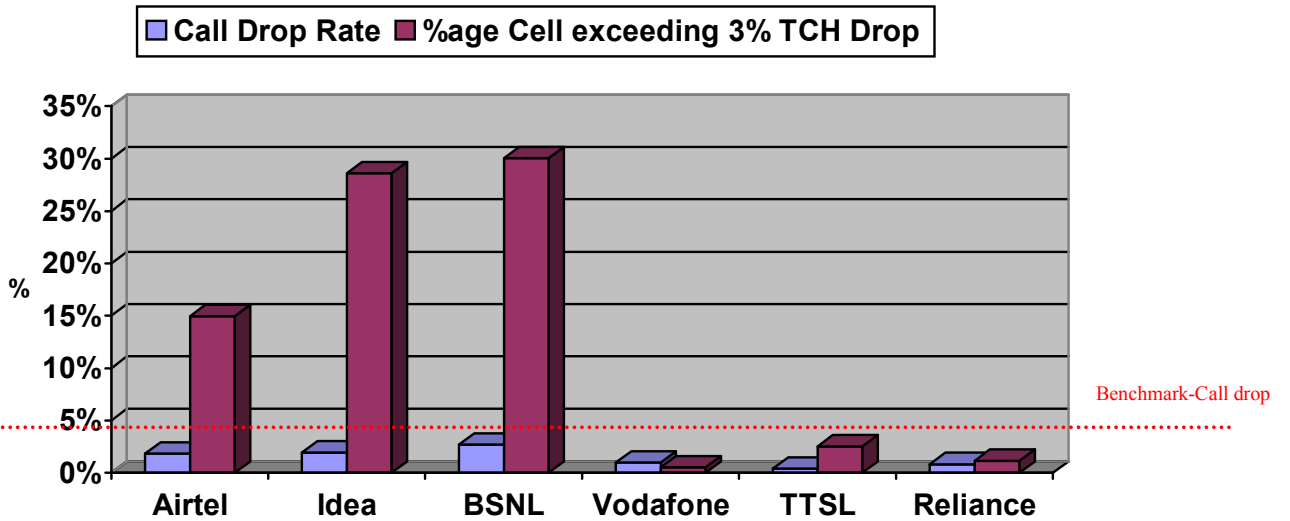


III. Blocked call rate:

- (1) SDCCH congestion (%): All operators meet benchmark (<1 %).
- (2) TCH congestion (%): All operators meet benchmark (<2 %).

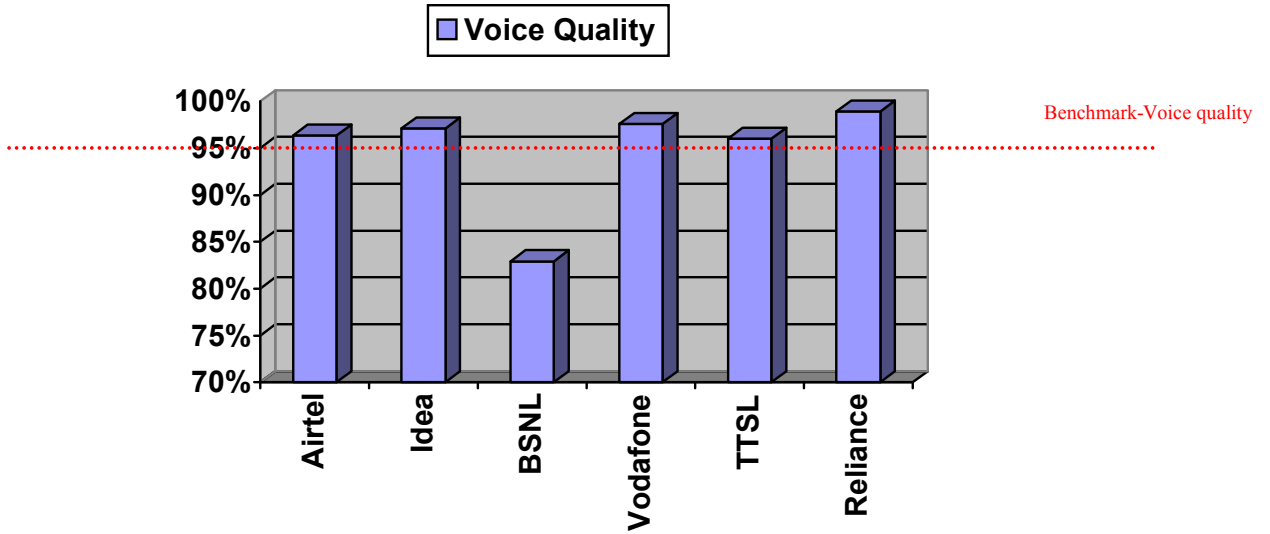


- IV. 1) Call drop rate (%): All operators meet benchmark (benchmark <3%).
- 2) %-age Cell exceeding 3% TCH Drop:

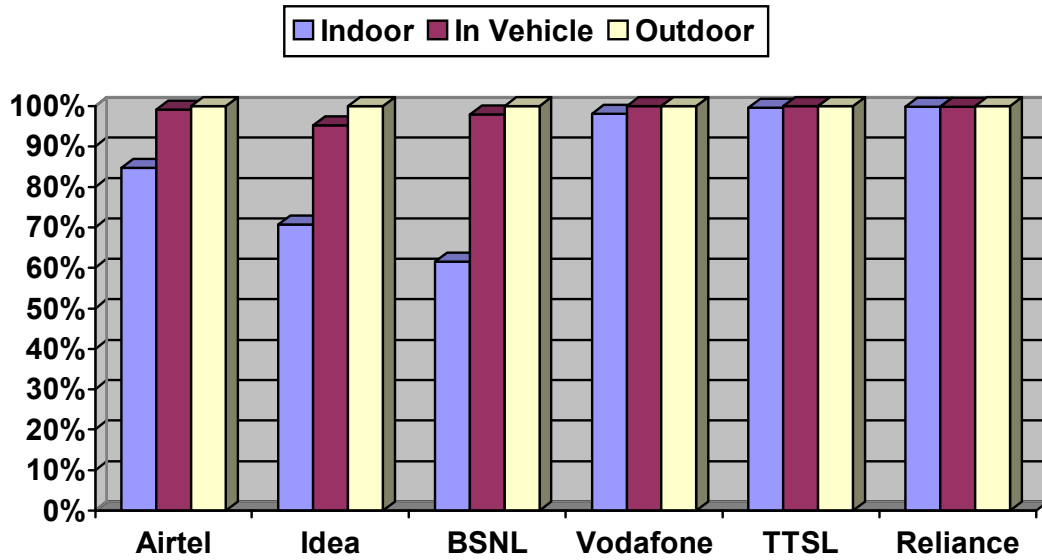


V. Percentage of connections with good voice quality(benchmark >95%):

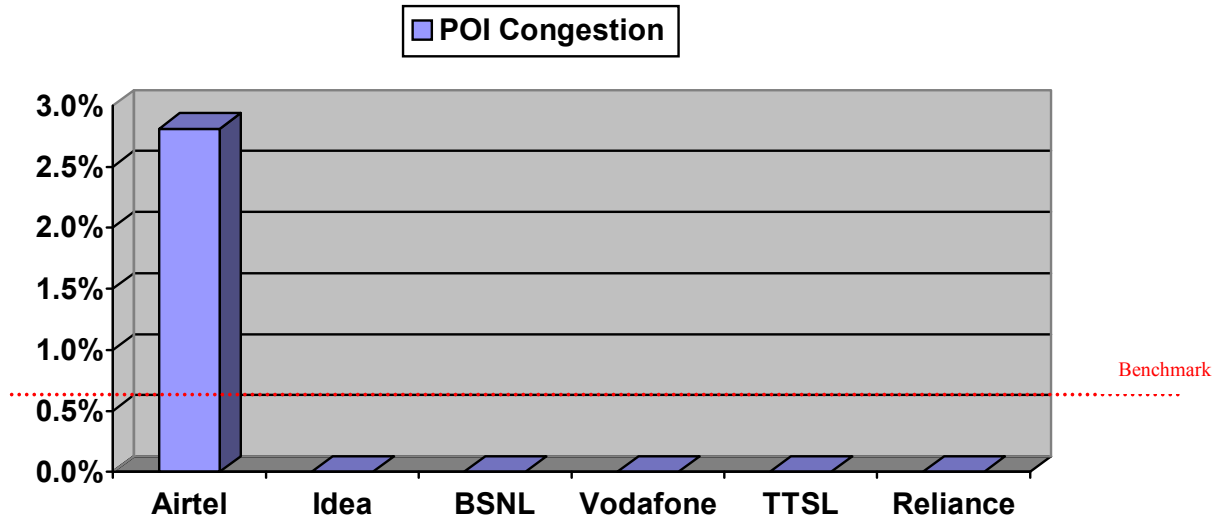
All of operators meet TRAI benchmarks except BSNL (83%)



VI. Service Coverage



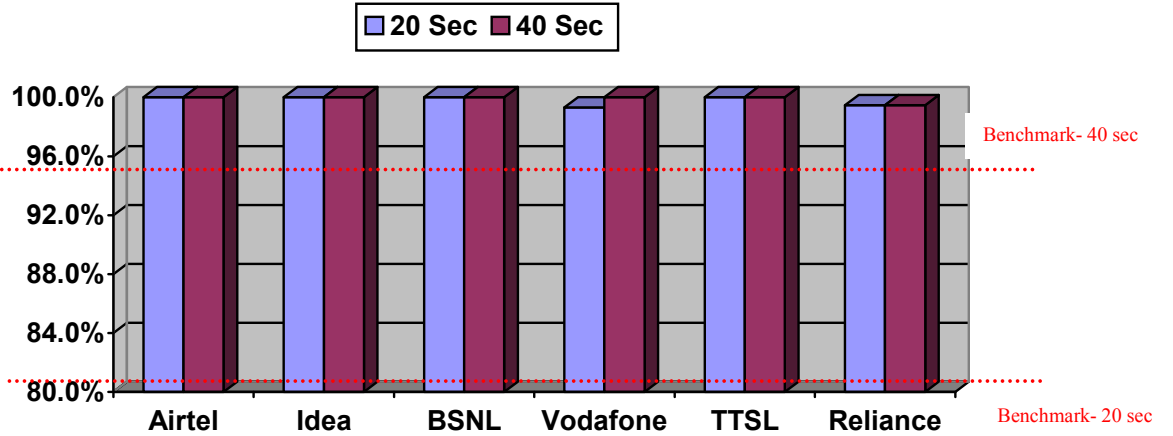
VII. POI Congestion (<0.5%):
All operators meet benchmark (<0.5%) except for Airtel (2.81%).



B) CUSTOMER HELPLINE PERFORMANCE

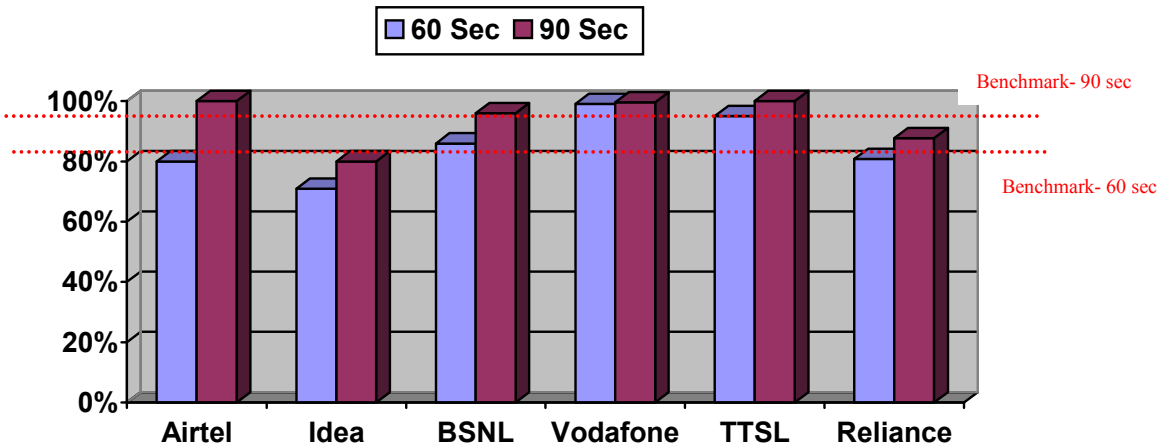
Response time to the customer for assistance:

- I. Percentage of call answered (Electronically);
 With in 20 sec (%): All operators meet benchmark.(>80%)
 With in 40 sec (%): All operators meet benchmark.(>95%)



- II. Percentage of call answered by operators (Voice to voice);


With in 60 sec: All operators meet benchmark(>80%) except Idea(71%).
 With in 90 sec: All operators meet benchmark (>95%) except for Idea(80%) & Reliance (87.7%)



6.3 LIVE ASSESSMENT : BROADBAND SERVICE

Service Provider Performance Report based on 3-days Live measurement data collected during audit period September – November 2008

S.N.	Parameters	Benchmark	Bharti	Hathway	BSNL	Reliance	SIFY	YOU Telecom	VSNL
1	Response time to the customer for assistance								
	% age of calls answered by operator (Voice to Voice)								
	Within 60 seconds	>60%	76%	86%	80%	87%	94%	100%	100%
	Within 90 seconds	>80%	94%	93%	88%	100%	99%	100%	100%
2	Bandwidth Utilization/ Throughput:								
	Bandwidth Utilization	<80%							
	i) POP to ISP Gateway Node [Intra-network] Link(s)		69.57%	37%	46.13%	40.90%	68%	NA	56.26%
	ii) ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity		77.58%	91%	74%	NA	49%	76.86%	48%
	Broadband Connection Speed (download)	>80%	100%	98.25%	89.33%	39%	95%	92.36%	92.45%
3	Packet Loss	<1%	0%	0.45%	1%	0.05%	0.66%	0%	0%
4	Network Latency (for wired broadband access)								
4.1	User reference point at POP / ISP Gateway Node to International Gateway (IGSP/NIXI)	< 120ms	87.33ms	45.33ms	59ms	32.59ms	20ms	13.55ms	42ms
4.2	User reference point at ISP Gateway Node to International nearest NAP port abroad (Terrestrial)	< 350ms	295.43 ms	257.67 ms	298ms	NA	246ms	237.77 ms	273ms
4.3	User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite)	< 800ms	NA	NA	NA	NA	NA	NA	NA

 Indicates deviation from benchmark of TRAI.

NA – Not Applicable

The Satellite link does not exist with any of the Operator, hence the parameter “ 4.3 User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite)” is not applicable to the above Operators.

6.3.1 Observation & Findings : Live Measurement – Broadband Services

Airtel

Airtel is meeting benchmarks for all the parameters for Live measurement data collected & audited for 3 days during September – November 2008.

Hathway

Hathway is meeting benchmarks for Live measurement data collected & audited for 3 days during September – November 2008 for all the parameters except Bandwidth Utilization (for ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity) for Surat City only.

BSNL

BSNL is meeting benchmarks for all the parameters for Live measurement data collected & audited for 3 days during September – November 2008.

Reliance

Reliance is meeting benchmarks for Live measurement data collected & audited for 3 days during September – November 2008 for all the parameters except Download Speed. However, for the Bandwidth Utilization and Network Latency parameter for ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity, there is No ISP Gateway Node provided for Gujarat Circle as Upstream link is taken care by ISP gateway at Mumbai, Delhi & Chennai, hence Not Applicable for Gujarat Circle.

SIFY

Sify is meeting benchmarks for all the parameters for Live measurement data collected & audited for 3 days during September – November 2008.

You Telecom

You Telecom is meeting benchmarks for Live measurement data collected & audited for 3 days during September – November 2008 for all the parameters. However, for the Bandwidth Utilization parameter for POP to ISP Gateway Node [Intra-network] Link(s) is not applicable. Since, all the CPE Equipments are terminating /aggregating at CMTS kept in NOC, so there is no separate POP. Hence, POP and ISP Gateway Node are at same place.

VSNL

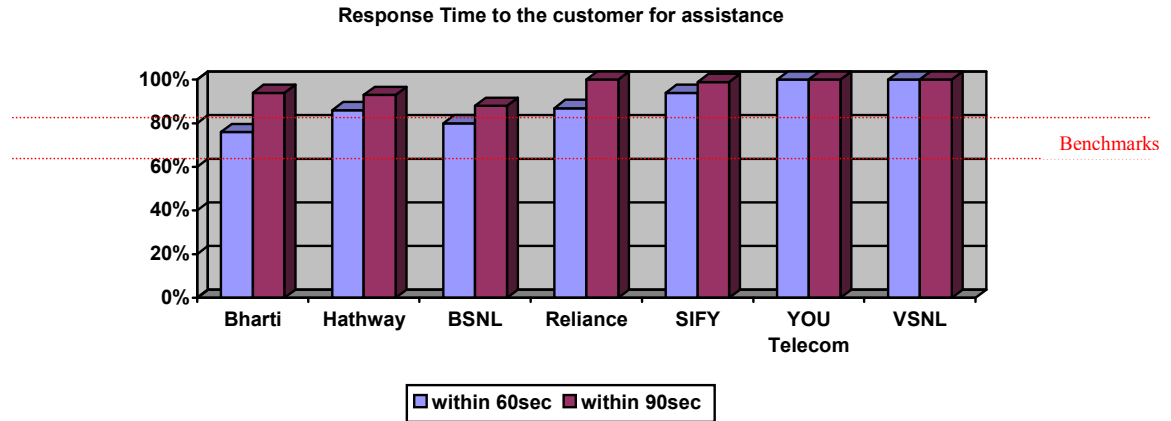
VSNL is meeting benchmarks for all the parameters for Live measurement data collected & audited for 3 days during September – November 2008.

6.3.2 Data Analysis & Graphical Representations – 3 Days Live Assessment – Broadband Services

1.0 Response time to the customer for assistance:

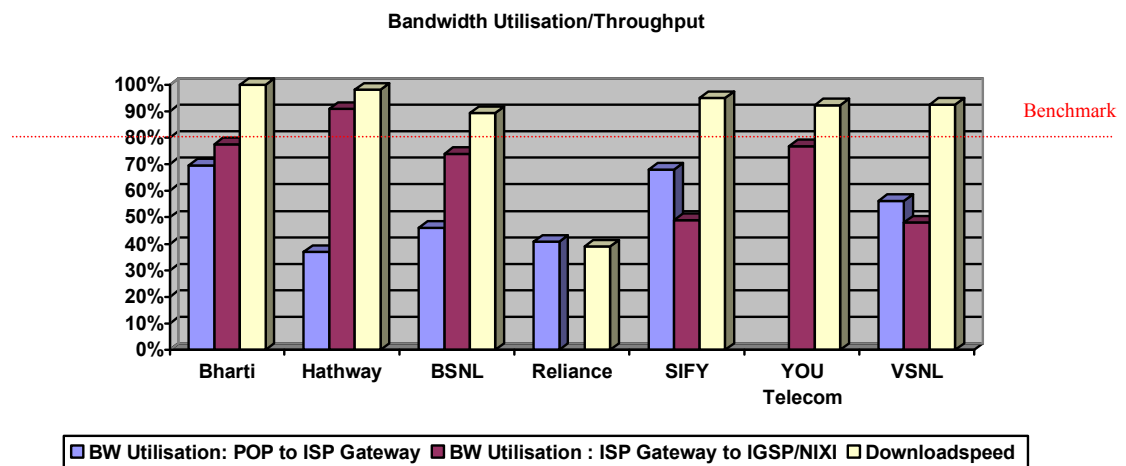
% age of calls answered by operator (Voice to Voice)

- **Within 60 seconds (>60%):** All the operators meet the benchmark.
- **Within 90 seconds (>80%):** All the operators meet the benchmark.

