REPORT FORMAT

FOR

AUDIT & ASSESSMENT OF QoS

OF

WIRELINE BASIC SERVICES, WIRELESS BASIC SERVICES, CELLULAR MOBILE TELEPHONE SERVICE AND BROADBAND SERVICE

FOR

WEST ZONE - MAHARASHTRA CIRCLE

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TABLE OF CONTENTS

CHAPTER – 1

EXECUTIVE SUMMARY

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 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 that 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 having following scope of work:

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 Maharashtra Service areas in the Western Zone for basic service (wireline), basic (wireless) and cellular mobile telephone service. The scope detailed below is as per the scope of the tenders.

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 as per clause (b) above 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 **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 with the help of the operator in presence of the auditing officers. 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.

1.3.2 **Basic Wireless and Cellular Mobile:**

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 with the help of the operator in presence of the auditing officers. 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 operator 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 **Broad band:**

5% of the POPs in 10% of the SDCA was 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 for link utilisation is used. Smoke Ping and Ping Test for Latency calculations was used. The data related to Billing and Customer care is checked for the previous month and verified with the customer by calling the customer with the help of the operator in presence of the auditing officers. The process of registration and handling of the complaints was also studied for the various operator. Call centre number is called for measuring the efficiency of the call centre.

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 wireline basic services, wireless basic and cellular mobile 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. PMR data of Operators provided by TRAI.

3. TRAI Tender document no. II (Audit)

4. Manufacturer's operating and configuration mannual where ever made available.

5. The following Systems /Tools were used while conducting the Audit and Assessment of QoS of Wireless Basic and Cellular Mobile Services.

   a. Drive Test Tools
   b. OMC-R & OMC-S
   c. MSC

6. The following Softwares /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

1 WIRELINE

Service Provider	Zone	Name of the Circle/ Service Area
BSNL	West	Maharashtra
Bharti	West	Maharashtra
TTML	West	Maharashtra
Reliance	West	Maharashtra

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

2 WIRELESS BASIC AND CELLULAR MOBILE

Sl.	Name of service Provider	Service Area
1	Idea Cellulars	Maharashtra
2	Vodafone Essar Limited	Maharashtra
3	BSNL	Maharashtra
4	Bharti Airtel Ltd	Maharashtra
5	Reliance Communications Ltd	Maharashtra
6	Tata Teleservices (Maharashtra)	Maharashtra

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

3 BROADBAND

S.No.	ISPs	Service Area
1	Bharat Sanchar Nigam Ltd.	Maharashtra
2	Tata Teleservices	Maharashtra
3	Bharti Airtel Ltd.	Maharashtra
4	Tata Communications (VSNL)	Maharashtra
5	You Telecom India Pvt Ltd	Maharashtra
6	Hathway Cable & Datacom Pvt. Ltd.	Maharashtra
7	Sify Limited	Maharashtra
8	Reliance Communications Ltd.	Maharashtra

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. Wireline Basic Services
2. Wireless Basic and Cellular Mobile Services
3. Broadband Services
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 against the following 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

CHAPTER – 5

PMR DATA VERIFICATION REPORT
PERIOD: JAN – MAR 2008

Verification of PMR Data submitted by operator to TRAI with QoS records maintained by Operator.

5.1   Wireline Services (Period : Jan – Mar 2008)

S.N.	Parameters	Benchmarks	AIRTEL	BSNL	RELIANCE	TTML
1	Provision of a telephone after registration of demand					
	100 % cases within 7 days (subject to technical feasibility)	100%	89.2%	86.51%	67.21%	84.53%
2	Fault incidences					
	(No. of faults/100 subscribers /month)	<3	3.07%	6.6%	NA	2.33%
	By 31st june 2008					
3	Fault repair by next working day					
	By next working day	> 90%	93%	87.73%	100%	96.75%
4	Mean Time To Repair (MTTR)	< 8Hrs	2.8	9.38	3.63	4.99
5	Call Completion Rate within a local network					
	Should be better than 55%	> 55%	39.73%	53.59%	-	57%
6	Metering and billing credibility					
	Disputed Bills over bills issued	<0.1%	1%	0.02%	0.05%	0.105%

S.N.	Parameters	Benchmarks	AIRTEL	BSNL	RELIANCE	TTML
7	Customer Care					
	(Promptness in attending to customers requests) 95% of requests					
	- Shifts (< 3 days)	95%	94%	83%	100%	98.26%
	- Closures (< 24 Hrs)	95%	100%	93.76%	97.89%	97.71%
	- Additional Facility (< 24 Hrs)	95%	96.97%	96.24%	97.67%	85.62%
8	Response Time to the customer for assistance					
	(i) % age of calls answered (electronically:					
	within 20 seconds	80%	-	100%	100%	100%
	within 40 seconds	95%				
	(ii) % age of calls answered by operator(voice to voice):					
	within 60 seconds	80%	92.34%	100%	95%	87%
	within 90 seconds	95%	95.23%	100%	98%	90%
9	Time taken for refund of deposits after closure (100% within 60 days)	100%	100%	100%	100%	-

Observation:

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

5.2 Wireless Basic and Cellular Mobile Services (Period : Jan – Mar 2008)

S.N.	Parameters	Benchmarks	GSM OPERATORS				CDMA OPERATORS	
			Airtel	Idea	BSNL	Vodafone	TTML	Reliance
1	**Network Performance**							
1.1	Accumulated down time of Community Isolation	< 24Hrs	21.25	04:52	Nil	1.16	12.45	0.21
1.2	Call set-up Success Rate (within licensees own network) (%)	> 95%	97.49%	97.83%	98.80%	99.92%	97.68%	99.40%
1.3	Service Access Delay (Sec)	9 – 20 Sec	11.11	9.19	8.8	13.5	12	4.1
1.4	Blocked Call Rate							
	(i) SDCCH Congestion (%)	< 1%	0.54%	0.97%	0.70%	0.55%	0.63%	0.00
	(ii)TCH Congestion (%)	< 2%	1.35%	1.39%	1.60%	1.44%	-	0.00
	(iii) Cell exceeding 80% TCH utilization (Nos)							
1.5	Call Drop Rate (%)	< 3%	1.27%	1.17%	2.3%	1.19%	0.71%	0.7%
1.6	Percentage of connections with good voice quality (%)	> 95%	96.5%	99.10%	97.5%	97.76%	96.67%	98.5%
1.8	POI Congestion (%)	< 0.5%	-	-	0.03%	-	0.02%	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%	95%	100%	97.3%
	within 40 seconds (%)	95%	-	100%	100%	95%	100%	97.3%
	(ii) % age of calls answered by operator (voice to voice):							
	Within 60 seconds (%)	80%	94.2%	99.03%	80.7%	100%	87%	94.6%
	Within 90 seconds (%)	95%	97.8%	99.32%	96.1%	100%	90.33%	96.7%

S.N.	Parameters	Benchmarks	GSM OPERATORS				CDMA OPERATORS	
			Airtel	Idea	BSNL	Vodafone	TTML	Reliance
3	**Billing Complaints**							
3.1	Billing complaints per 100 bills issued (%)	<0.1%	0.07%	0.03%	0.032%	0.07%	0.09%	0.06%
3.2	% of billing complaints resolved within 4 weeks (%)	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	<15 days	<4 weeks	< 4 weeks

Observation:

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

5.3   Broadband Services. (Period : Jan – Mar 2008)

S.N.	Parameters	Benchmark	Hathway	BSNL	Reliance	SIFY	TTML	YOU Telecom	Bharti	VSNL
1	**Service Provisioning/ Activation Time**	100% in =<15 working days								
1.1	No. of connections registered		15107	54586	2829	16478	5783	1266	2433	42546
1.2	%age of connections provided within 15 days of registration of demand	100%	92.00%	78.23%	58%	100%	99.79%	100.00%	98.0%	98.0%
1.3	%age of connections provided after 15 days of registration of demand		8.00%	21.8%	42%	0%	0.21%	Nil	2.0%	2.0%
1.4	No. of customers to whom credit is given for delayed connections		-	3	No Delayed connection	0	NA	Nil	0	0
1.5	Total no. of connections provided during the period		14350	67215	65257	16478	5362	1266	2433	38389
1.6	Total no. of working connections at the period		92759	187540	65257	16262	19326	1266	12791	218616