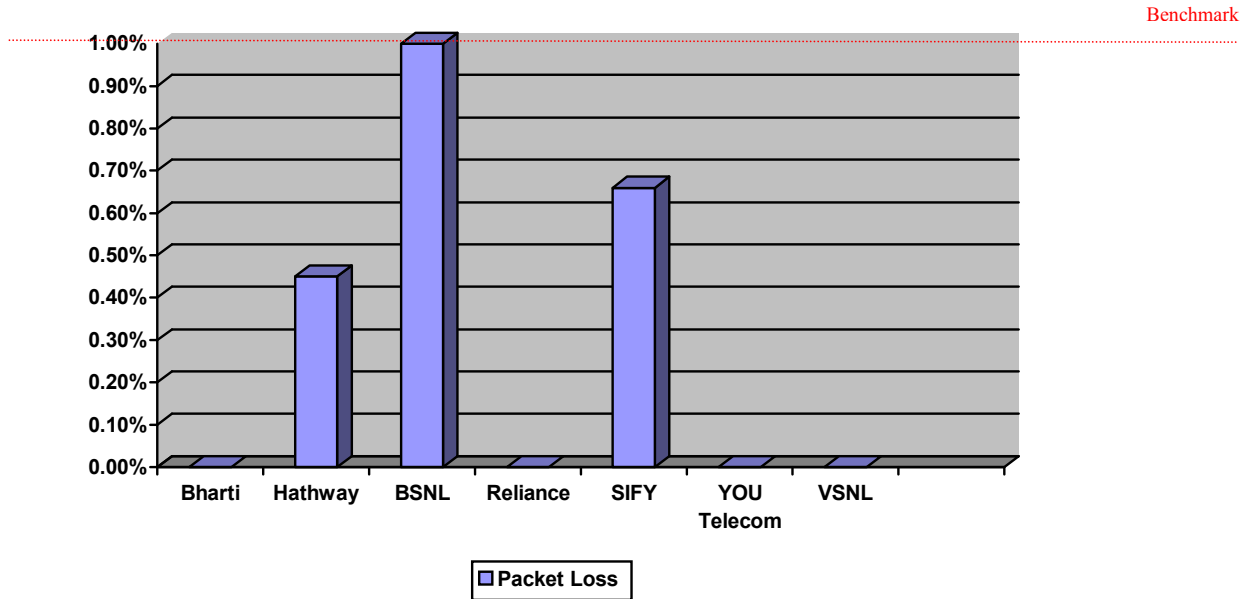


2.0 Bandwidth Utilization/ Throughput:

- POP to ISP Gateway Node [Intra-network] Link(s): (Benchmark <80%): All the operators meet the benchmark.
- ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity: (Benchmark <80%): All the operators meet the benchmark except for Hathway(91%) deviating marginally.
- Broadband Connection Speed (download) (>80%): All the operators meet the benchmark except for Reliance(39%).

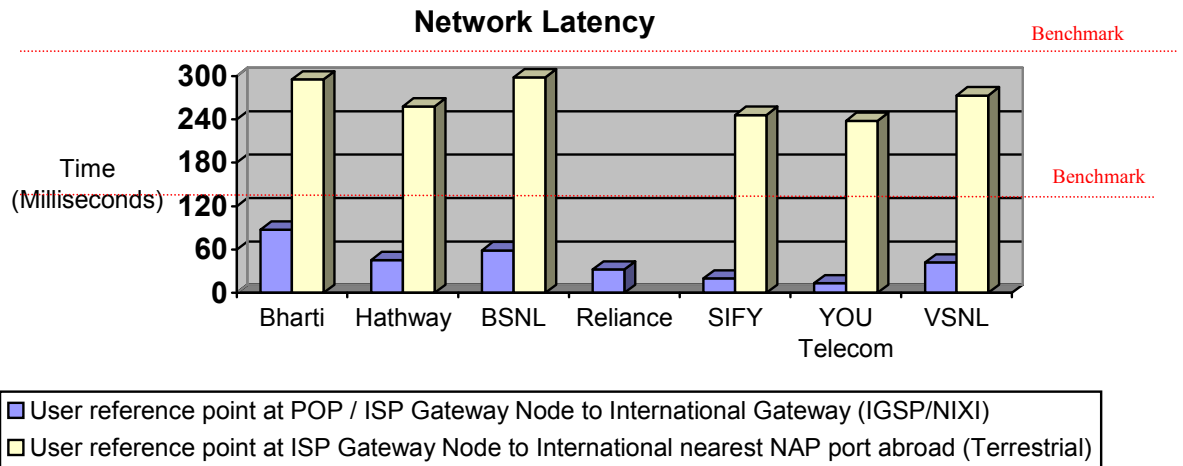


3.0 Packet Loss: (Benchmark <1%) : All the operators meet the benchmark.



4.0 Network Latency:

- User reference point at POP / ISP Gateway Node to International Gateway (IGSP/NIXI): (Benchmark <120ms): All the operators meet the benchmark.
- User reference point at ISP Gateway Node to International nearest NAP port abroad (Terrestrial): (Benchmark <350ms): All the operators meet the benchmark.
- User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite): Link does not exist for the any of the operator. Hence, Not applicable.



CHAPTER – 7

PERFORMANCE REPORT OF OPERATORS

7.1 QUALITY OF SERVICE ASSESSMENT : BASIC SERVICE (WIRELINER)

7.1.1 Service Provider Performance Report based on One Month Data Verification in which audit was conducted (September – November 2008).

S.N.	Parameters	BENCH-MARKS	AIRTEL	BSNL	RELIANCE	TTSL
1	Provision of a telephone after registration of demand					
	100 % cases within 7 days (subject to technical feasibility)	100%	98.84%	100%	100%	100%
2	Fault incidences					
	(No. of faults/100 subscribers /month)	< 3%	2.69%	6.64%	5.38%	3.0%
	By 31st June 2008					
3	Fault repair by next working day					
	By next working day	>90%	98.13%	91%	99%	92%
	Within 3 days	100%	100%	98%	100%	100%
4	Mean Time To Repair (MTTR)	<8 Hrs	6.64	8.7	5.06	7.6
5	Call Completion Rate within a local network					
	Should be better than 55%	>55%	60.40%	65.02%	77.02%	56.08%
6	Metering and billing credibility					
	Disputed Bills over bills issued	< 0.1%	0.17%	0.04%	0.04%	0.10%
7	Customer Care					
	(Promptness in attending to customers requests) 95% of requests					
	- Shifts (< 3 days)	95%	97.81%	100%	96.87%	100%
	- Closures (< 24 Hrs.)	95%	99.56%	100%	98.12%	100%
	- Additional Facility (< 24 Hrs.)	95%	99.50%	100%	96.76%	95%
8	Response Time to the customer for assistance					
	(i) % age of calls answered (electronically):					
	within 20 seconds	80%	100%	100%	100%	100%
	within 40 seconds	95%	100%	100%	100%	100%
	(ii) % age of calls answered by operator(voice to voice):					
	within 60 seconds	80%	83.78%	95.12%	99.59%	93.07%
	within 90 seconds	95%	91.96%	95.12%	99.91%	94.76%
9	Time taken for refund of deposits after closure (100% within 60 days)	100%	100%	100%	100%	100%

■ Indicates deviation from benchmark of TRAI.

Critical findings and Key take outs

7.1.2 Basic service (Wireline)

- ◆ The Basic service (Wireline) audit for Gujarat Circle broadly indicates that almost all the service providers are meeting the benchmarks fixed by Telecom Regulatory Authority of India (TRAI) with exceptions in some areas as described in the report.
- ◆ The live calling results of call center for response time to the customer for assistance are found to be different from the 1 month data audited with some operators. This may be due to small sample size of 3-days measurement.
- ◆ In the live measurements conducted to assess Call Completion Rate (CCR), it was found that all the operators are meeting the benchmark.
- ◆ The testing of the efficiency of level 1 services (Police, Fire brigade, Ambulance, Trunk booking, Child helpline, Women helpline, Airline booking, etc.) provided by the service providers in Gujarat Circle has been conducted by TCIL auditors. To test the same, 300 calls were made to different numbers provided by service providers and answered call was recorded. The efficiency of level 1 services of all the operators are found to be excellent with 100% successful calls rate.
- ◆ To test the Service Providers performance on Technical (Network related complains) & Non-Technical (Provisioning, Billing, Refund etc.) complaint handling TCIL auditors have conducted a customer feedback calling for random 100 nos of customers in each segment. It was found that more than 95% customers are satisfied with services provided by the operators.
- ◆ The BSNL has a decentralised system for Book keeping, and data has been verified only for sample 5% of exchanges spread over 10% of Short Distance Charging Area (SDCA's) in Gujarat Circle.

The parameter wise key takeouts for the Basic (Wireline) Service providers for the Gujarat Circle are as under:-

Provision of telephone after registration of demand

Airtel is found to be marginally deviating from the TRAI benchmark of 100% for provisioning of telephone within 7 working days. BSNL, Reliance and TTSL are fully complying the benchmark.

Fault incidence

Airtel with 2.69% and TTSL with 3% meet the benchmarks of <3% set by TRAI. However major deviations are observed for BSNL (6.64%) and Reliance (5.36%) during one month data audit. The similar deviation was observed for BSNL (5.9%), TTSL (4.3%) at the time of PMR verification.

Fault Repair

It is found that all the operators meeting the benchmarks of >90% set by TRAI for one month data audit and PMR data verification. The live calling scores for the fault repair within 24 hours it was found that almost all the operators are better than 95% of customer satisfaction. While verification of records of service providers it was found that all the service providers are providing rebates as per TRAI norms.

Mean Time to Repair (MTTR)

All the operators are meeting the benchmark of <8hrs fixed by TRAI except for BSNL, which at 8.7hrs was marginally deviating. It is also found while PMR data verification that all the operators are complying the benchmarks of TRAI for Mean Time to Repair (MTTR).

Call Completion Rate (CCR)

All the service providers are found to be meeting TRAI benchmark of >55% for Call Completion Rate (CCR) during the PMR data verification, 3-days live measurement and one month data verification in which audit was conducted.

However in the case of Reliance, the Answer Seizure Ratio (ASR) is measured in place of Call Completion Rate (CCR) and the firm claims that the same is a better indicator for the kind of network owned by the Reliance.

Metering and billing credibility

Bharti with 0.17% billing complaint was not found to be meeting the benchmark of less than 0.1% billing complaints over the total number of bills issued during the one-month data audit, where as all other operators are complying the benchmark.

As per the findings for one-month data audit, all the operators were found to meet the sub-parameter “% age of billing complaints resolved within 4 weeks”.

Customer care (Promptness of attending customer request)

Shift:- All the operators are meeting the TRAI benchmarks of 95% for shift requests.

Closure:- All the operators are meeting the TRAI benchmarks of 95% for closure requests. It was observed that only TTSL does not meet this benchmark during PMR data verification

Additional Facility:- All the operators are meeting the benchmarks of 95% additional facility requests.

Response time to customer for assistance (Electronically)

Response Time to the customer for assistance calls answered electronic through IVR menu parameter, live calling, one month data audit and PMR data verification scores for all the operators are found to be within the benchmarks for call answered in 20 and 40 seconds.

Response Time to Customer for Assistance (Voice to Voice):

Within 60 Seconds:- Response Time to the customer for assistance calls answered by operators parameter, live calling during 3-days live measurement & PMR data verification all the operators are meeting the benchmark except for Bharti (76% & 78% respectively) does not meets the benchmark, where as for one month data audit it is found to be all the operators are meeting the benchmarks of 80% set by the TRAI.

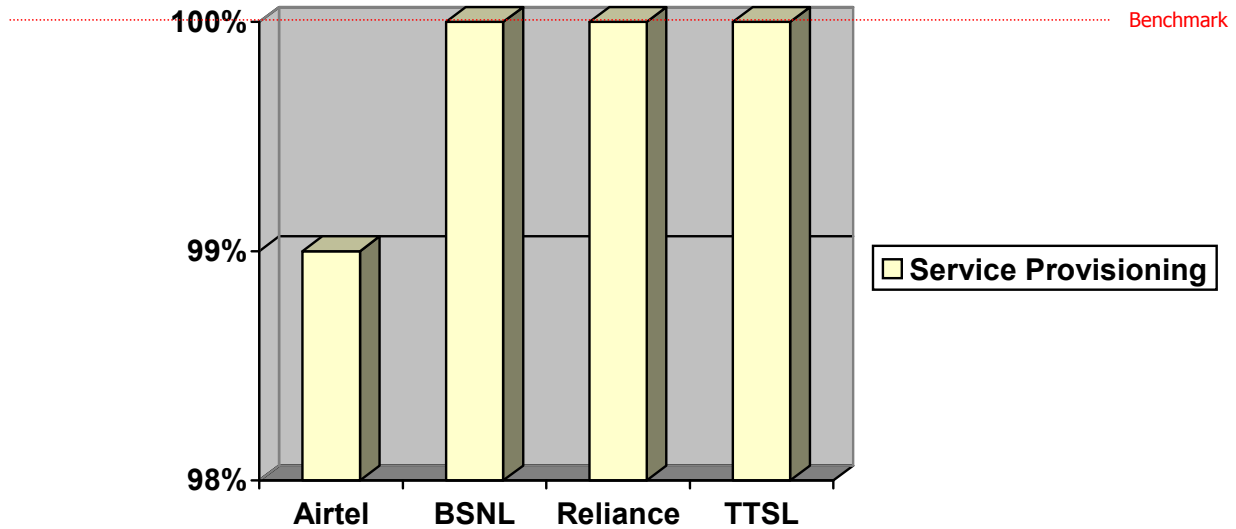
Within 90 Seconds:- Response Time to the customer for assistance calls answered by operators within 90Seconds parameter, live calling during 3-days live measurement all the operators are meeting the benchmark of 95% fixed by TRAI except for Bharti (94%, 91.96% & 83% respectively) does not meets the benchmark. Where as, one-month data audit and PMR data verification all the operators are meeting the benchmark except for TTSL (94.76% & 94% respectively) does not meets the benchmark.

Time taken for refund of deposits after closure

The audit finding on 'time taken for refund of deposit after closure' that all the operators are providing the refund to the customers within the benchmark, hence all are found to be at 100% against the benchmark level of 100%.

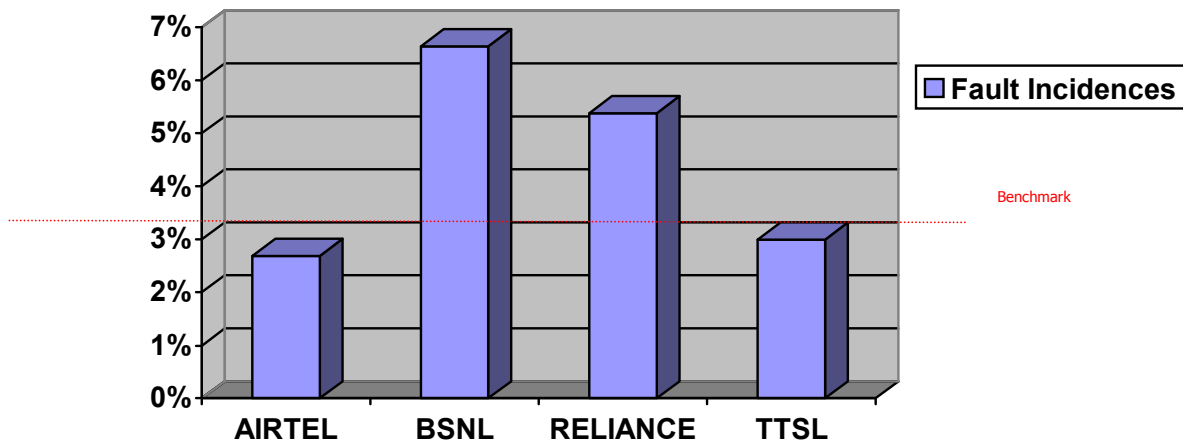
7.1.3 Parameter wise Data Analysis & Graphical Representations – Basic Service (Wireline)

1.0 Service Provisioning /Activation Time(100 % cases within 7 days, subject to technical feasibility): BSNL(100%) & Reliance(100%) and TTSL(100%) meets the benchmark. Airtel with 98.84% deviates marginally from the benchmark.



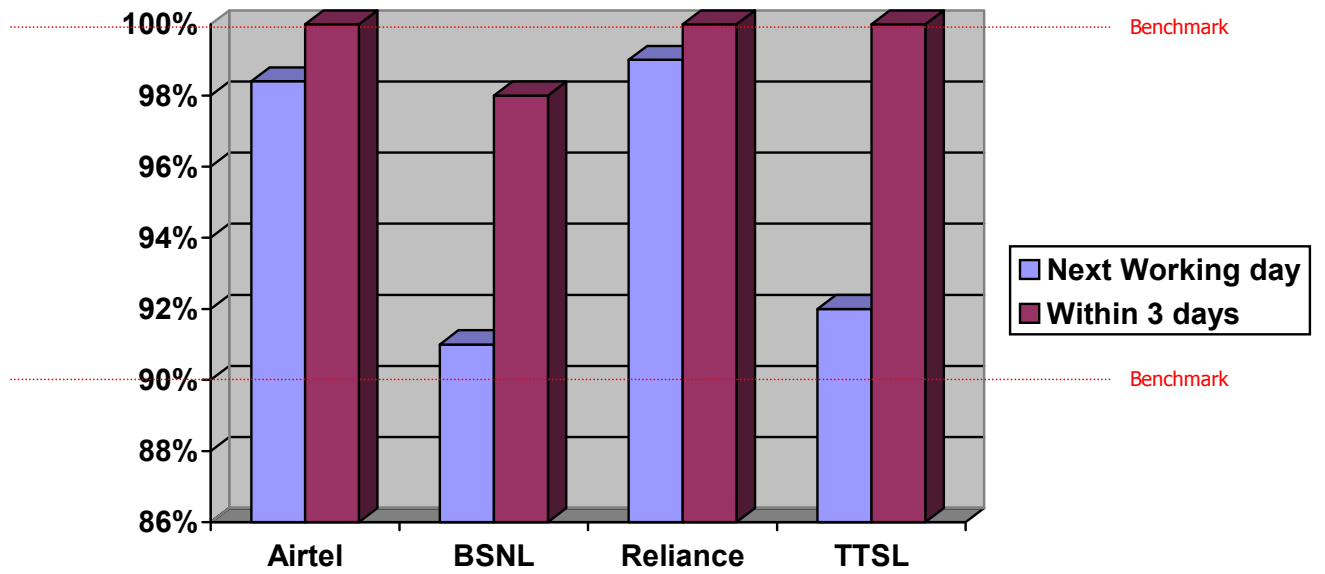
2.0 Fault Incidence (< 3%):

Nos of Faults per 100 subscribers per month : Airtel & TTSL are meeting the TRAI benchmark. BSNL & Reliance shows deviation from the benchmark.



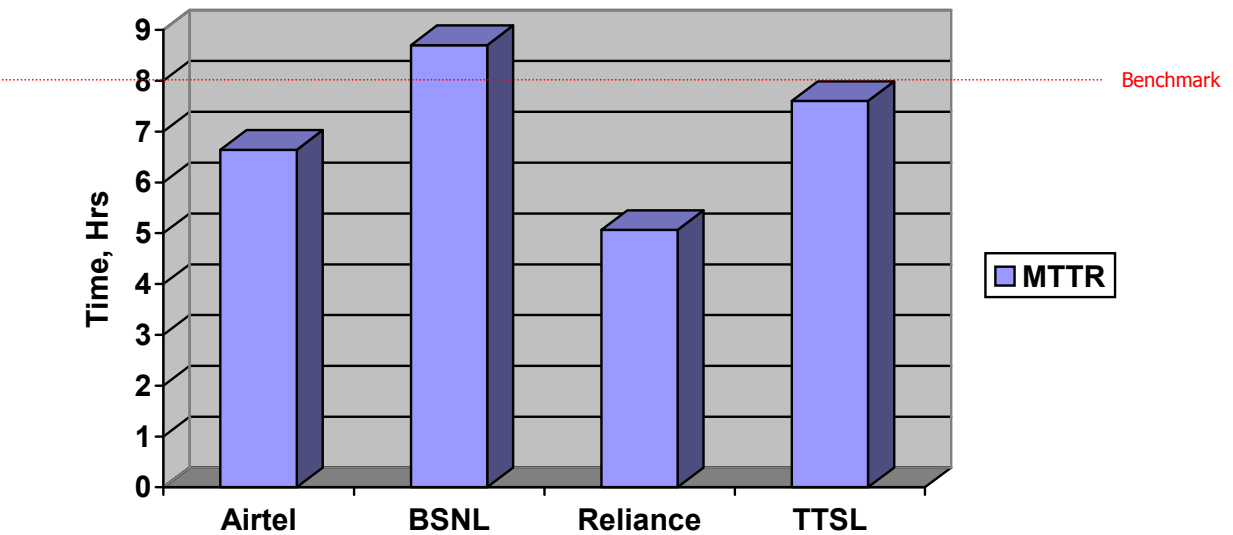
3.0 Fault Repair:

- By next working day (>90%): All the operators comply with the TRAI benchmark of 90% .
- within 3 working days (100%): All the operators comply with the TRAI benchmark of 100% except for BSNL (98%).



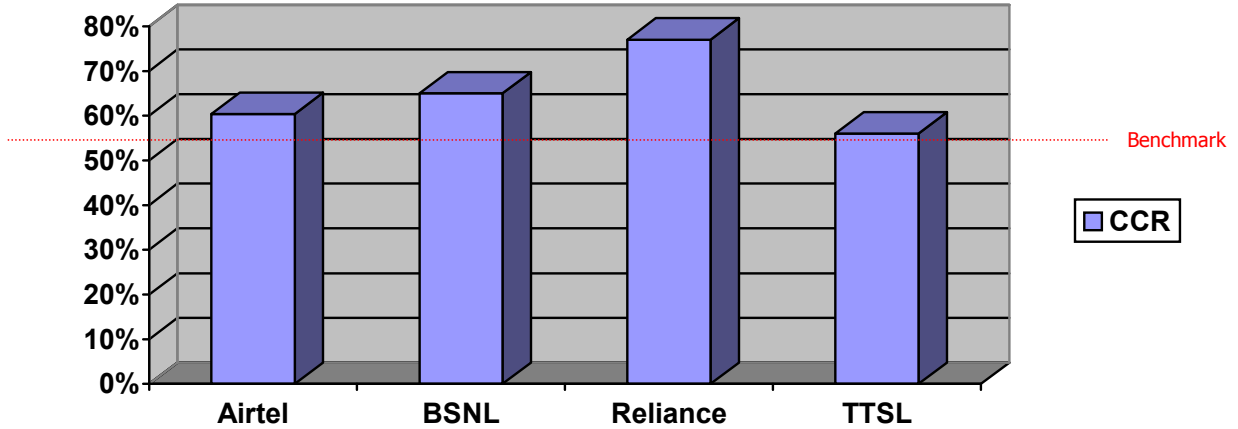
4.0 Mean Time to Repair (MTTR) (<8 Hrs):

All the operators comply with the TRAI benchmark except for BSNL (8.7).



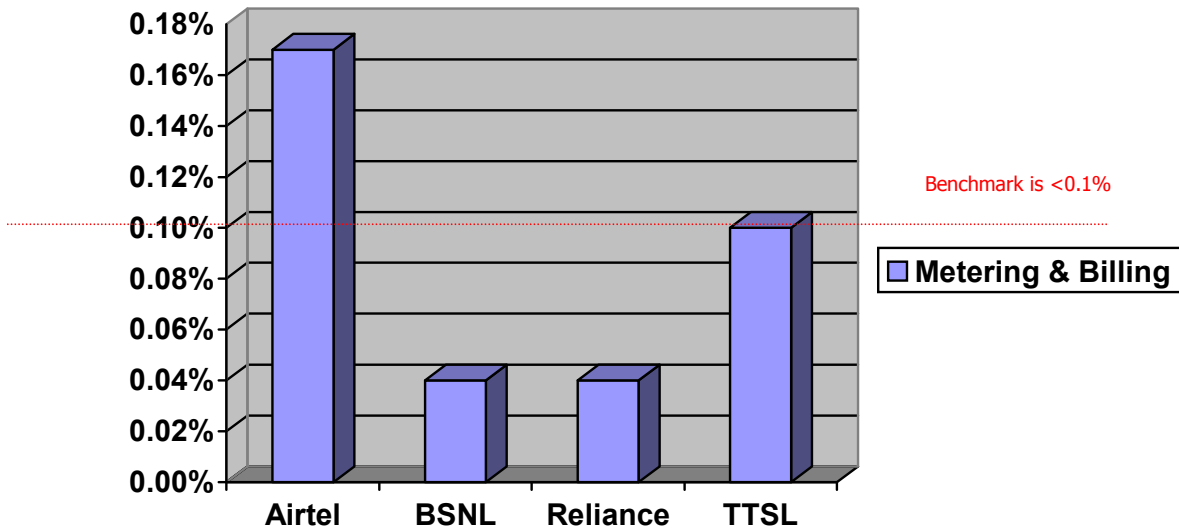
5.0 Call Completion Rate (CCR) (>55%):

All the operators comply with the TRAI standards.



6.0 Metering and Billing Credibility (<0.1%):

Disputed Bills over Bills issued:- All the operators meets the benchmarks except for Airtel.

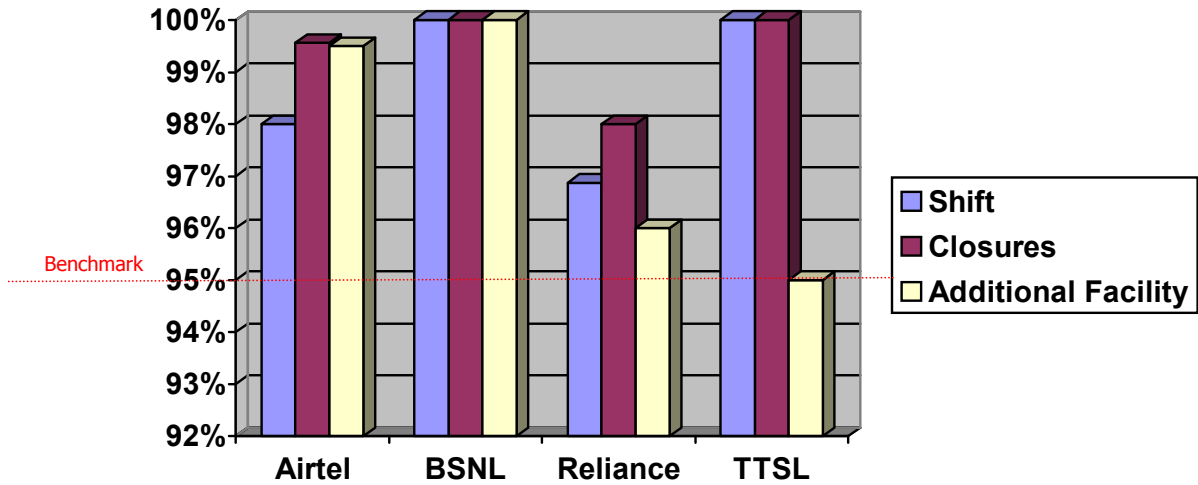


7.0 Customer Care (Better than 95%):

Shifts (>95%): All the operators are meeting the benchmark of TRAI.

Closures (>95%): All the operators are meeting the benchmark of TRAI.

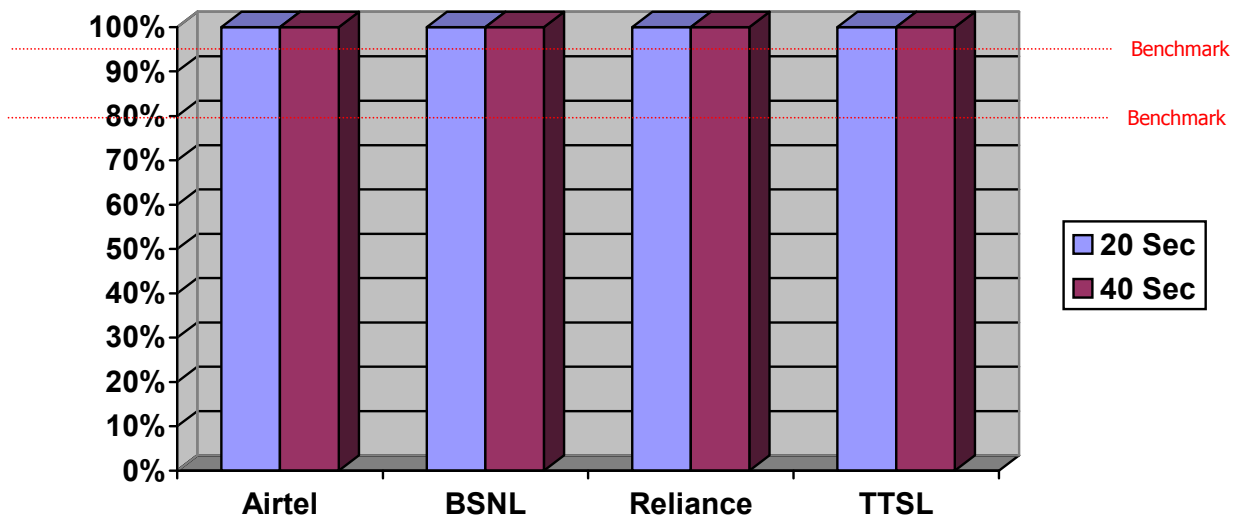
Additional Facility (>95%): All the operators are meeting the benchmark of TRAI.



8.0 Response time to the customer for assistance:

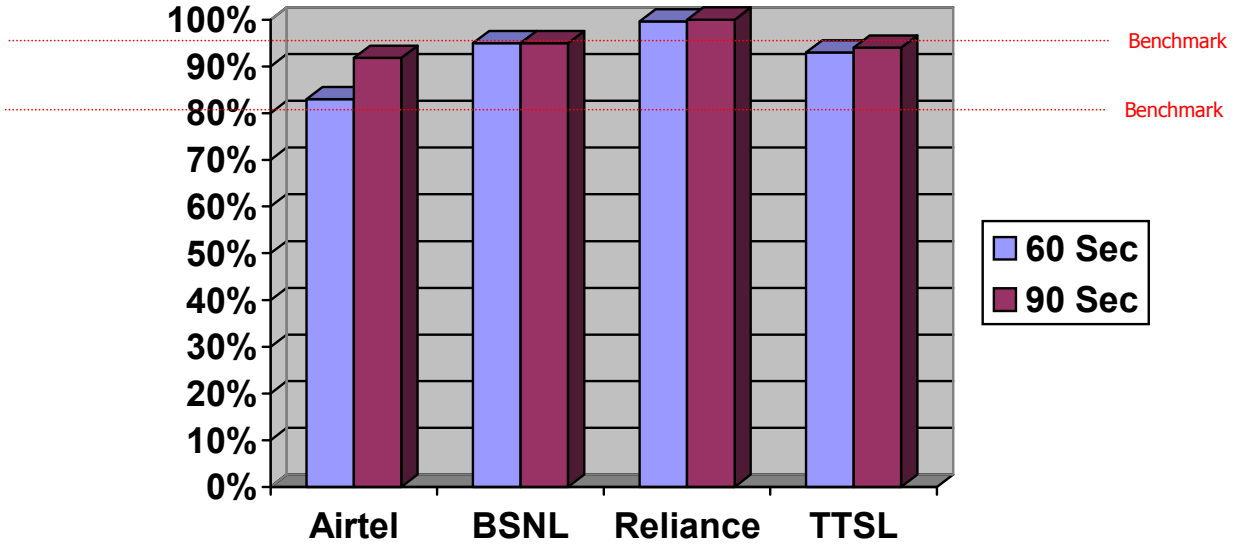
(i) % age of calls answered by operator (Electronically)

- Within 20 seconds (>80%): All the operators meeting the benchmark.
- Within 40 seconds (>95%): All the operators meeting the benchmark.



(ii) % age of calls answered by operator (Voice to Voice)

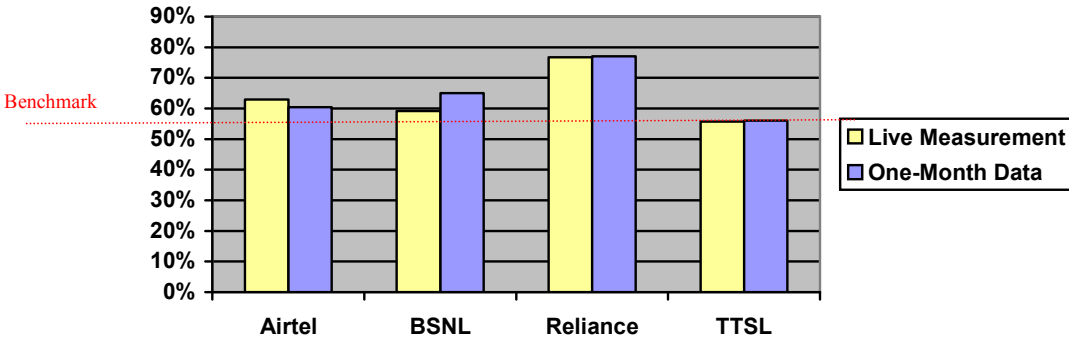
- Within 60 seconds (>80%): All the operators meet the benchmark.
- Within 90 seconds (>95%): All the operators meet the benchmark except for Airtel and TTSL.



7.1.4 Comparison between Live measurements and One month data Audit – Basic Service (Wireline).

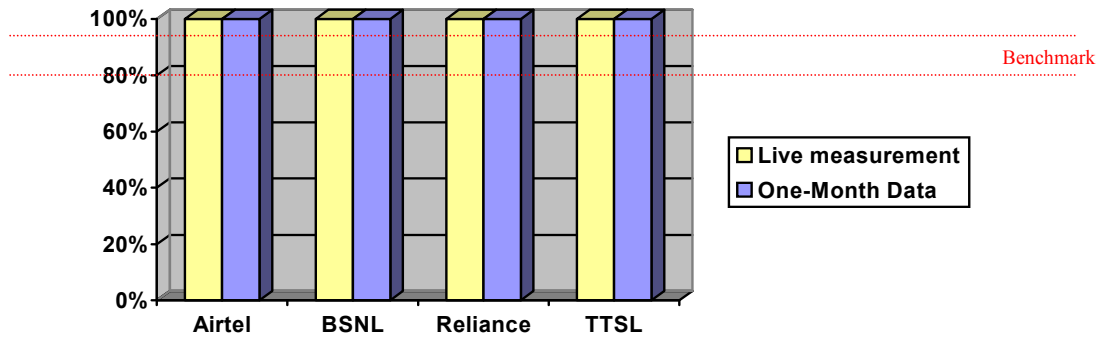
1.0 Call Completion Rate (>55%):

The performance based on Live measurement as well as One-Month Data match for all operators and they meet the benchmarks.



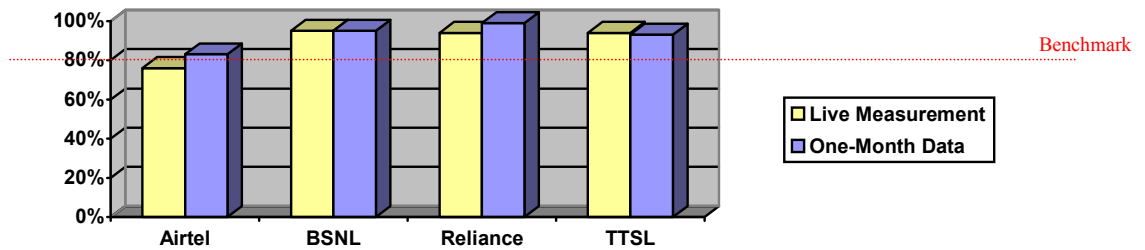
2.0 Response time to the customer for assistance:

(i) Calls answered Electronically (20 Sec.- >80% & 40 Sec.- >95%): All the operators meet the benchmark.



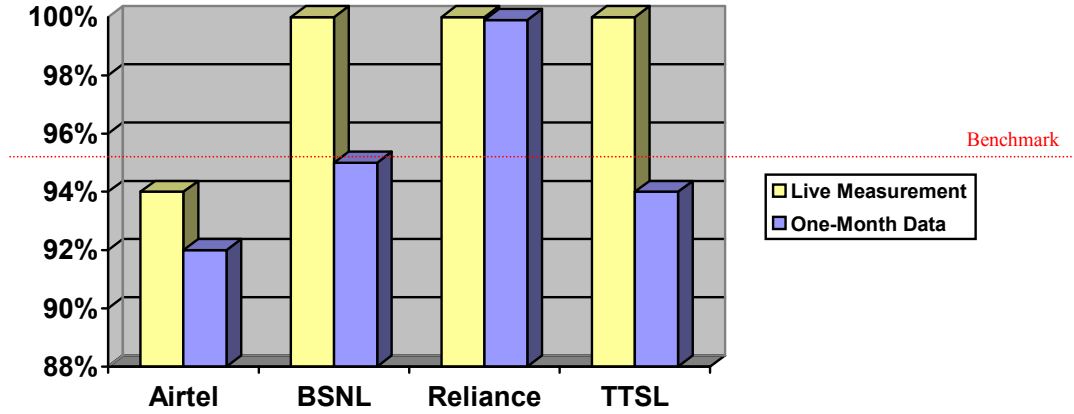
(ii) Calls answered by operator Within 60 seconds (>80%) (Voice to Voice) :

The performance based on Live measurement as well as One-Month Data are matching and all the operators meet the benchmark.



(iii) Calls answered by operator Within 90 seconds (>95%) (Voice to Voice) :


The performance based on Live measurement as well as One-Month Data are not similar in case of Airtel, BSNL & TTSL. The difference noticed may be due to small sample size of 3-days measurement.



7.2 QUALITY OF SERVICE ASSESSMENT : BASIC SERVICE (WIRELESS) AND CELLULAR MOBILE TELEPHONE SERVICES

7.2.1 Service Provider Performance Report based on One Month Data Verification in which Audit was conducted (September – November 2008).

S.N.	Parameters	Benchmark	GSM OPERATORS				CDMA OPERATORS	
			Airtel	Idea	BSNL	Vodafone	TTSL	Reliance
1	Network Performance							
1.1	Accumulated down time of Community Isolation	< 24 Hrs	18.21	2.46	0	0	0.67	0
1.2	Call set-up Success Rate (within licensee's own network) (%)	> 95%	95.88%	99.18%	99.3%	98.40%	99.11%	99.56%
1.3	Service Access Delay (Sec)	9 – 20 Sec	4.4	12.99	2.3	10.5	11.7	13.19
1.4	Blocked Call Rate							
	(i) SDCCH Congestion (%)	< 1%	0.10%	0.71%	0.15%	0.18%	0%	0%
	(ii) TCH Congestion (%)	< 2%	0.29%	0.20%	1.92%	0.28%	0.02%	0.44%
	(iii) Cell exceeding 80% TCH utilization (Nos)		3485	3218	1363	131	6	1.7
1.5	(i) Call Drop Rate (%)	< 3%	1.8%	1.90%	2.70%	1.07%	0.45%	0.86%
	(ii) Cell exceeding 3% TCH drop (Nos)		2562	3017	1737	130	18	12.8
	(iii) Cell exceeding 3% TCH drop (%)		18.75%	27.80%	30.03%	0.78%	2%	1.23%
1.6	Percentage of connections with good voice quality (%)	> 95%	95%	97.02%	95%	96.98%	98.2%	99.3%
1.8	POI Congestion (%)	< 0.5%	2.73%	0%	0%	0%	0%	0%
2	Customer Help Lines:							
2.1	Response time to the customer for assistance							
	(i) % age of calls answered (electronically)							
	within 20 seconds (%)	> 80%	100%	100%	100%	99.29%	100%	97.54%
	within 40 seconds (%)	> 95%	100%	100%	100%	100%	100%	97.54%
	(ii) % age of calls answered by operator (voice to voice):							
	Within 60 seconds (%)	> 80%	93%	10%	86%	95.27%	93%	89%
	Within 90 seconds (%)	> 95%	99%	24%	96%	96.96%	95%	93.6%
3	Billing Complaints							
3.1	Billing complaints per 100 bills issued (%)	0.1%	0.04%	0.07%	0.04%	0.058%	0.07%	0.08%
3.2	% of billing complaints resolved within 4 weeks (%)	100%	100%	97.22%	100%	100%	100%	100%
3.3	Period of all refunds / payments due to customers from the date of resolution of complaints as in (ii) above (weeks)	< 4 weeks	< 4 week	< 4week	< 2 weeks	< 4 weeks	< 4 weeks	< 4 weeks

 Indicates deviation from benchmark of TRAI.

Critical findings and Key take outs

7.2.2 Basic service (Wireless) & Cellular Mobile Services

- ◆ Audit has been done for all MSCs of all service providers in Gujarat circle. Audit activity has been done in three stages as 3 days live assessment, one-month data audit & PMR validation. We have found all the service providers are meeting benchmark by and large.
- ◆ Data has been collected for busy hour of network in live assessment & month of audit for all service providers & verified that service providers are providing busy hour data for QOS service. We have found that TCBH hour is matching with network busy hour as provided by service providers for Gujarat circle.
- ◆ To test the Service Providers performance on Technical (Network related complains) & Non-Technical (Provisioning, Billing, Refund etc.) complaint handling TCIL auditors have conducted a customer feedback calling for random 100 nos of customers in each segment. It was found that more than 97% customers are satisfied with services provided by the operators.

The parameter wise key takeouts for the Basic (Wireless) & Cellular Mobile Services providers for the Gujarat Circle are as under:-

Accumulated downtime:

All operators are meeting benchmark. But, however Airtel is on the higher threshold of the benchmark.

Call setup success rate:

All operators are meeting benchmark.

Service access delay:

All operators are meeting benchmark for the live assessment & one-month data validation.

Blocked call rate:

(i) SDCCH congestion: All operators are meeting benchmark for live assessment & one-month data validation.

(ii) TCH congestion: All operators are meeting benchmark for live assessment & one-month data validation.

Call drop rate:

All operators are meeting benchmark. BSNL is found to be highest and TTSL is found to be lowest call drop for live assessment & one-month data validation.