S.N.	Parameters	Benchmark	Hathway	BSNL	Reliance	SIFY	TTML	YOU Telecom	Bharti	VSNL
2	**Faults Repair / Restoration Time**									
2.1	Total no. of faults registered		78090	21664	9329	43133	6030	8851	388	399782
2.2	%age of faults repaired by next working day	>90%	88.33%	84.0%	96%	91%	92.31%	98.48%	92.2%	90.0%
2.3	%age of faults repaired within 3 working days	=>99%	96.67%	93.0%	99%	98%	100.0%	99.78%	98.7%	96.0%
2.4	No. of customers to whom rent rebate is given in minimum monthly charges or equivalent usage allowance for delay in fault repair						NA	6		46014
	a. Rent Rebate of 7 days		528	21	25	129	0	5	11	45251
	b. Rent Rebate of 15 days		218	18	32	21	0	0.67	1	610
	c. Rent Rebate of One Month		102	8	30	0	0	0.67	9	153
3	**Billing Performance**									
3.1	Total no. of bills issued		72740	342145	139768	0	18238	32682	69736	295274
3.2	No. of bills disputed		1191	121	397	0	67	76	1	4484
3.3	%age of bills disputed	<2%	1.64%	0.30%	0.28%	0	0.37%	0.23%	0.00%	1.61%
3.4	%age of complaints resolved within 4 weeks	100% within 4 weeks	99.17%	94%	100%	0	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	100.00%	97%	100%	0	100%	98.25%	100%	100%
4	**Response Time to the Customer for assistance**									
4.1	Total no. of calls received by operators (Voice to voice)		149604	63603	667157	75819	23782	42765	13376	1269562
4.2	%age of calls answered by operator (Voice to voice) within 60 sec	>60%	60%-80%	88.0%	87.33%	100%	65.21%	89.10%	92.3%	93.86%
4.3	%age of calls answered by operator (Voice to voice) within 90 sec	>80%	80%-90%	96.0%	91.30%	100%	84.94%	91.17%	94.8%	97.75%

S.N.	Parameters	Benchmark	Hathway	BSNL	Reliance	SIFY	TTML	YOU Telecom	Bharti	VSNL
5	**Bandwidth utilisation/throughout**									
5.1	No. of intra network links (POP to ISP Gateway nodes)		365 Mb MPLS VPN	-	0	400	29	4	6	16
5.2	No. of intra network links having Bandwidth utilisation >90% during peak hours (TCBH)		0	-	0	1.66	0	0	0	NIL
5.3	No. of Upstream links for International connectivity (ISP Gateway nodes to IGSP/NIXI node/NAP)		6	-	6	28	4	4	0	-
5.4	No. of Upstream links for International connectivity having bandwidth utilisation >90% during peak hours (TCBH)		1	-	0	NIL	0	0	0	NIL
5.5	Total International bandwidth available from ISP Node to IGSP/NIXI/NAP in Mbps		245 Mb + 100 Mb Nixi	-	46264	3218	340Mbps	48.67	270	-
5.6	Total International bandwidth during peak hours (TCBH) in Mbps (Enclose MRTG)		216Mb + 52 Mb NIXI	-	24394	2028	280	38.50	228	-
5.7	%age International bandwidth utilisation during peak hours (TCBH) in Mbps (enclose MRTG)		85-90%	-	53%	85%	91.66%	79.11%	84.57%	70.05%
5.8	Broadband Connection Speed available (download) from ISP node to user	>80%	=85%	90%	90%	95%	95%	90%	100%	>80%