Connections with good voice quality: All operators are meeting benchmark except for BSNL in live assessment.

POI Congestion:

All operators are meeting benchmark except for Airtel in live assessment & one-month data validation.

Customer care/Helpline:

All operators are meeting benchmark except for Idea & Reliance for the parameter “%age of call answered by operator(Voice to voice)” in live assessment & one-month data validation.

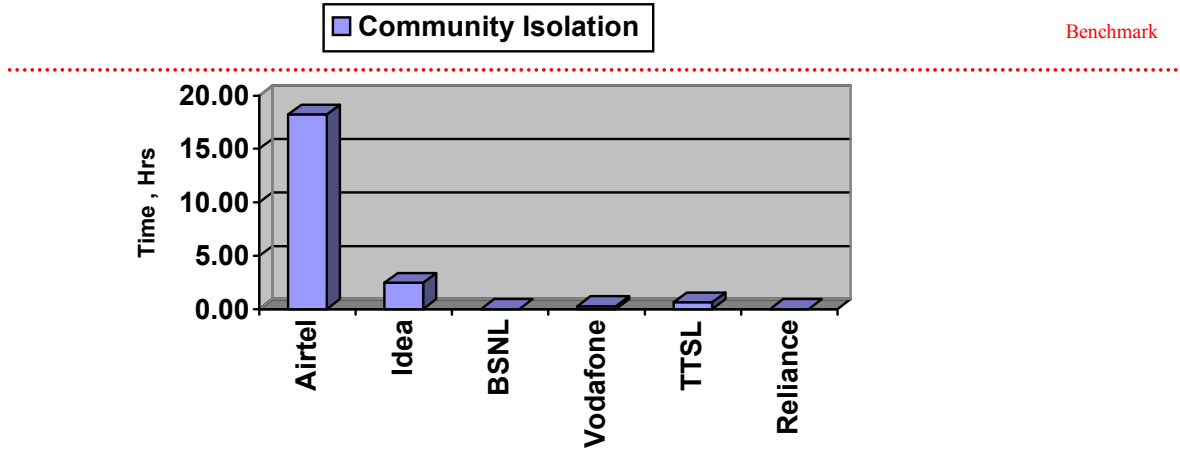
Billing Complaints:

All operators are meeting the benchmark.

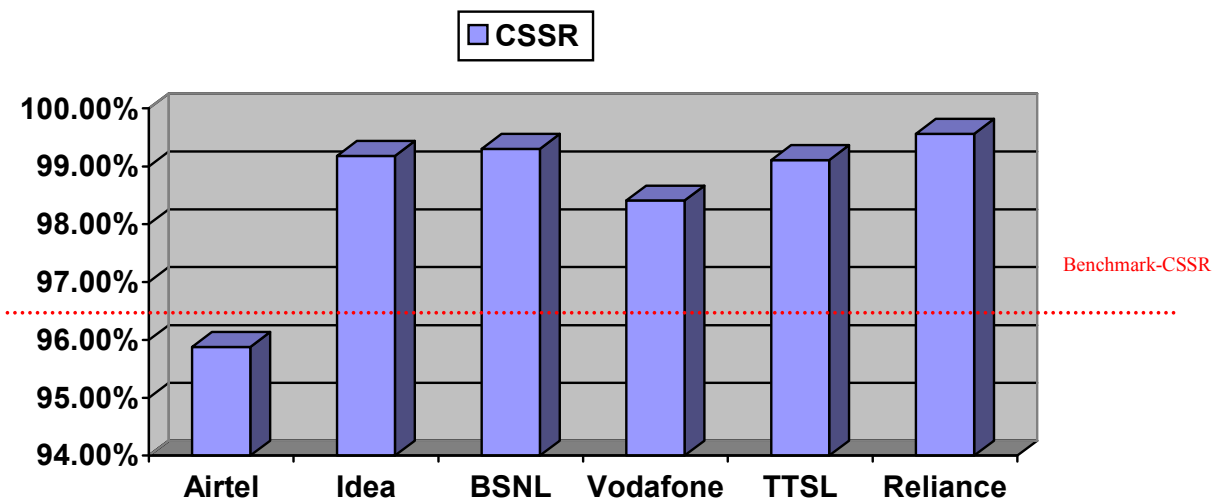
7.2.3 Parameter wise Data Analysis & Graphical Representations – Basic (Wireless) & Cellular Mobile Services

A) NETWORK PERFORMANCE

I. Accumulated down time of Community Isolation :(<24 Hrs): All operators meet TRAI regulations.

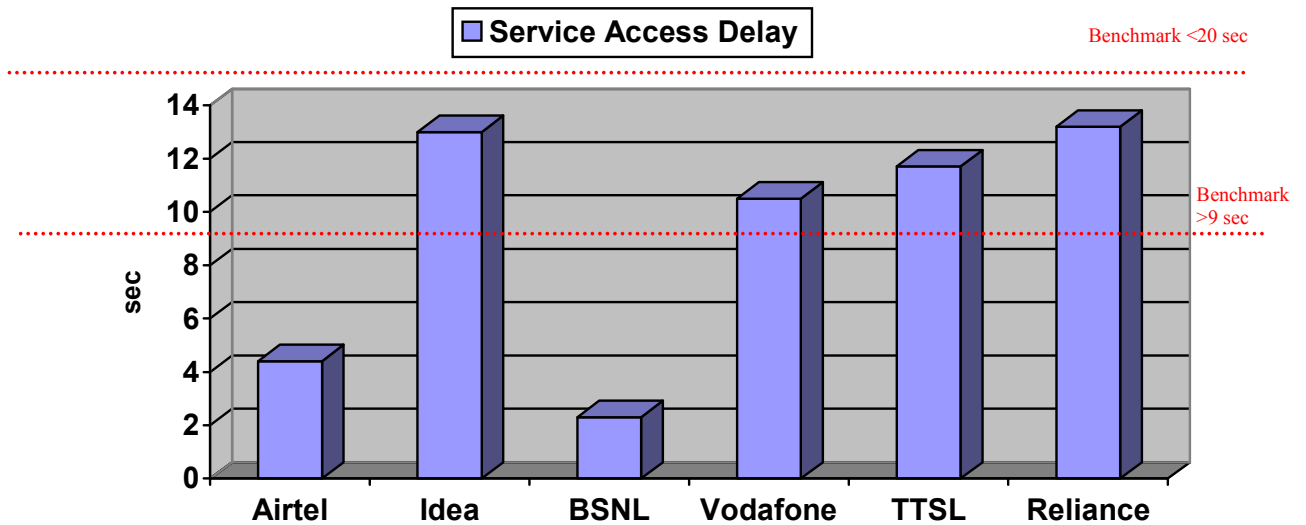


II. Call setup success rate: (>95) : All operators meet benchmark.



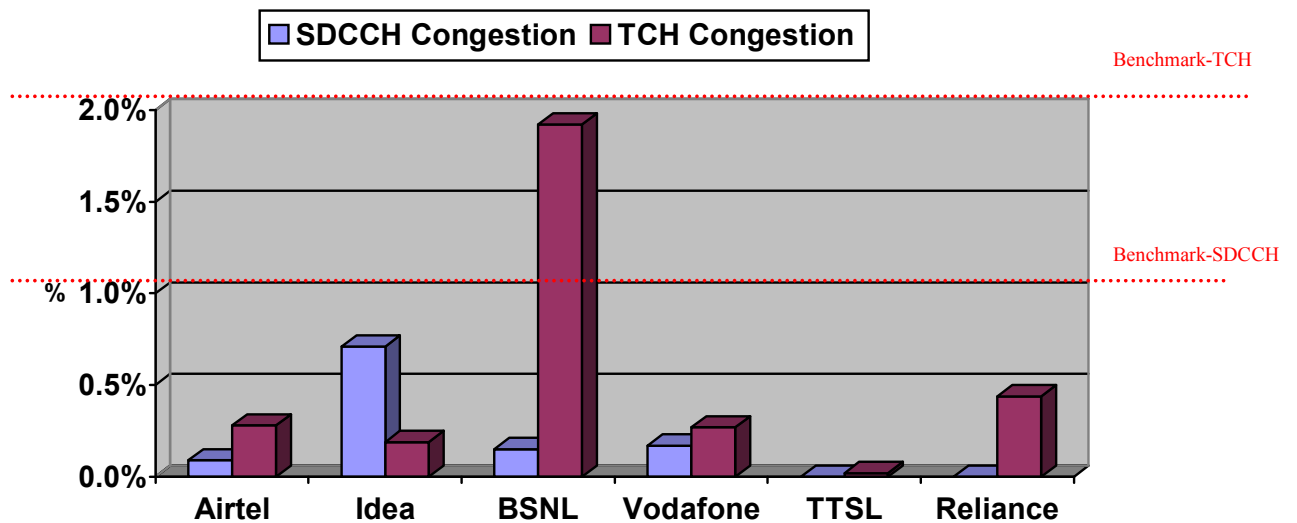
III. Service access delay:

All operators meet the benchmark (>9 to <20 sec.). Airtel & BSNL have a lower value than the lower limit (9 Sec).

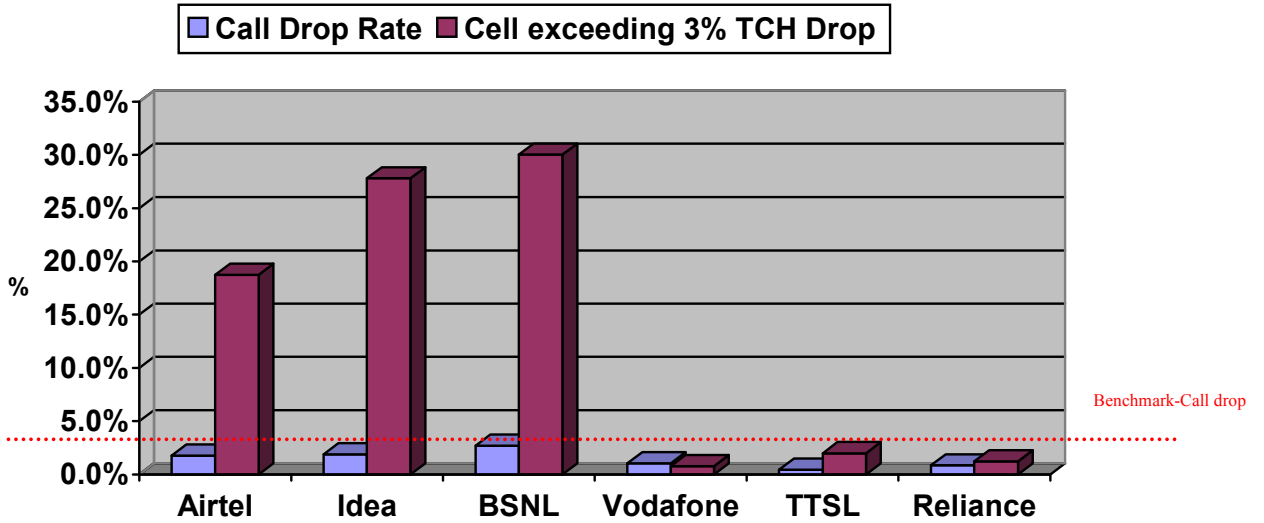


IV. Blocked call rate:

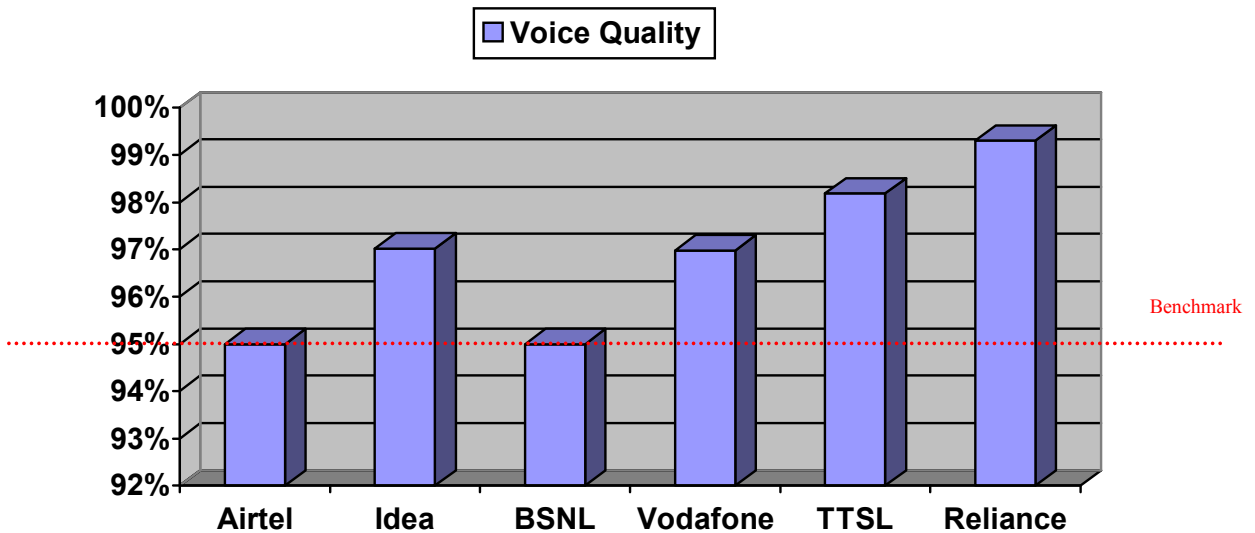
- (1) SDCCH congestion (%): (<1 %): All operators meet benchmark.
- (2) TCH congestion (%): (<2%): All operators meet benchmark



- V. 1. Call drop rate (%): (< 3%) All operators meet benchmark.
 2. %-age of Cell exceeding 3% TCH drop:

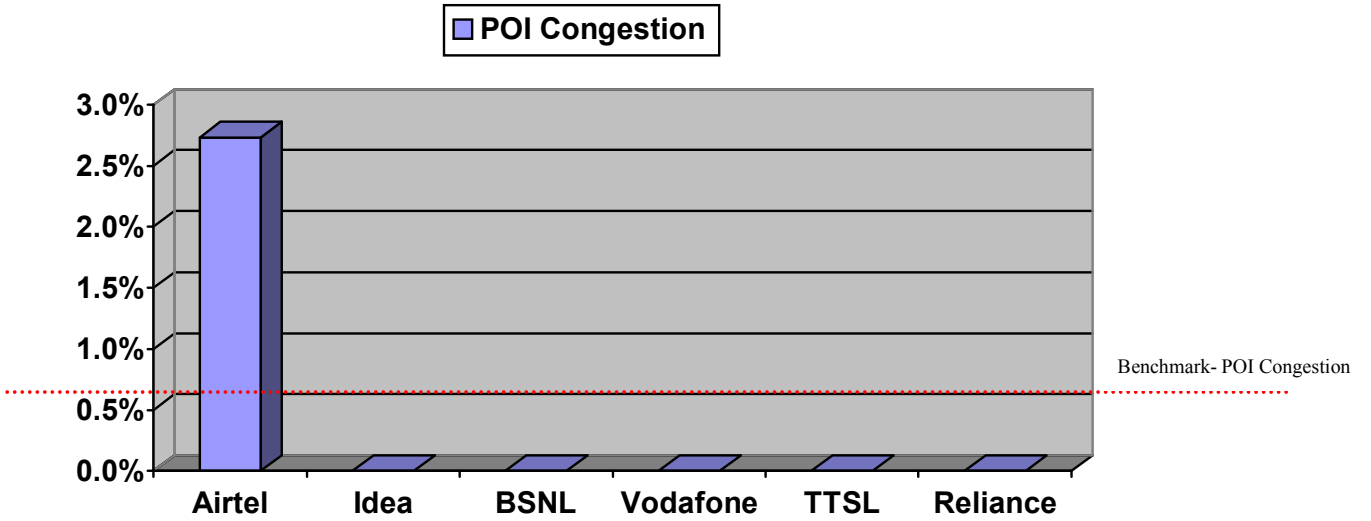


- VI. Percentage of connections with good voice quality: (>95%)
 All the operators meets the TRAI benchmarks.



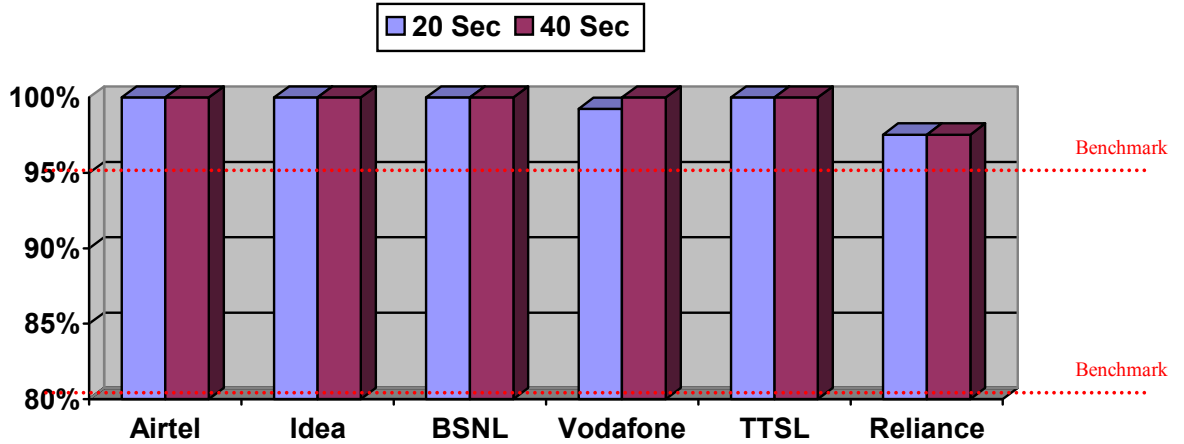
VII. POI Congestion: (<0.5%)

All operators meet benchmark except for Airtel (2.73 %)

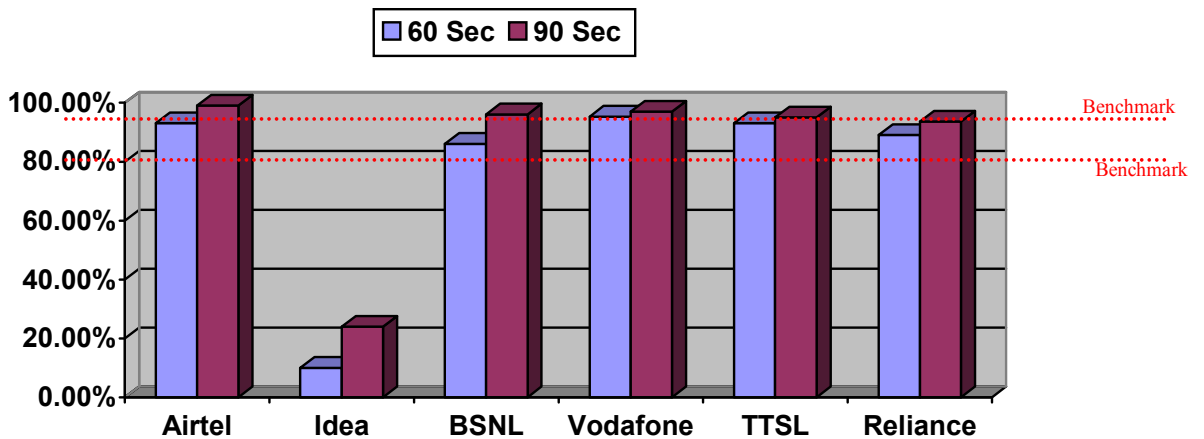


B) CUSTOMER HELPLINE PERFORMANCE

- I. Response time to the customer for assistance:
 Percentage of call answered (Electronically);
 With in 20 sec (%): (> 80%)
 All operators meet the TRAI benchmark.
 With in 40 sec (%): (>95%)
 All operators meet the TRAI benchmark.



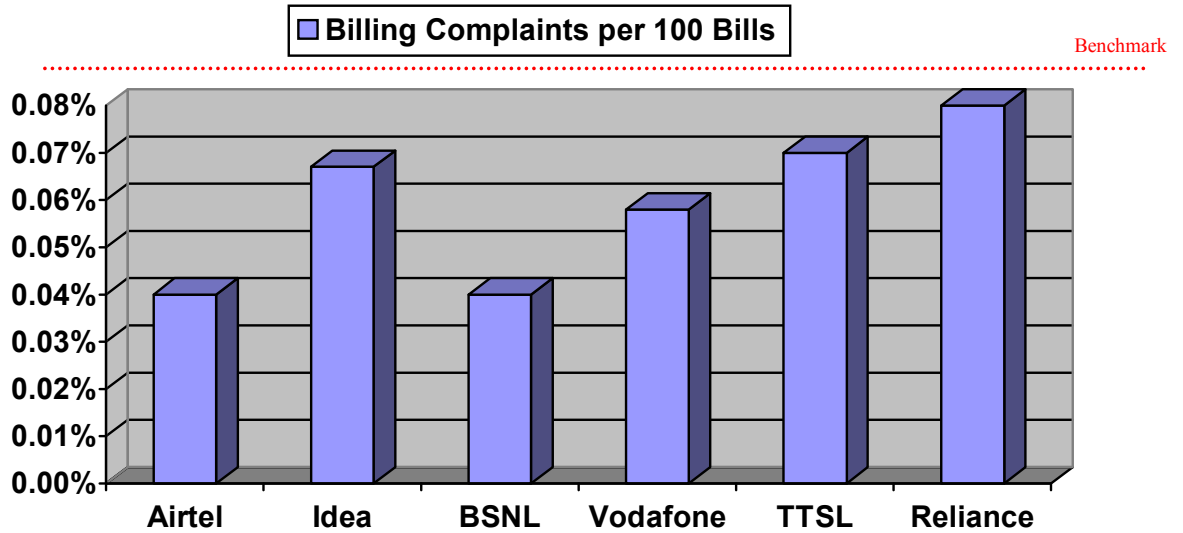
- II. Percentage of call answered by operators (Voice to voice);
 With in 60 sec (%): (>80%):
 All operators meet benchmarks except by Idea (10%).
 With in 90 sec (%): (>95%):
 All meet benchmarks except data not provided by Idea (24%) & Reliance (93.6%).



C) BILLING COMPLAINTS

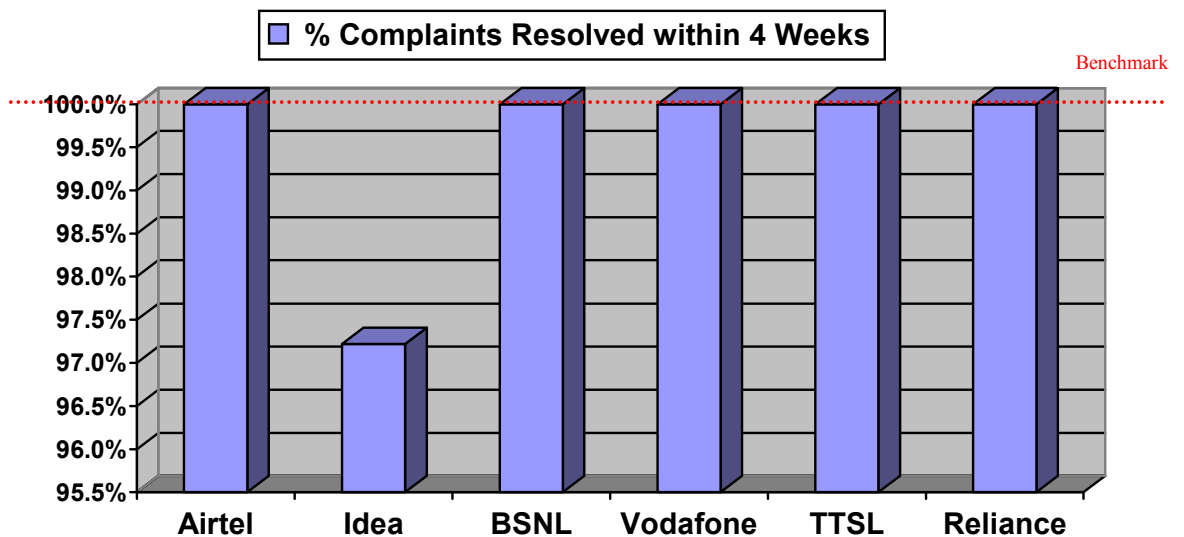
I. Billing Complaints per 100 bills issued:(>0.1%)

All operators meet the benchmarks.



II. Percentage of Billing Complaints resolved within 4 weeks: (100%)

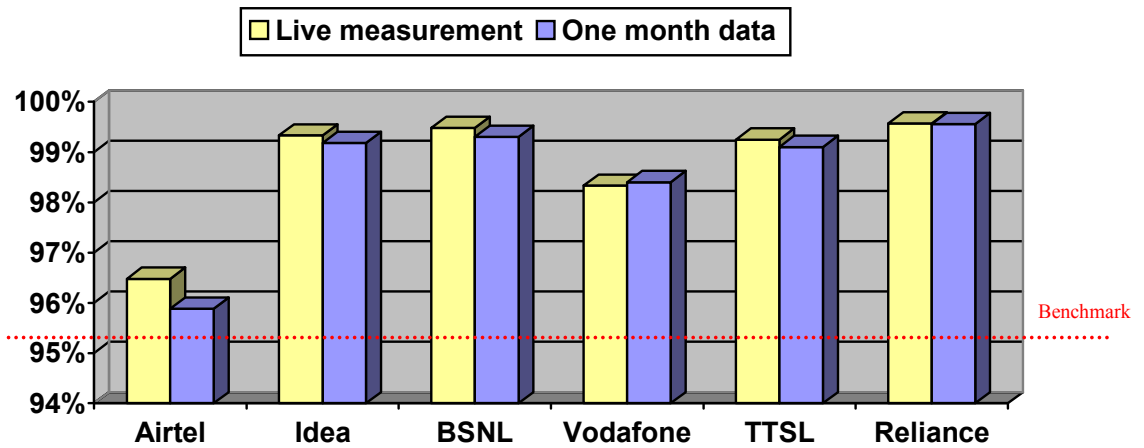
All except Idea (97.22%) meet the benchmarks.



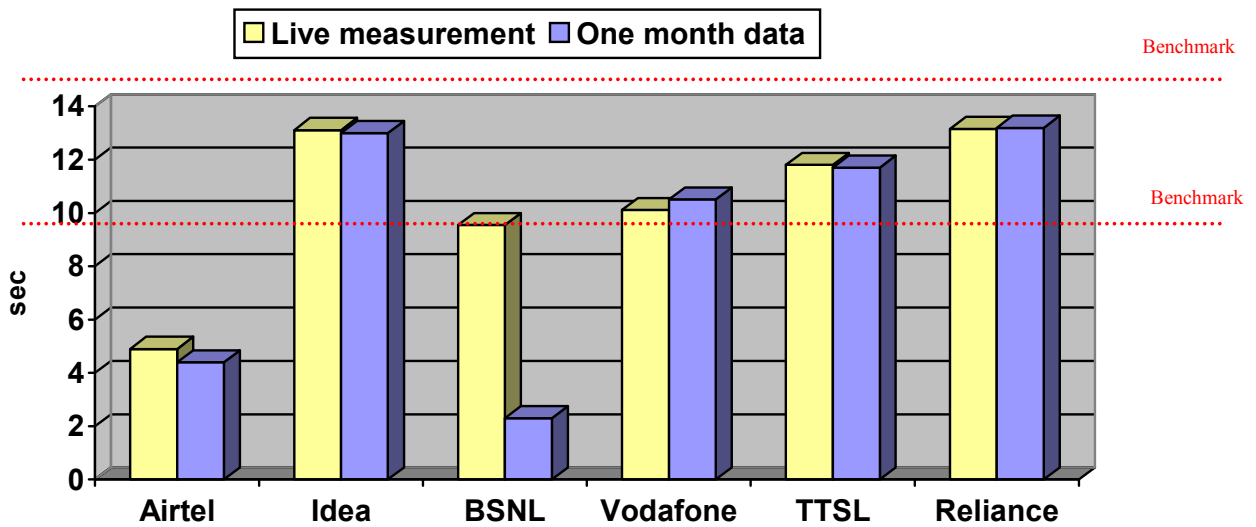
7.2.4 Comparison between Live measurements and One month data Audit – Basic (Wireless) And Cellular Mobile Telephone Services

A) NETWORK PERFORMANCE

I. **Call setup success rate:** All operators meet TRAI benchmarks (>95 %)

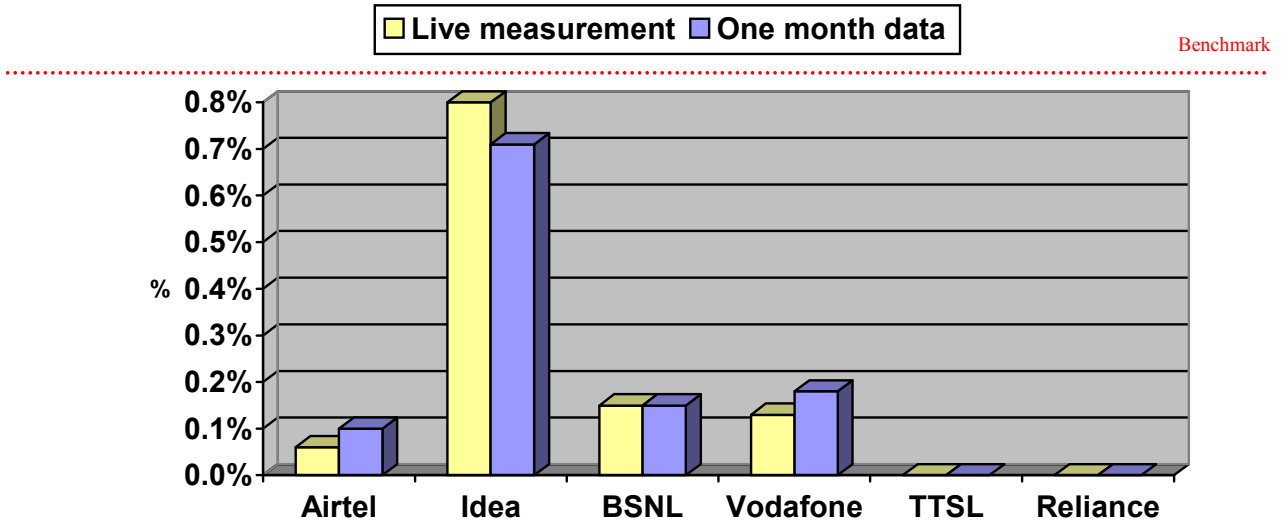


II. **Service access delay:** All operators meet the benchmark (>9 to < 20 sec). Here Airtel is below the lower limit set as benchmark in live measurement & month of data both. BSNL also below in month data.

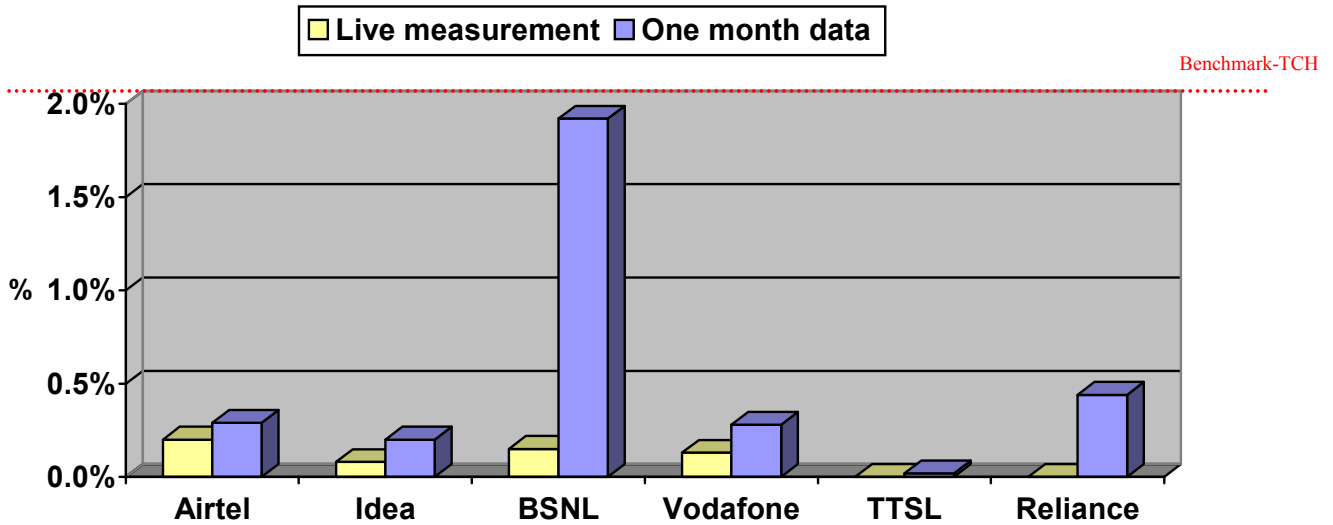


III. Blocked call rate:

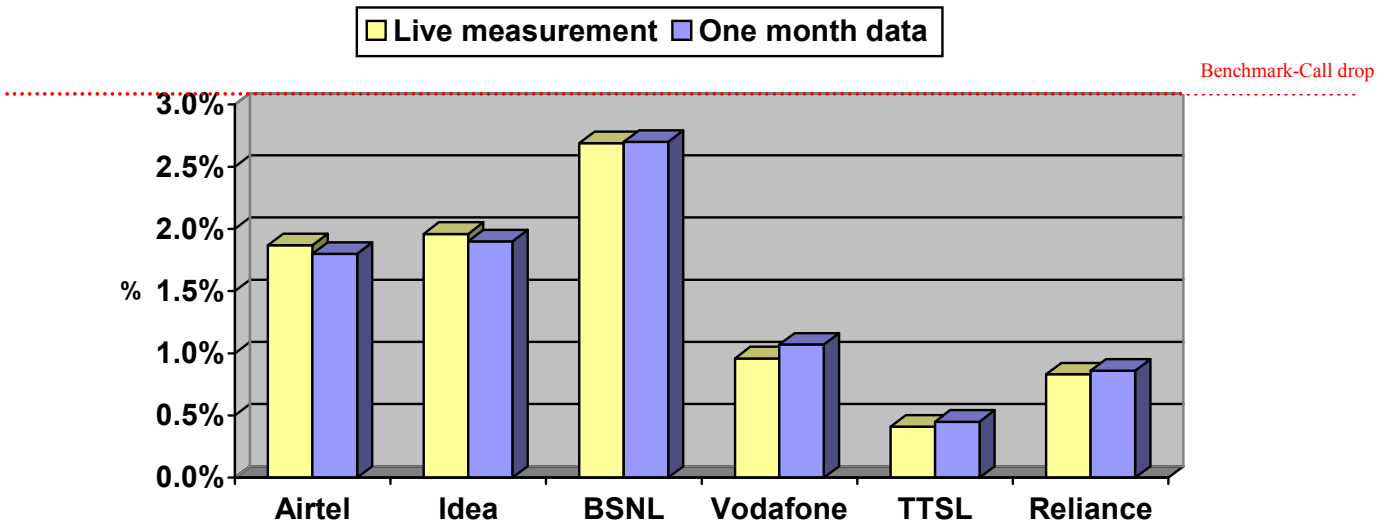
(1) SDCCH congestion (%): All operators meet benchmark (<1 %).



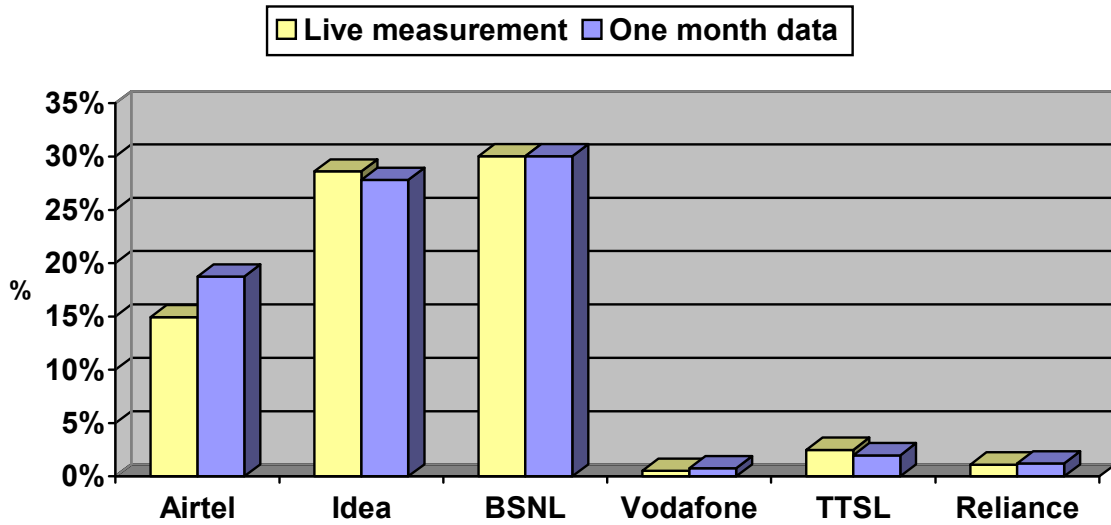
(2) TCH congestion (%): All operators meet benchmark (<2 %).



IV. 1) Call drop rate (%): All operators meet benchmark(benchmark <3%).

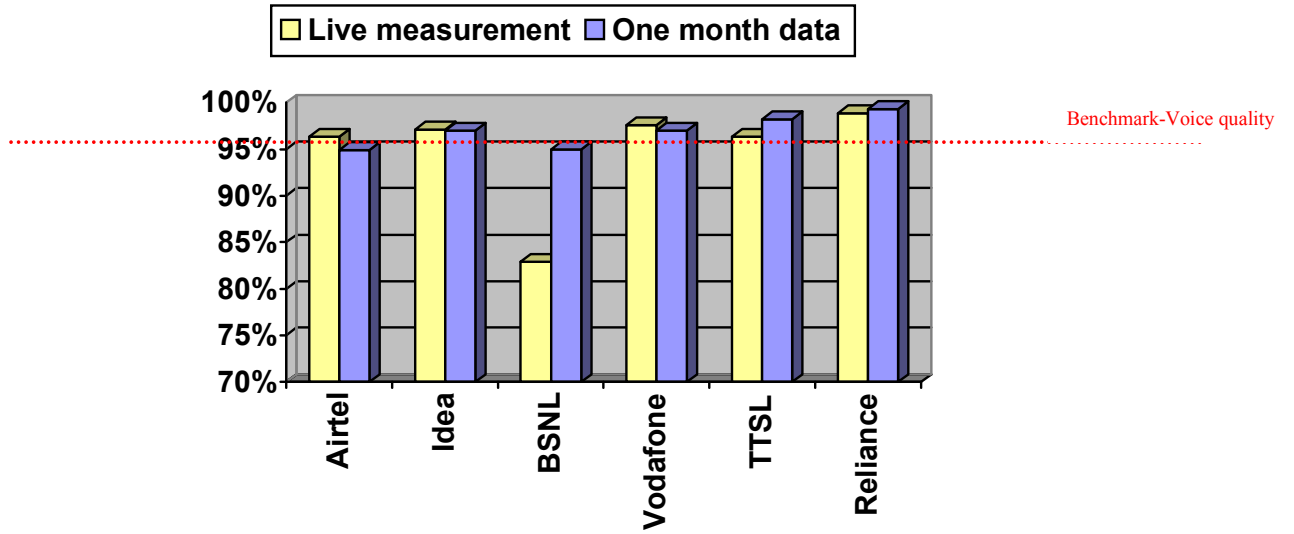


2) %-age Cell exceeding 3% TCH Drop:



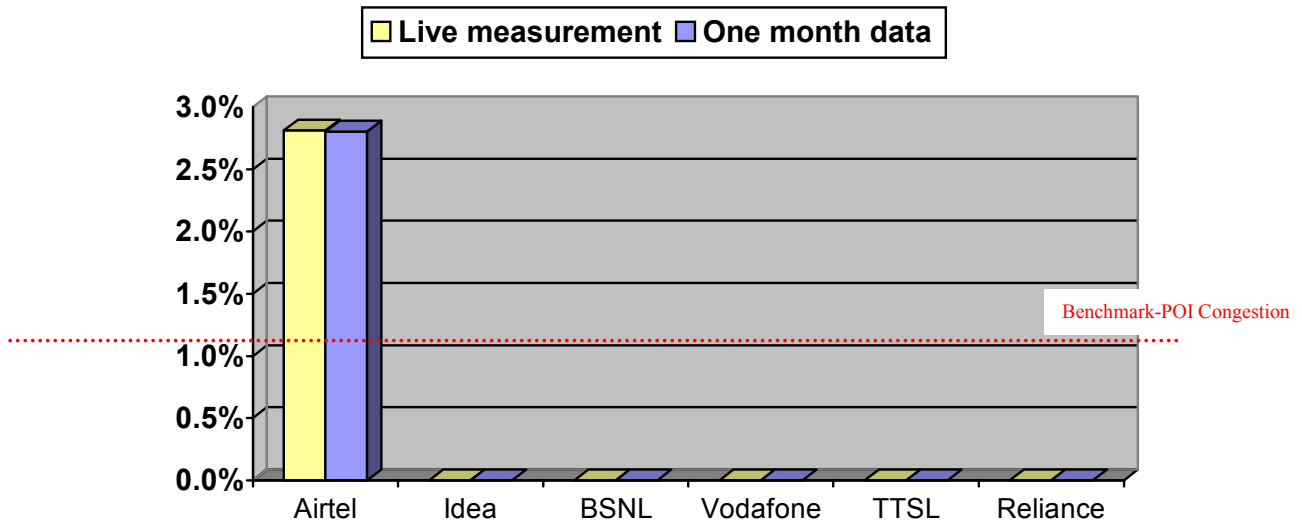
V. Percentage of connections with good voice quality (benchmark >95%):

All of operators meet TRAI benchmarks except BSNL (83%) not meeting benchmark in live measurement.