S.N.	Parameters	Benchmark	Hathway	BSNL	Reliance	SIFY	TTML	YOU Telecom	Bharti	VSNL
6	**Service Availability / Uptime (for all users) in %age**	>90% QE June 07 >98% w.e.f. QE Sep. 07								
6.1	Total Operational Hours		64350312	-	728	728	2184	20656044	728	27078912
6.2	Total downtime in hours		240192	-	3.56	0	0	289006	1.06	358701
6.3	Service availability/uptime (for all users) in %age	>90%	99.65%	-	99.5%	100%	99%	98.6%	99.85%	98.80
7	**Packet loss (for wired broadband access) in %age**	<1%	<1%	-	0.50%	<1%	0.75%	<1%	0%	0%
8	**Network latency (for wired broadband access)**			-						-
8.1	User reference point at POP/ISP Gateway node to IGSP/NIXI	<120 ms	<80 ms	-	<22.9ms	<45ms	25ms	<40ms	91ms	<80ms
8.2	User reference point at ISP Gateway node to IGSP/NIXI	<350 ms	< 350 ms	-	<278ms	<300 ms	250ms	<300ms	317ms	<180ms
8.3	User reference point at ISP Gateway node to international nearest NAP port abroad (satellite)	<800 ms	NA	-	Refer Annx 1	NIL	NA	NA	NA	VSNL does not use Satellite b/w

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

CHAPTER -6

LIVE ASSESSMENT OF QoS OF DIFFERENT SERVICES

3 DAYS DATA

6.1   Wireline Services data audited for 3 days during Jun – Aug 2008

S.N.	Parameters	Benchmarks	AIRTEL	BSNL	RELIANCE	TTML
1	Call Completion Rate within a local network					
	Should be better than 55%	> 55%	60.46%	46.02%	77.66%(ASR)	55.70%
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%	57%	72%	93%	95%
	within 90 seconds	95%	80%	99%	97%	98%

NOTE:

BSNL: 184 Exchanges from the SSA/SDCA Pune, Nashik, Akola, Nagpur, Nanded and Latur were audited.

For other operator the centralized data was provided for all the exchanges.

6.1.2   Data Analysis - LIVE ASSESSMENT

1.0   Call Completion Rate within a local network:
Should be better than 55%: All the operators meet the benchmark except for BSNL (46.02%).
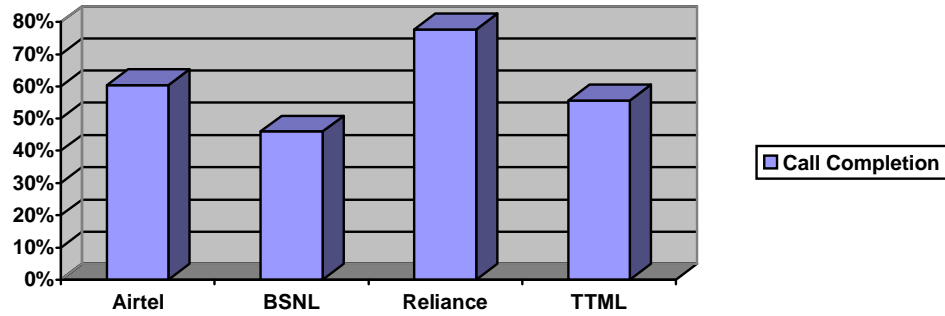
2.0   Response time to the customer for assistance:

(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.
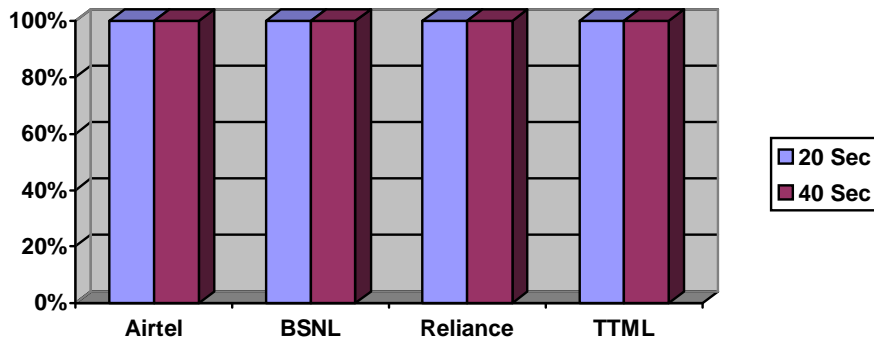
(ii) % age of calls answered by operator (Voice to Voice)
- Within 60 seconds (>80%): Only Reliance & TTML is meeting the benchmark
- Within 90 seconds (>95%): All the operators meet the benchmark except Airtel (80%).
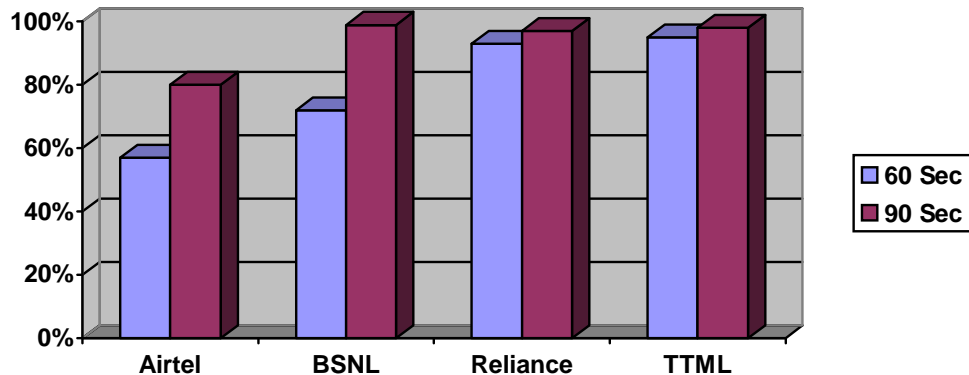
6.2   WIRELESS BASIC AND CELLULAR MOBILE SERVICES