VI. POI Congestion:

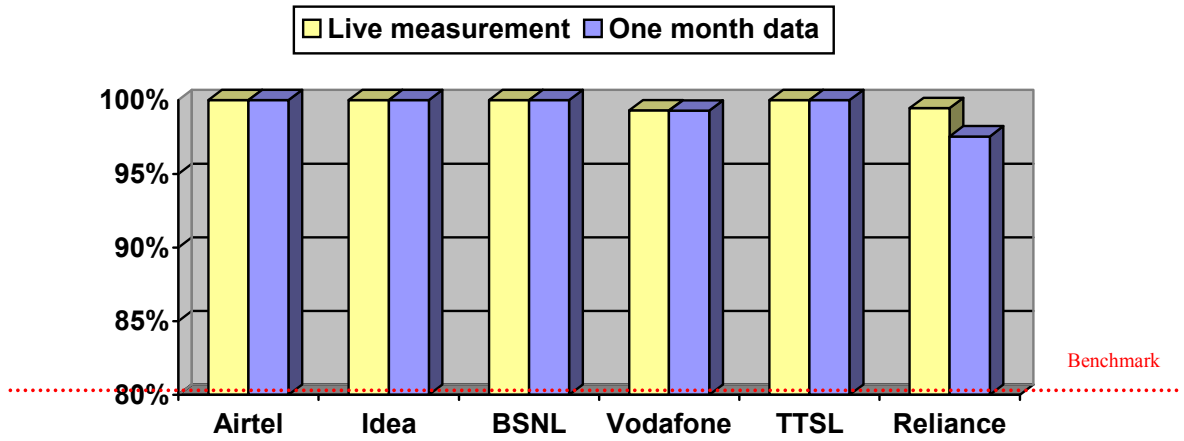
All operators meet benchmark (<0.5%) except for Airtel (2.81%). Airtel is not meeting benchmark in live measurement & month of audit both.



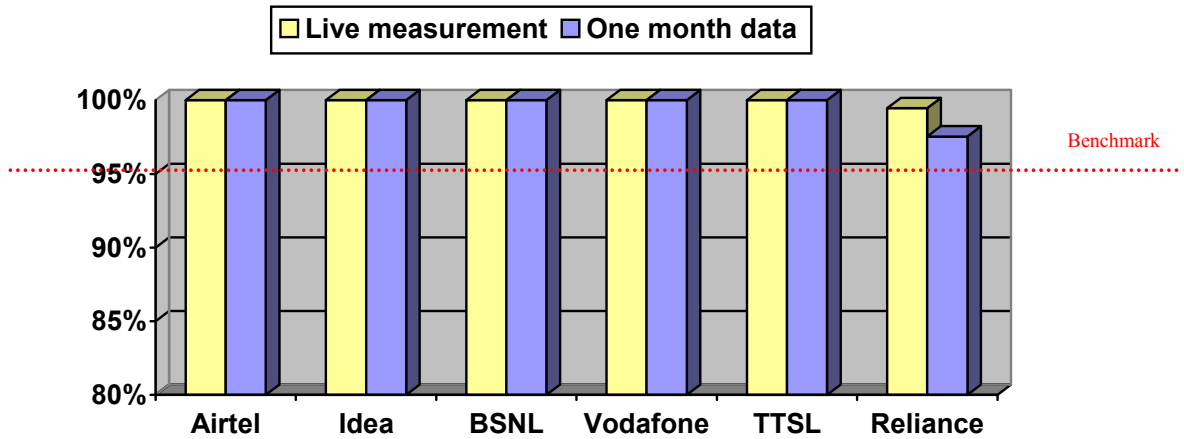
B) CUSTOMER HELPLINE PERFORMANCE

III. Response time to the customer for assistance:
Percentage of call answered (Electronically);

(i) With in 20 sec (%): All operators meet benchmark.(>80%)

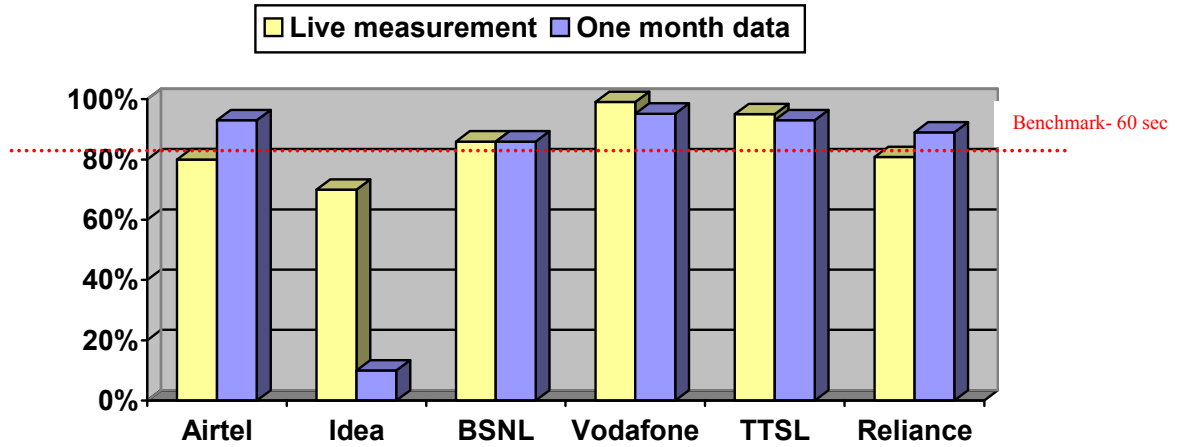


(ii) With in 40 sec (%); All operators meet benchmark.(>95%)

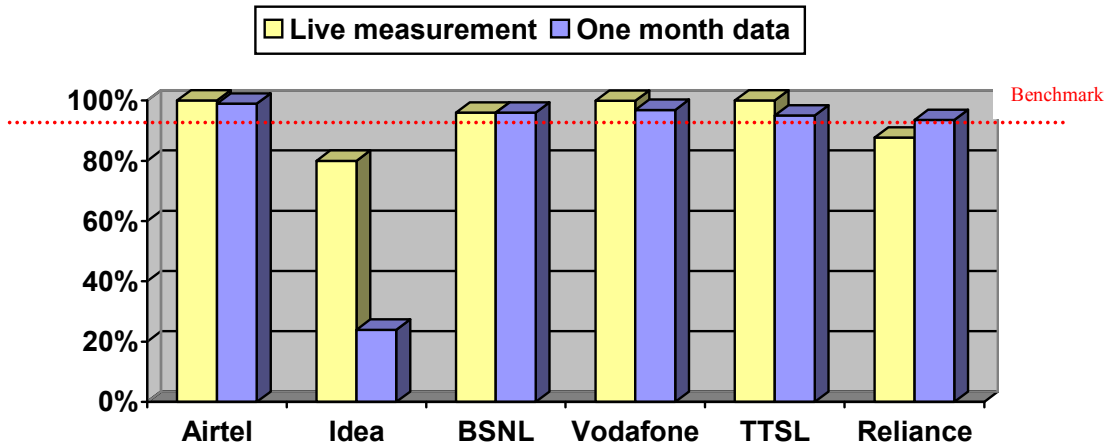


IV. Percentage of call answered by operators (Voice to voice);

(i) With in 60 sec: All operators meet benchmark (>80%) except Idea is not meeting in live measurement & month of audit both..



(ii) With in 90 sec: All operators meet benchmark (>95%) except for Idea is not meeting in live measurement & month of audit both..




7.3 QUALITY OF SERVICE ASSESSMENT : BROADBAND SERVICE

7.3.1 Service Provider Performance Report based on One Month Data Verification in which Audit was conducted (September – November 2008).

S.N.	Parameters	Benchmark	Bharti	Hathway	BSNL	Reliance	SIFY	YOU Telecom	VSNL
1	Service Provisioning /Activation Time								
1.1	100% cases in days (subject to technical feasibility)	<15 working days	99.41%	100%	100%	100%	100%	100%	99.56%
1.2	In all cases where payment towards installation charge & security deposit is taken and the Broadband connection is not provided within 15 working days	A credit at the rate of Rs.10/ per day, subject to a maximum of installation charge or equivalent usage allowance shall be given to the customer, at the time of issue of first bill.	Nil	0	0	Nil	0	0	0
2	Fault Repair / Restoration Time								
	By next working day:	> 90%	94%	90.29%	97.35 %	99%	54%	88.78%	92%
	within 3 working days:	99%	99.18%	98.12%	99.51 %	100%	76%	96.79%	98%
2.1	Rebate:								
	Faults Pending for > 3 working days and < 7 working days: (Rebate equivalent to 7 days of minimum monthly charge or equivalent usage allowance)		26	20	0	0	0	113	13413
	Faults Pending for > 7 working days and < 15 working days: (Rebate equivalent to 15 days of minimum monthly charge or equivalent usage allowance)		0	21	0	0	0	21	391
	Faults Pending for > 15 working days: (Rebate equivalent to one month of minimum monthly charge or equivalent usage allowance)		1	15	0	0	0	0	64
3	Billing Performance								
	Billing complaints per 100 bills issued	< 2%	1.66%	0.14%	0.24%	0.19%	Not Applicable as SIFY is under Prepaid Module	0.32%	1.03%
	%age of Billing Complaints resolved	100% within 4 weeks	100%	100%	100%	100%		100%	100%
	Time taken for refund of deposits after closure:	100% within 60 days	100%	100%	100%	100%		96%	100%

S.N.	Parameters	Benchmark	Bharti	Hathway	BSNL	Reliance	SIFY	YOU Telecom	VSNL
4	Response time to the customer for assistance								
	% age of calls answered by operator (Voice to Voice)								
	Within 60 seconds	> 60%	83.78%	95%	77.41%	94%	96%	88%	94.93%
	Within 90 seconds	> 80%	91.96%	98%	90.29%	96%	100%	94%	96.86%
5	Bandwidth Utilization/ Throughput:								
	Bandwidth Utilization (If on any link(s) / route bandwidth utilization exceeds 90%, then network is considered to have congestion. For this additional provisioning of Bandwidth on immediate basis, but not later than one month, is mandated.)	< 80% link(s) / route bandwidth utilization during peak hours (TCBH).							
	i) POP to ISP Gateway Node [Intra-network] Link(s)		78.50%	55%	49.66%	35%	68%	NA	48.39%
	ii) ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity		74.68%	90%	75.02%	NA	49%	76.87%	40%
	Broadband Connection Speed (download) - from ISP Node to User	> 80%	99%	90%	88.29%	>85%	95%	85.34%	88.39%
6	Service Availability / Uptime (for all users)								
	With effect from quarter ending September 2007 and onwards	> 98%	99.99%	98.81%	99.98%	99.99%	100%	99.28%	99.09%
7	Packet Loss	< 1%	0.03%	0.16%	0.10%	0.1%	<1%	<1%	0%
8	Network Latency (for wired broadband access)								
	User reference point at POP / ISP Gateway Node to International Gateway (IGSP/NIXI)	< 120 msec	29.9ms	34ms	53ms	33.44ms	25ms	14ms	44.43ms
	User reference point at ISP Gateway Node to International nearest NAP port abroad (Terrestrial)	< 350 msec	172.0ms	233ms	246ms	NA	255ms	244ms	274.83 ms
	User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite)	< 800 msec	NA	NA	NA	NA	NA	NA	NA

 Indicates deviation from benchmark of TRAI.

NA – Not Applicable

The Satellite link does not exist with any of the Operator, hence the parameter “ 4.3 User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite)” is not applicable to the above Operators.

- VSNL : parameter 2.1 & 4 contains data on all India basis.

- Reliance: ISP gateway is in Mumbai, Delhi, Chennai. Hence No Upstream Link for GJ Circle.

Critical findings and Key take outs

7.3.2 Critical findings and Key take outs: Broadband service

- ◆ The Broadband Service audit is being carried out for the first time by an independent audit agency for Gujarat Circle.
- ◆ Reliance and SIFY is submitting the PMR on all India basis, hence data is verified on All India basis not for particularly for Gujarat Circle.
- ◆ BSNL submits the data against the parameters “Bandwith Utilization/ Throughput”, “Packet Loss” and “Network latency” on All India Basis, except the data for “Bandwidth Connection Speed(download)”.
- ◆ The Satellite link does not exist with Operators, hence the parameter “User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite)” is not applicable to the Operator.
- ◆ To test the Service Providers performance on Technical (Network related complains) & Non-Technical (Provisioning, Billing, Refund etc.) complaint handling TCIL auditors have conducted a customer feedback calling for random 100 nos of customers in each segment. It was found that more than 97% customers are satisfied with services provided by the operators.

The key conclusions (Parameter wise) emerging out from the Audit exercise of Broadband service providers are highlighted below

Service provisioning/Activation time

All the service providers are performing well and meeting the benchmarks for service provisioning except Airtel (99.41%) and VSNL (99.56%) deviating marginally from the benchmark.

Fault Repair/Restoration time & Rebate

All the operators are meeting the benchmark of more than 90% for fault repair by next working day except for Sify(54%) & You-Telecom(88.78%). Airtel, BSNL & Reliance are meeting the benchmarks of more than 99% for fault repaired within 3 working days.

All the service providers are found to providing Rebate as per the guide lines set by TRAI.

Billing performance

All the operators are meeting the benchmark of Less than 2% for billing complaints. Also all the operators are meeting the benchmark of “100% cases 4 weeks” for billing complaint resolution for on-month data verifications. All the operators are providing the refund of deposits after closure as per the benchmark of “100% cases within 60 days” except You-Telecom with 96% deviating marginally.

Sify claims that all its broadband customers are prepaid and hence there are no bills issued.

Customer Care/Helpline Assessment

All the service providers meet the benchmark for both live Measurement as well as One month data verification, for both the parameters response time to the customer for assistance (Voice to Voice) within 60 and 90 seconds.

Bandwidth Utilisation:

All the operators are meeting the benchmarks for bandwidth utilisation – POP to ISP Gateway Node (intra-network) links for both live Measurement and One month data verification.

Airtel, Sify, You-Telecom & VSNL are meeting the benchmarks for Bandwidth utilisation – ISP Gateway Node to IGSP/ NIXI Node upstream links for International connectivity for both live Measurement and one month data verification. Hathway is deviating marginally for both live Measurement & one month data verification. Reliance does not have separate upstream links for Gujarat Circle as their ISP Gateway is at Mumbai, Delhi & Chennai. BSNL observes this parameter on All India basis at their NOC, Bangalore (DNW circle).

Download speed

All the operators are meeting the TRAI benchmark of greater than 80% connection speed during live measurements and one-month data verification except Reliance does not meet the benchmark during live measurements.

Service Availability/Uptime:

All the operators are meeting the TRAI benchmark of greater than 98% during one-month data verification.

Packet Loss

All the operators are meeting the TRAI benchmark of less than 1% during live measurements and one-month data verification.

Network Latency

All the operators are meeting the TRAI benchmarks less than 120ms for “User reference point at POP/ISP Gateway node to IGSP/NIXI” and benchmark less than 350ms for “User reference point at ISP Gateway node to IGSP/NIXI” during live measurements and one-month data verification. However, Reliance does not have separate upstream links for Gujarat Circle as their ISP Gateway is at Mumbai, Delhi & Chennai.

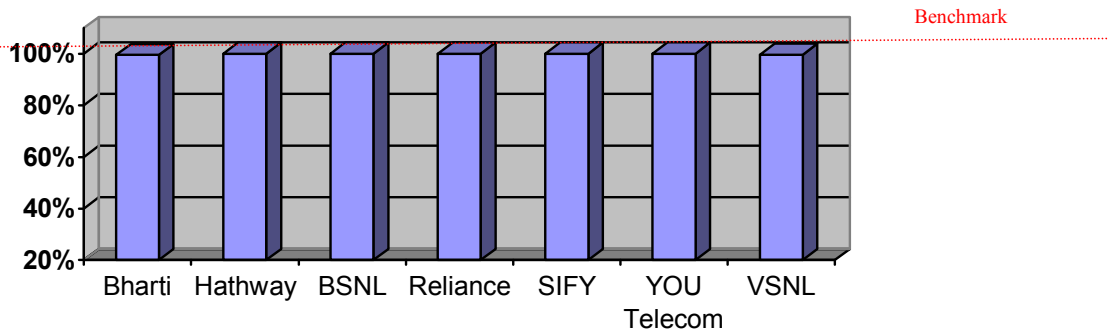
The Satellite link does not exist with any of the operator, hence the parameter “User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite)” is not applicable to all the operators.

7.3.3 Parameter wise Data Analysis & Graphical Representations – Broadband Service

1.0 Service Provisioning /Activation Time: (Should be 100%)

All the operators comply with the TRAI benchmark of 100%, except for Bharti (99.41%) and VSNL (99.56%) showing marginal deviation.

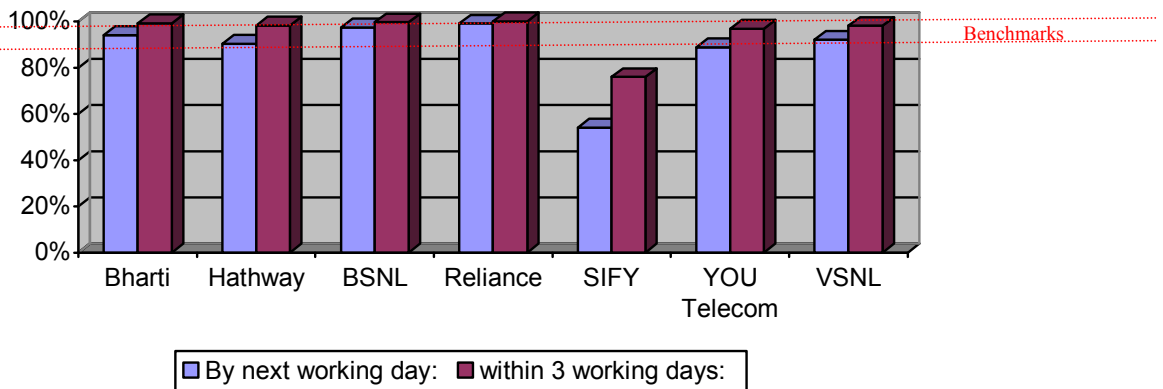
Service Provisioning/Activation Time



2.0 Fault Repair / Restoration Time:

- **By next working day (>90%):** All the operators comply with the TRAI benchmark of 90% except for Sify (54%) and You Telecom(88.78%).
- **Within 3 working days (>99%):** Only Bharti, BSNL and Reliance comply with the TRAI benchmark of 99%. All other are showing deviation, Hathway (98.12%), Sify (76%), You Telecom (96.79%) and VSNL (98%).
- **Rebate:** All the operators are giving rebate to the eligible customers.

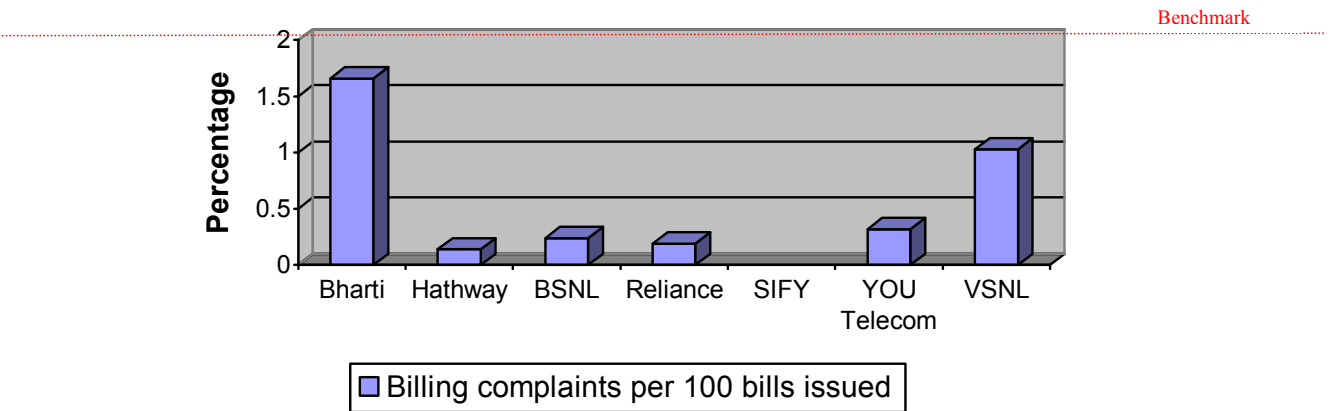
Fault Repair/ Restoration Time



3.0 Billing Performance: (Benchmark <2%)

All the operators comply with the TRAI standards.

Billing Performance

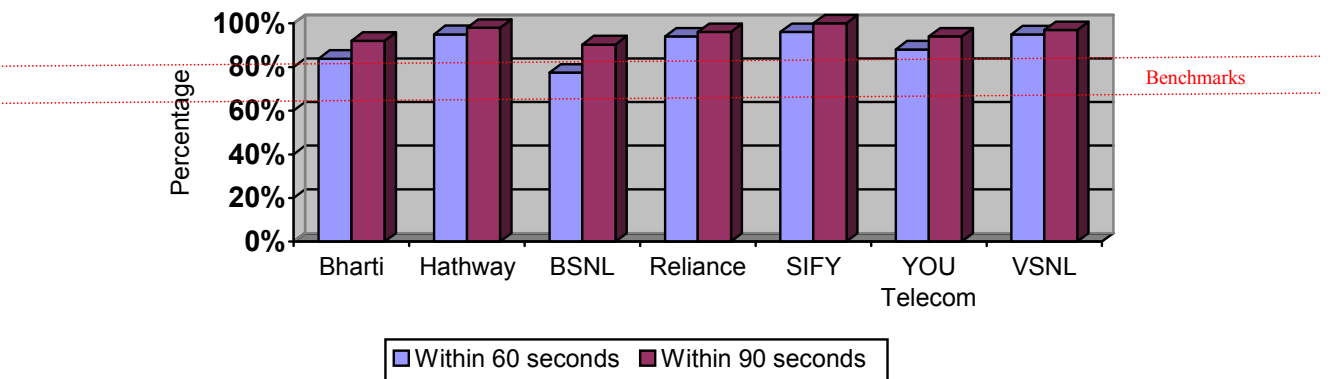


4.0 Response time to the customer for assistance:

% age of calls answered by operator (Voice to Voice)

- **Within 60 seconds (>60%):** All the operators meet the benchmark.
- **Within 90 seconds (>80%):** All the operators meet the benchmark.

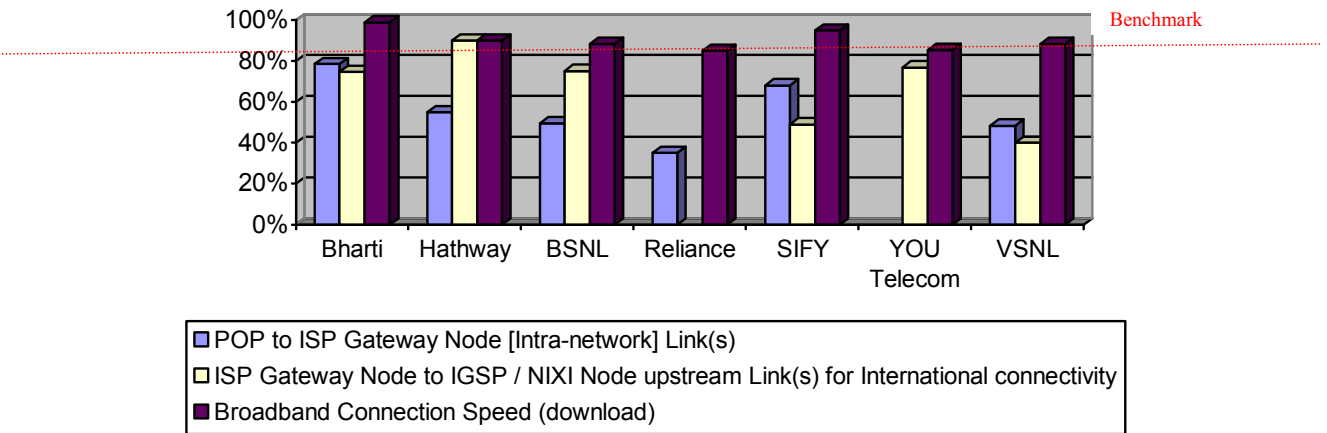
Response Time to the Customer for Assistance



5.0 Bandwidth Utilization/ Throughput:

- POP to ISP Gateway Node [Intra-network] Link(s): (Benchmark <80%): All the operators meet the benchmark.
- ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity: (Benchmark <80%): All the operators meet the benchmark except for Hathway (90%).
- Broadband Connection Speed (download) (>80%): All the operators meet the benchmark.

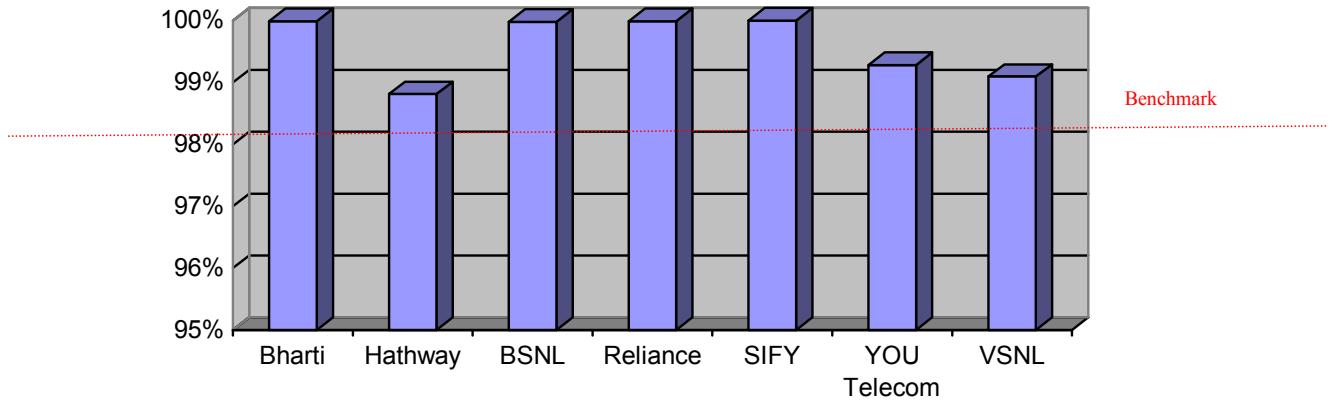
Bandwidth Utilisation



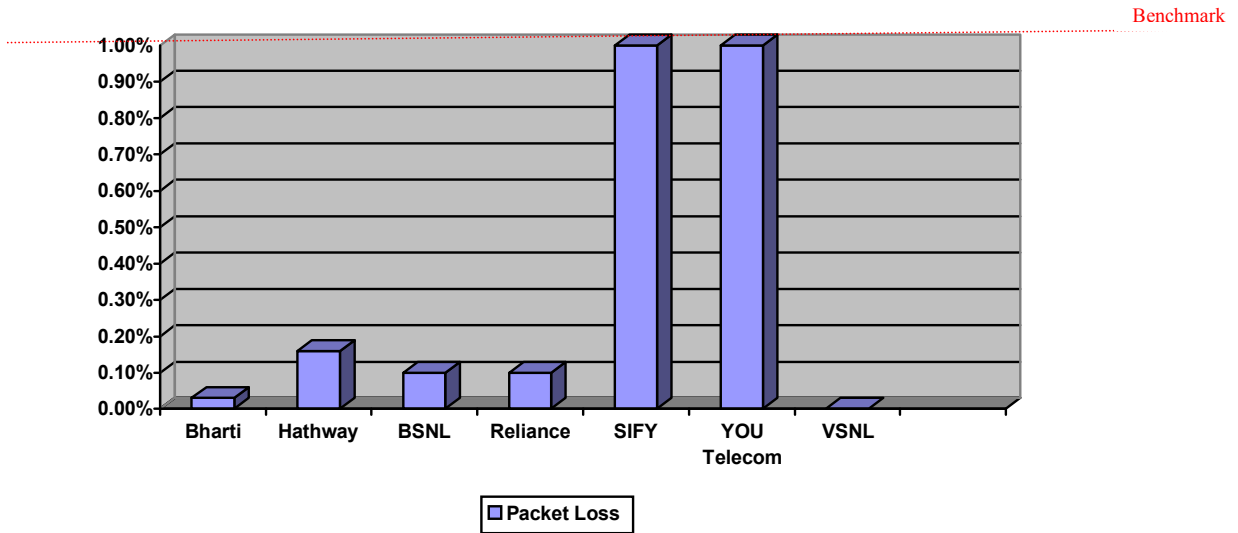
6.0 Service Availability / Uptime (for all users) (better than 98%):

All the operators comply with the TRAI standards of >98%.

Service Availability/ Uptime



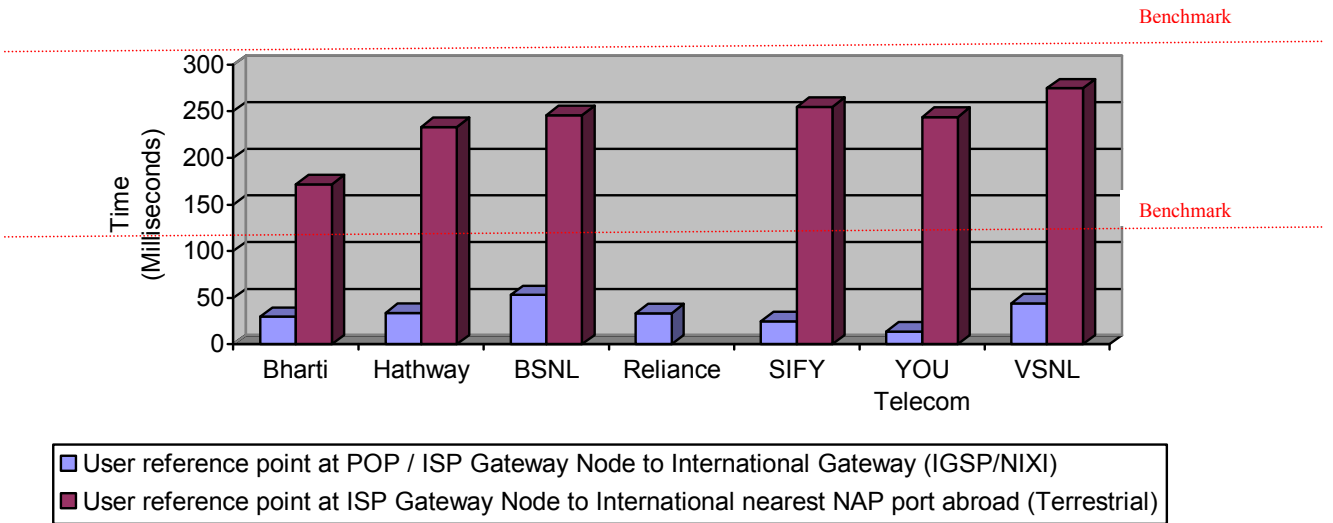
7.0 Packet Loss (Should be less than 1%) : All the operators comply with the TRAI benchmarks.



8.0 Network Latency:

- User reference point at POP / ISP Gateway Node to International Gateway (IGSP/NIXI): (Benchmark <120ms): All the operators meet the benchmark.
- User reference point at ISP Gateway Node to International nearest NAP port abroad (Terrestrial): (Benchmark <350ms): All the operators meet the benchmark.
- User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite): Link does not exist for the operators. Hence, Not applicable.

Network Latency



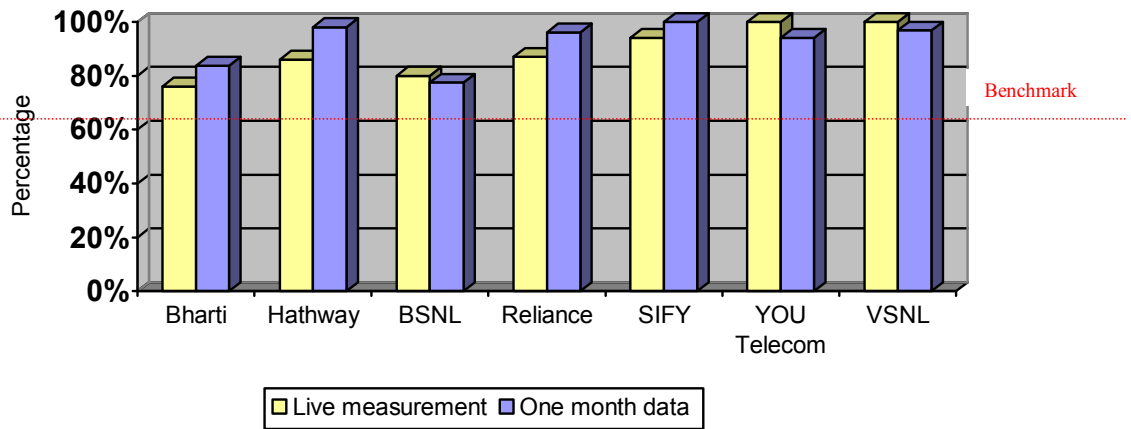
7.3.4 Comparison between Live measurements and One month data Audit – Broadband Service

1. Response time to the customer for assistance (Voice to Voice):

(i) Calls answered by operator within 60 seconds (>60%)

All the operators meet the benchmark.

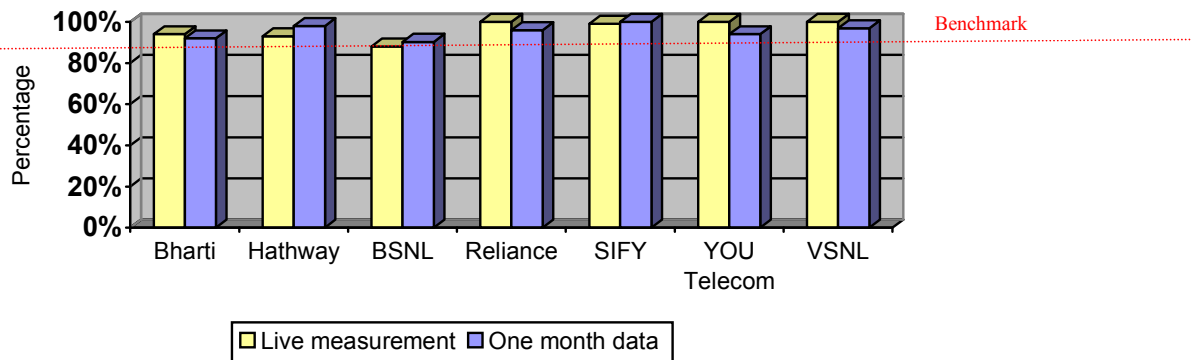
Response Time to the Customer for Assistance



(ii) Calls answered by operator within 90 seconds (>80%)

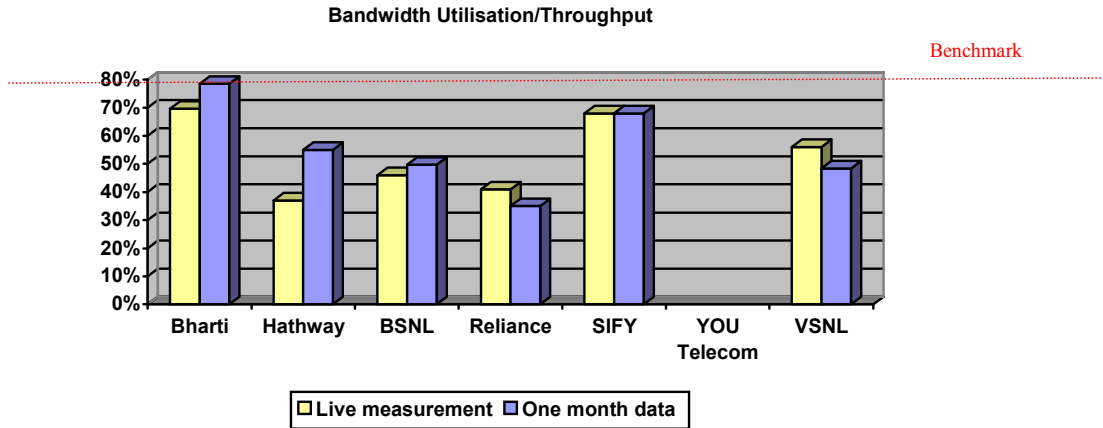
All the operators meet the benchmark.

Response Time to the Customer for Assistance

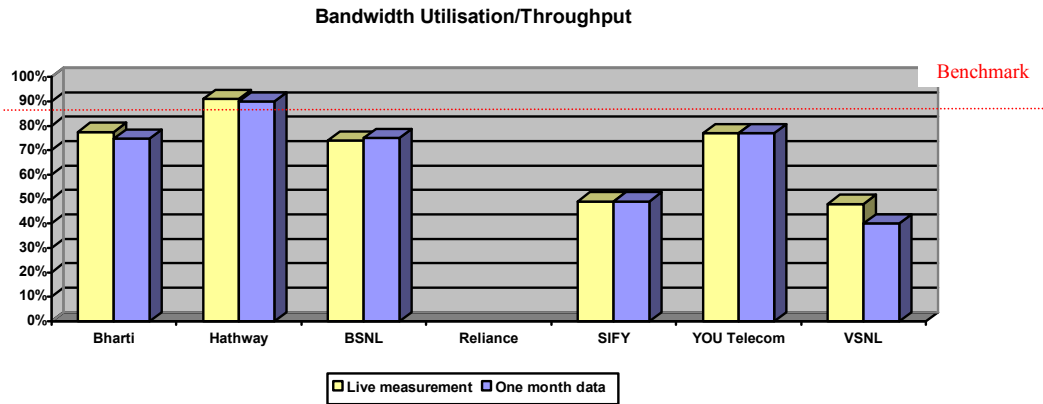


2. Bandwidth Utilization/ Throughput:

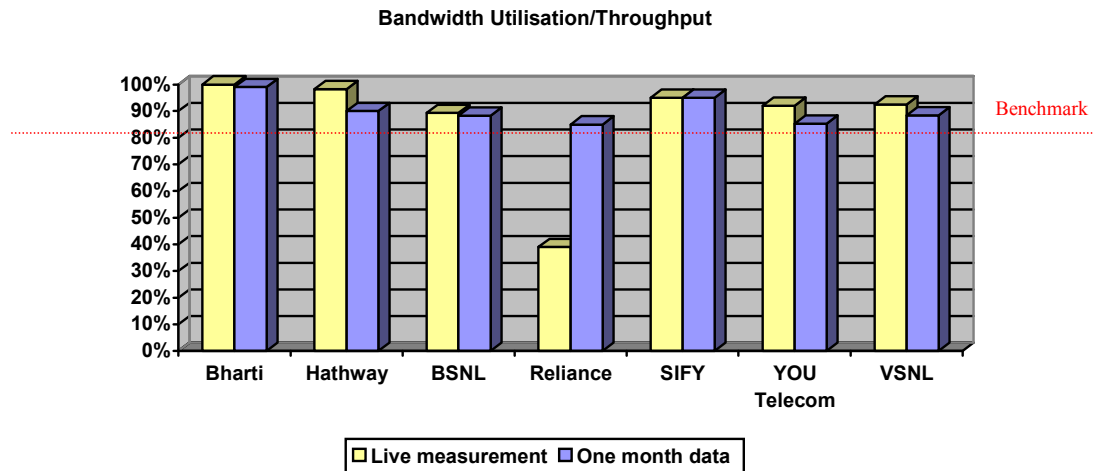
- POP to ISP Gateway Node [Intra-network] Link(s) (<80%): All the operators meet the benchmark. However, not applicable to You-Telecom as POP & ISP Gateway node are at same place.