6.2.1   3 DAYS DATA AUDITED FOR DURING JUN – AUG 2008.

S.N.	Parameters	Benchmark	GSM OPERATORS				CDMA OPERATORS	
			Airtel	Idea	BSNL	Vodafone	TTML	Reliance
1	**Network Performance**							
1.2	Call set-up Success Rate (within licensees own network) (%)	> 95%	92.5%	97.3%	100%	97.5%	99.4%	100%
1.3	Service Access Delay (Sec)	9 – 20 Sec	17.2	11.04	5	5	10.1	5
1.4	Blocked Call Rate							
	(i) SDCCH Congestion (%)	< 1%	0.42%	0.87%	0.80%	0.09%	0.00	0.00
	(ii)TCH Congestion (%)	< 2%	0.47%	0.93%	2.2%	0.4%	0.5%	0.50%
	(iii) Cell exceeding 80% TCH utilization (Nos)		5239	218	NA	774	47	16
1.5	(i) Call Drop Rate (%)	< 3%	1.5%	2.6%	3%	1.2%	0.9%	1.4%
	(ii) Cell exceeding 3% TCH drop (Nos)		876	2364	444	275	45.3	28.3
	(iii) Cell exceeding 3% TCH drop (%)		5.7%	18.84%	5.6%	2.5%	4%	3.20%
1.6	Percentage of connections with good voice quality (%)	> 95%	96.3%	97.10%	90%	95.6%	96%	97.57%
1.7	Service Coverage							
	In door (>= -75dBm)		90.70%	88.40%	76%	65%	93%	93.2 %
	In-vehicle (>= -85dBm)		96.10%	99.20%	89.3%	97%	99.9%	99.8%
	Out door- in city (>= -95dBm)		99.50%	100%	99.5%	100%	100%	100%
1.8	POI Congestion (%)	0.05%	14.96%	8.9%	0	0.04%	0	0

S.N.	Parameters	Benchmark	GSM OPERATORS				CDMA OPERATORS	
			Airtel	Idea	BSNL	Vodafone	TTML	Reliance
2	**Customer Help Lines:**							
2.1	Response time to the customer for assistance							
	(i) % age of calls answered (electronically) :							
	within 20 seconds (%)	> 80%	100%	96%	100%	100%	100%	100%
	within 40 seconds (%)	> 95%	100%	96%	100%	100%	100%	100%
	(ii) % age of calls answered by operator (voice to voice):							
	Within 60 seconds (%)	> 80%	48%	92%	85%	90%	95%	88%
	Within 90 seconds (%)	> 95%	91%	96%	97%	100%	100%	98%