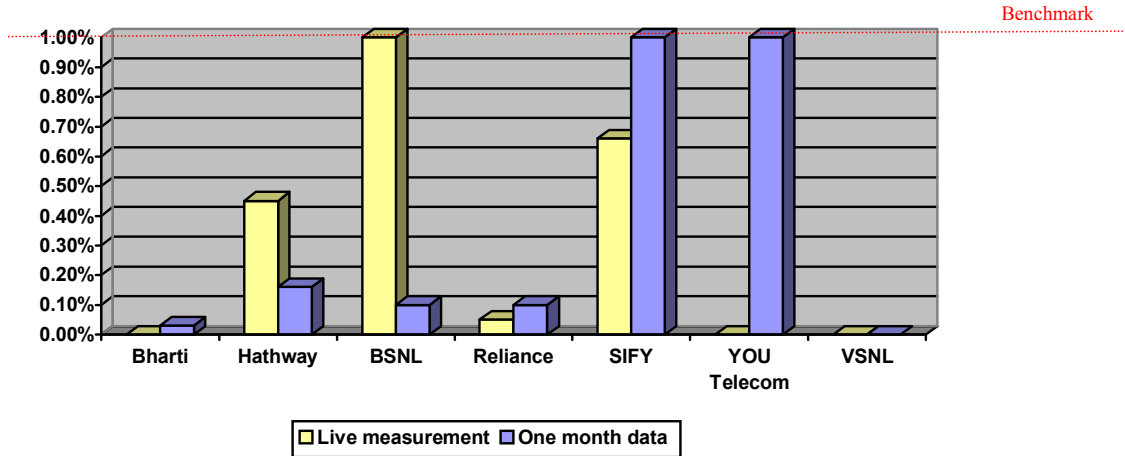
- ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity (Should be less than 80%): All the operators meet the benchmark except for Hathway(90%) deviating marginally. Not applicable in case of Reliance.



- Broadband Connection Speed (download) (>80%):** All the operators meet the benchmark except for Reliance during live measurement.

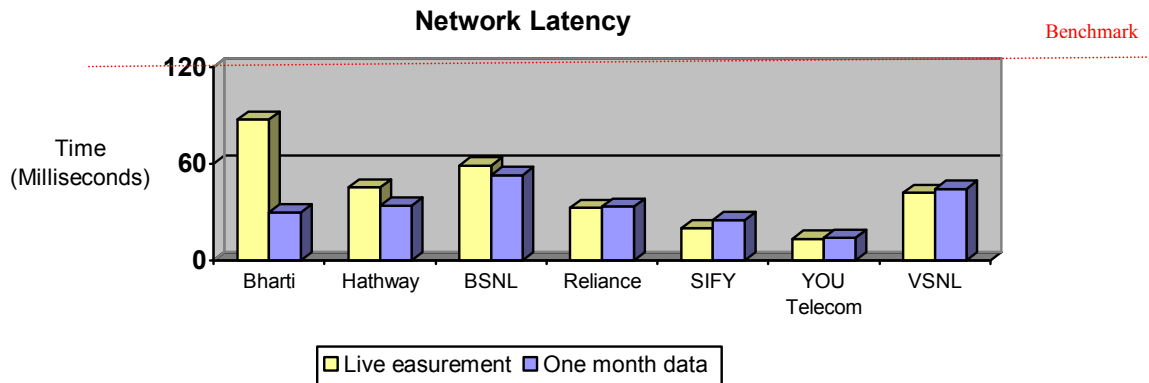


3. Packet Loss: (Benchmark <1%): All the operators meet the benchmark.

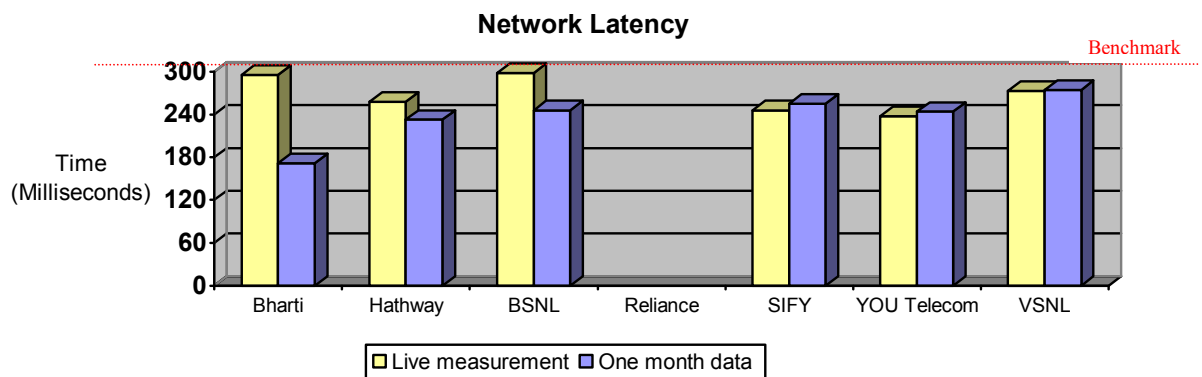


4. Network Latency:

- User reference point at POP / ISP Gateway Node to International Gateway (IGSP/NIXI): (Benchmark <120ms): All the operators meet the benchmark.



- User reference point at ISP Gateway Node to International nearest NAP port abroad (Terrestrial): (Benchmark <350ms): All the operators meet the benchmark.



CHAPTER – 8

DRIVE TEST FINDING

8.1 Drive Test Procedure :

TCIL have conducted individual drive test for each operator. TCIL auditors have selected 3 types of clutter in city on the basis of population & clutter. The clutters are dense population, medium population & low population. Auditors have covered more than 100 Kms in each city.

During the drive test, auditors have taken short calls of 120 second call duration & 10 second waits after end of call & covered all routes in selected clutters. At the drive test moment, vehicle speed was 20- 30 km/hr.

For GSM operators, auditors have taken Rx quality & in case of CDMA operators, FER has been taken. The range of Rx quality is 0-5 with respect to hopping & 0-4 with respect to without hopping. Rx quality sample should be 95 % with respect to 0-5 & FER samples should be 95% with respect to 0-4 as per the benchmark.

8.2 Drive Test Data Analysis (Operator Assisted Drive Test)


8.2.1 AHMEDABAD

S.N.	Parameters	Airtel	IDEA	BSNL	Reliance	TTSL	Vodafone
1	Drive Test						
1.1	Call Attempts	188	214	286	205	222	214
1.2	Blocked Call Rate (<3%)	1.60%	0.47%	15.73%	0.49%	0%	0.47%
1.3	Dropped Call Rate (<3%)	0.5%	2.80%	6.29%	0%	0.45%	0%
1.4	Percentage of connections with good voice quality (>95%)						
	(i) 0-4 (w/o frequency hopping)					96.64%	
	(ii) 0-5 (with frequency hopping)	96.32%	97.2%	68.22%	98.9	97.35%	97.55%
1,5	Service Coverage						
	In door (>= -75dBm)	84.9%	72.5%	85.4%	94.35%	99.6%	98%
	In-vehicle (>= -85dBm)	98.47%	95.4%	99.2%	99.78%	99.97%	99.9%
	Out door- in city (>= -95dBm)	99.91%	100%	100%	99.95%	99.97%	100%
1.6	Call Setup Success Rate(>95%)	98.85%	99.53%	88.75%	99.67%	100%	99.75%

■ Indicates deviation from benchmark of TRAI.


8.2.2 BARODA

S.N.	Parameters	Airtel	IDEA	BSNL	Reliance	TTSL	Vodafone
1	Drive Test						
1.1	Call Attempts	173	163	41	157	117	147
1.2	Blocked Call Rate (<3%)	1.16%	0%	2.44%	0%	0%	0%
1.3	Dropped Call Rate (<3%)	0.58%	0.61%	9.76%	0%	0.85%	0%
1.4	Percentage of connections with good voice quality (>95%)						
	(i) 0-4 (w/o frequency hopping)						
	(ii) 0-5 (with frequency hopping)	95.7%	97.1%	90.32%	98.7%	96.50%	97.6%
1,5	Service Coverage						
	In door (>= -75dBm)	90.3%	94.6%	68.58%	83.99%	100%	98.36%
	In-vehicle (>= -85dBm)	99.5%	99.9%	30.6%	99.77%	100%	100%
	Out door- in city (>= -95dBm)	99.9%	100%	0.8%	100%	100%	100%
1.6	Call Setup Success Rate (>95%)	97.14%	100%	98.92%	100%	100%	100%

 Indicates deviation from benchmark of TRAI.

8.2.3 SURAT

S.N.	Parameters	Airtel	IDEA	BSNL	Reliance	TTSL	Vodafone
1	Drive Test						
1.1	Call Attempts	151	185	79	174	162	181
1.2	Blocked Call Rate (<3%)	2.65%	0%	2.53%	0%	0%	0%
1.3	Dropped Call Rate (<3%)	0.66%	1.08%	12.66%	0%	0.61%	0%
1.4	Percentage of connections with good voice quality (>95%)						
	(i) 0-4 (w/o frequency hopping)						
	(ii) 0-5 (with frequency hopping)	94.8%	97.3%	90.13%	99.2%	96.83%	97.4%
1,5	Service Coverage						
	In door (>= -75dBm)	86.4%	45.3%	54.6%	94.05%	100%	98%
	In-vehicle (>= -85dBm)	99.3%	90.3%	41.99%	100%	100%	99.93%
	Out door- in city (>= -95dBm)	100%	100%	3.38%	100%	100%	100%
1.6	Call Setup Success Rate(>95%)	92.38%	100%	97.67%	100%	100%	100%

 Indicates deviation from benchmark of TRAI.

Observation:

The Operator Assisted Drive Test was conducted at Ahmedabad, Baroda and Surat cities for all the operators. The operator wise observations based on drive test are as follows:

Airtel

Airtel is meeting all the benchmarks in Ahmedabad and Baroda. However in Surat they are deviating from the benchmark in QOS parameters like Connection with good voice quality (marginal) and Call Setup Success Rate (CSSR).

Idea

Idea is meeting all the benchmarks in all the three cities (Ahmedabad, Baroda and Surat).

BSNL

BSNL is deviating from the benchmark in QOS parameters like Dropped Call rate & Connection with good voice quality by a substantial amount in all the three cities (Ahmedabad, Baroda and Surat). In addition to these the Blocked Call rate & Call Setup Success Rate (CSSR) at Ahmedabad is also not meeting the benchmark.

Vodafone

Vodafone is meeting all the benchmarks in all the three cities (Ahmedabad, Baroda and Surat).

TTSL

TTSL is meeting all the benchmarks in all the three cities (Ahmedabad, Baroda and Surat).

Reliance

Reliance is meeting all the benchmarks in all the three cities (Ahmedabad, Baroda and Surat).

CHAPTER – 9

POI CONGESTION: VOICE CALL TEST

9.1 INTER OPERATOR CALL CONGESTION ASSESSMENT

9.1.1 Summary of Successful Calls

Calling Operator	Called Operator					
	Idea	Vodafone	Airtel	Reliance	TTSL	BSNL
Idea	-	100%	100%	100%	100%	100%
Vodafone	100%	-	100%	100%	100%	100%
Airtel	98%	97%	-	90%	100%	100%
Reliance	97%	98%	100%	-	100%	100%
TTSL	95%	98%	100%	100%	-	100%
BSNL	100%	100%	100%	100%	100%	-

9.1.2 Detailed Records

A sample of 2x50 test calls per Service Providers with in the licensed service area (Gujarat Circle) were made between 1100 to 1400 hrs and between 1600 to 1900 hrs.

S. No	Calling Number Operator	Called operator	Total no of calls	Total no of Successful calls	Call Success %
1	Idea	Vodafone	50	50	100%
		Tata	50	50	100%
		Airtel	50	50	100%
		Reliance	50	50	100%
		BSNL	50	50	100%
		Vodafone	50	50	100%
		Tata	50	50	100%
		Airtel	50	50	100%
		Reliance	50	50	100%
		BSNL	50	50	100%
2	Vodafone	Tata	50	50	100%
		Reliance	50	50	100%
		Idea	50	50	100%
		Airtel	50	50	100%
		BSNL	50	50	100%
		Tata	50	50	100%
		Reliance	50	50	100%
		Idea	50	50	100%
		Airtel	50	50	100%
		BSNL	50	50	100%

S. No	Calling Number Operator	Called operator	Total no of calls	Total no of Successful calls	Call Success %
3	Airtel	Idea	50	50	100%
		Vodafone	50	50	100%
		Tata	50	50	100%
		Reliance	50	49	98%
		BSNL	50	50	100%
		Idea	50	47	94%
		Vodafone	50	47	94%
		Tata	50	50	100%
		Reliance	50	41	82%
		BSNL	50	50	100%
4	Reliance	Idea	50	48	96%
		Vodafone	50	50	100%
		Tata	50	50	100%
		Airtel	50	50	100%
		BSNL	50	50	100%
		Idea	50	49	98%
		Vodafone	50	48	96%
		Tata	50	50	100%
		Airtel	50	50	100%
		BSNL	50	50	100%
5	TTSL	Idea	50	48	96%
		Vodafone	50	50	100%
		Reliance	50	50	100%
		Airtel	50	50	100%
		BSNL	50	50	100%
		Idea	50	47	94%
		Vodafone	50	48	96%
		Reliance	50	50	100%
		Airtel	50	50	100%
		BSNL	50	50	100%
6	BSNL	Idea	50	48	96%
		Vodafone	50	50	100%
		Reliance	50	50	100%
		Airtel	50	50	100%
		Tata	50	50	100%
		Idea	50	47	94%
		Vodafone	50	48	96%
		Reliance	50	50	100%
		Airtel	50	50	100%
		Tata	50	50	100%

CHAPTER – 10**CUSTOMER CARE & GRIEVANCES REDRESSAL****10.1 Basic Service (Wireline)**

S.N.	Parameters	Airtel	Reliance	TTSL	BSNL
1	Parameters				
1.1	Complaints per 100 bills issued	0.17%	0.04%	0.1%	0.04%
1.2	Percentage of billing complaints resolved within 4 weeks	100%	100%	100%	100%
1.3	Response time to customer for assistance: % of calls answered by operator within 90 seconds	91.96%	99.91%	95%	99.78%
2	Call Centre				
2.1	Total no of complaints received in the call centre	1725	5545	1113	6062
2.2	Complaints per 100 customers per months	5.88%	4.53%	3.10%	0.27%
2.3	Total no of complaints redressed by the call centre within the specified time limit	1407	5536	1048	6033
3	Nodal Officer				
3.1	Total no of complaints received by the nodal officers	18	0	6	312
3.2	Percentage of complaints with reference to total no of complaints received at the call centre	1.04%	0	0.50%	5.15%
3.3	Total no of complaints redressed within the specified time limit	18	0	6	312
4	Appellate Authority				
4.1	Total no of appeals received by the appellate authority	3	0	0	1
4.2	Percentage of appeal received with reference to total no of complaints received by the nodal officers	16.67%	0	0	0.32%
4.3	Total no of appeals decided within 3 months	3	0	0	1

Note :

This is found that there are many instances where customers directly approach to Nodal Officer without approaching to Call Center for redressal. Similarly there are many instances where customers directly approach to Appellate Authority without approaching to Nodal Officer for their grievances redressal.

10.2 Basic Service (Wireless) and Cellular Mobile Services

S.N.	Parameters	Airtel	BSNL	Idea	TTSL	Vodafone	Reliance
1	Parameters						
1.1	Complaints per 100 bills issued	0.04%	1.02%	0.07%	0.071%	0.001%	0.06%
1.2	Percentage of billing complaints resolved within 4 weeks	100%	100%	97.22%	100%	100%	100%
1.3	Response time to customer for assistance: % of calls answered by operator within 90 seconds	99%	96%	24%	95%	99.6%	92.71%
2	Call Centre						
2.1	Total no of complaints received in the call centre	51542	22953	7942	8220	10681	618
2.2	Complaints per 100 customers per months	17.06%	1.02%	0.22%	3.3%	0.15%	0.02%
2.3	Total no of complaints redressed by the call centre within the specified time limit	51542	22795	7508	7299	9934	618
3	Nodal Officer						
3.1	Total no of complaints received by the nodal officers	314	39	63	297	8	74
3.2	Percentage of complaints with reference to total no of complaints received at the call centre	0.61%	0.17%	0.79%	3.6%	0.07%	11.97%
3.3	Total no of complaints redressed within the specified time limit	314	32	62	296	8	74
4	Appellate Authority						
4.1	Total no of appeals received by the appellate authority	124	0	0	0	0	1
4.2	Percentage of appeal received with reference to total no of complaints received by the nodal officers	39.49%	0	0	0	0	1.35%
4.3	Total no of appeals decided within 3 months	124	0	0	0	0	1

Note :

This is found that there are many instances where customers directly approach to Nodal Officer without approaching to Call Center for redressal. Similarly there are many instances where customers directly approach to Appellate Authority without approaching to Nodal Officer for their grievances redressal.

10.3 Broadband Services

S.N.	Parameters	Airtel	Reliance	BSNL	Sify	Hathway	You Telecom	VSNL
1	Parameters							
1.1	Complaints per 100 bills issued	1.66%	0.19%	0.02%	Not Applicable as SIFY is under Prepaid Module	0.42%	0.32%	1.03%
1.2	Percentage of billing complaints resolved within 4 weeks	100%	100%	99.97%		100%	100%	100%
1.3	Response time to customer for assistance: % of calls answered by operator within 90 seconds	91.96%	99%	87.10%		98%	80%	94.45%
2	Call Centre							
2.1	Total no of complaints received in the call centre	1044	3286	37219	259	10262	4116	12514
2.2	Complaints per 100 customers per months	9.47%	18.91%	23.97%	7%	44%	0.43%	52.04%
2.3	Total no of complaints redressed by the call centre within the specified time limit	833	3253	37219	125	10262	4116	12264
3	Nodal Officer							
3.1	Total no of complaints received by the nodal officers	18	0	0	134	48	7	98
3.2	Percentage of complaints with reference to total no of complaints received at the call centre	1.72%	0	0	52%	0.47%	0.17%	0.78%
3.3	Total no of complaints redressed within the specified time limit	18	0	0	134	48	7	98
4	Appellate Authority							
4.1	Total no of appeals received by the appellate authority	3	0	0	0	0	3	33
4.2	Percentage of appeal received with reference to total no of complaints received by the nodal officers	16.67%	0	0	0	0	43%	34%
4.3	Total no of appeals decided within 3 months	3	0	0	0	0	3	33

Note :

This is found that there are many instances where customers directly approach to Nodal Officer without approaching to Call Center for redressal. Similarly there are many instances where customers directly approach to Appellate Authority without approaching to Nodal Officer for their grievances redressal.

ANNEXURE - I

List of Exchanges / Switches

1. BASIC SERVICE (WIRELINER):

AIRTEL: Ahmedabad

TTSL : Ahmedabad, Surat

RELAINCE: Ahmedabad, Surat

BSNL: 160 Exchanges Covering Ahmedabad, Vadodhara, Surat, Bharuch, Mehsana, Palanpur, Rajkot and Jamnagar.

2. BASIC (WIRELESS) AND CELLULAR MOBILE SERVICE:

AIRTEL: Ahmedabad : MSC01AHD, MSC03AHD, MSS01AHD, MSS04AHD
Surat : MSC04SRT, MSS03SRT
Rajkot : MSC02RJKT, MSS02RJKT

IDEA : Gandhinagar : MSCGNR1, MSCGNR2, MSSGN01, MSSGN03, MSSGN04
Surat : MSCSUR1
Rajkot : MSCRAJ1, MSCRAJ2

TTSL : Ahmedabad : MSC1, MSC2
Baroda : Baroda MSC
Surat : Surat MSC
Rajkot : Rajkot MSC

RELAINCE: Ahmedabad: MSC1, MSC2
Surat : MSC1, MSC2
Rajkot : MSC1

BSNL(GSM) : GCS01, GCS02, GMSC10, GMSC9, MSC1, MSC2, MSC3, MSC4, MSC5, MSC6, MSC7, MSC8, MSS01, MSS02, MSS03, MSS04, MSS05, NSS06, MSS07, MSS09

VODAFONE: GCS01, GCS02, GMSC10, GMSC9, MSC1, MSC2, MSC3, MSC4, MSC5, MSC6, MSC7, MSC8, MSS01, MSS02, MSS03, MSS04, MSS05, MSS06, MSS07, MSS09

3. BROADBAND SERVICE:

AIRTEL: Ahmedabad

SIFY : Ahmedabad Sears Towers

BSNL : Ahmedabad, Vadodhara, Surat, Bharuch, Mehsana, Palanpur, Rajkot and Jamnagar

RELIANCE : Ahmedabad

HATHWAY : Baroda, Surat

YOU TELECOM : Ahmedabad, Baroda & Surat

TATA COMM (VSNL) : Ahmedabad

ANNEXURE - II

DRIVE TEST LOCATIONS

A. AHMEDABAD

Dense : Relief Road

Medium Dense 1 : Maninagar

Medium Dense 2 : C G Road

Low Dense : SG Road

B. BARODA

Dense : Fatehpura, Raopura, Laxmiroad, Panigate, Vade, Mandavi, Nyaymandir etc

Medium Dense : Majalpur & Alkapuri

Low Dense : Makarpura

C. SURAT

Dense : Varachha

Medium Dense 1 : Udhana

Medium Dense 2 : Punagam

Low Dense : Adajan—Palanpur