6.2.2 DATA ANALYSIS

A)   **NETWORK PERFORMANCE**

I.   Call setup success rate: All operator except Airtel (92.5%) meet TRAI benchmarks.
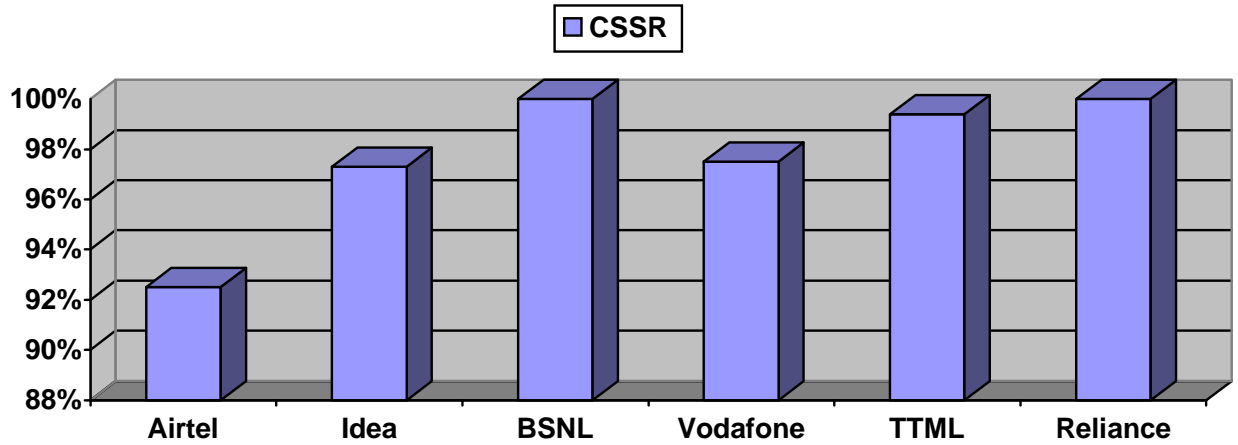
All operators meet benchmark except for BSNL (GSM) & BSNL, CDMA.

II.   Service access delay:

All operators meet the benchmark.
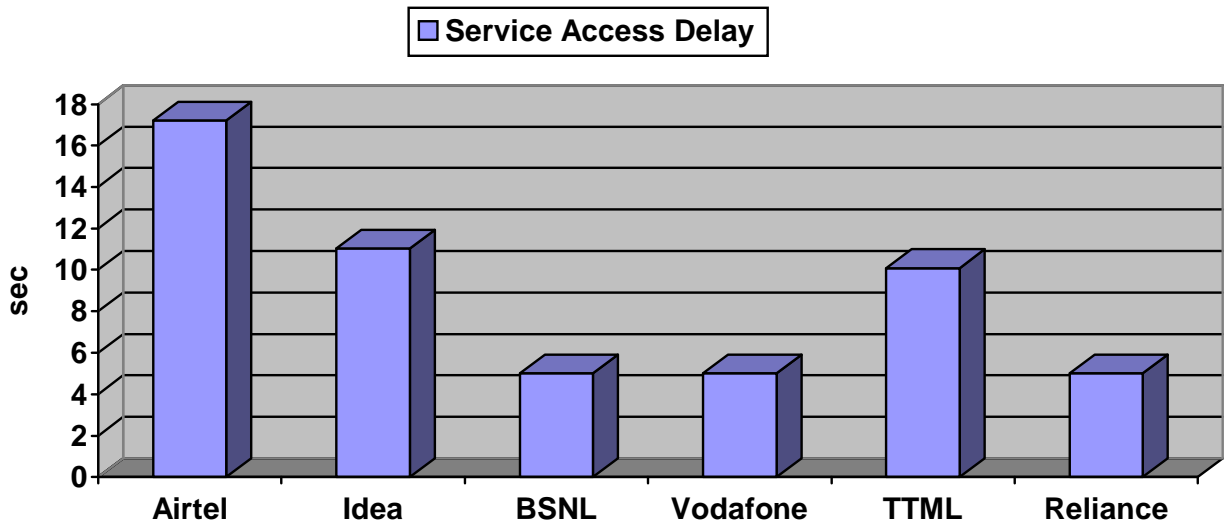
III. Blocked call rate:

(1) SDCCH congestion (%): All operators meet benchmark.
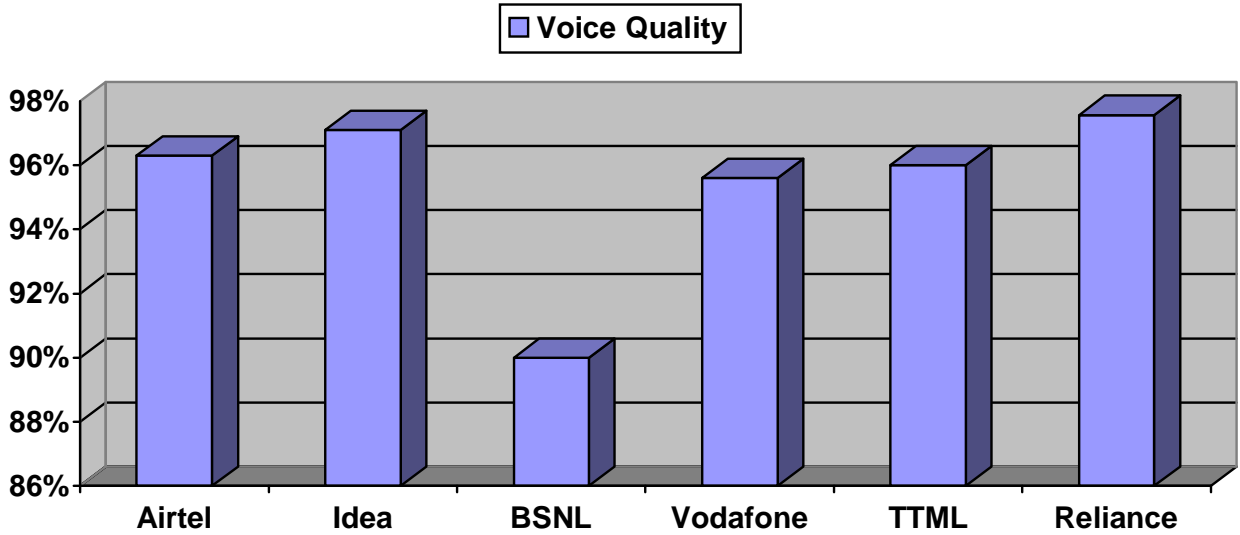(2) TCH congestion (%):   All operators except BSNL meet benchmark

□ SDCCH Congestion ■ TCH Congestion

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

□ Call Drop Rate ■ Cell exceeding 3% TCH Drop
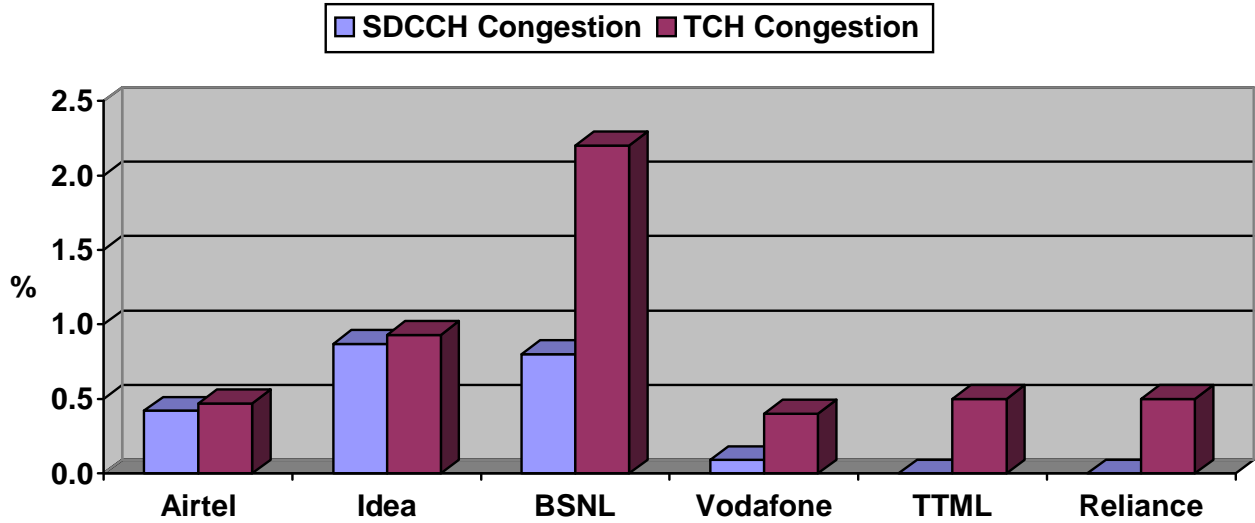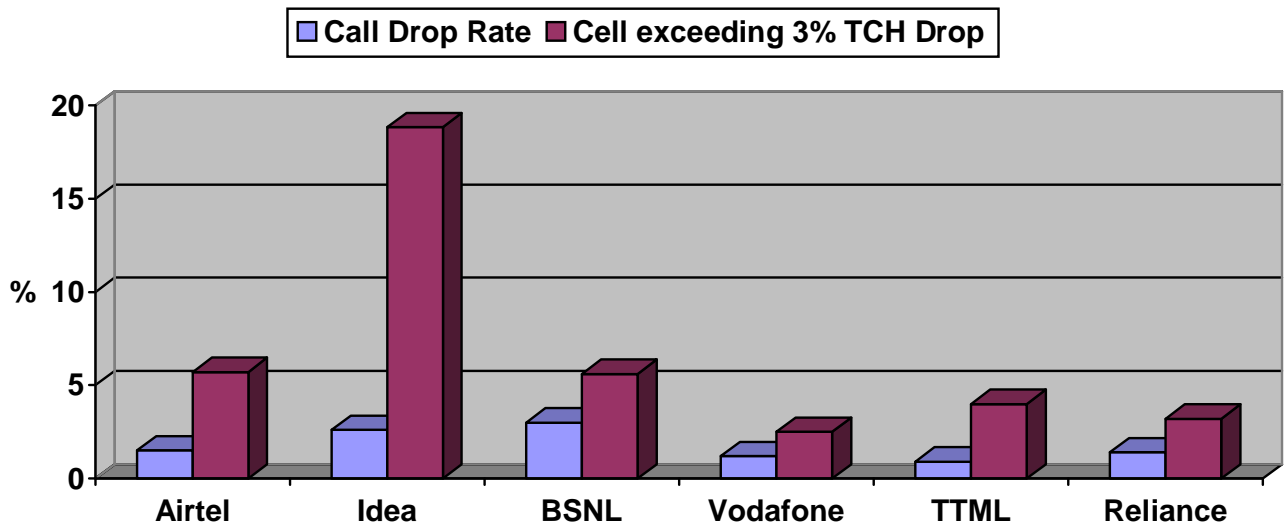
V.   Percentage of connections with good voice quality:

All of operators meet TRAI benchmarks except BSNL (90%)
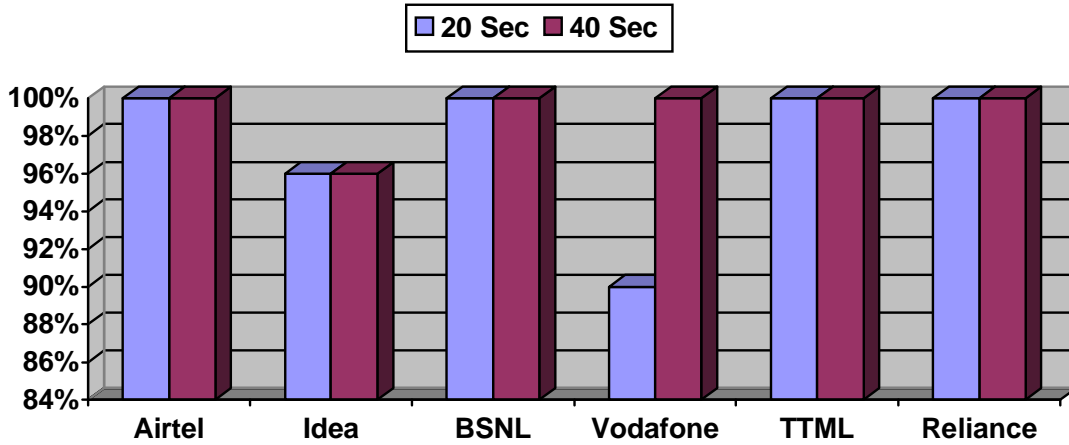

VI.   Service Coverage
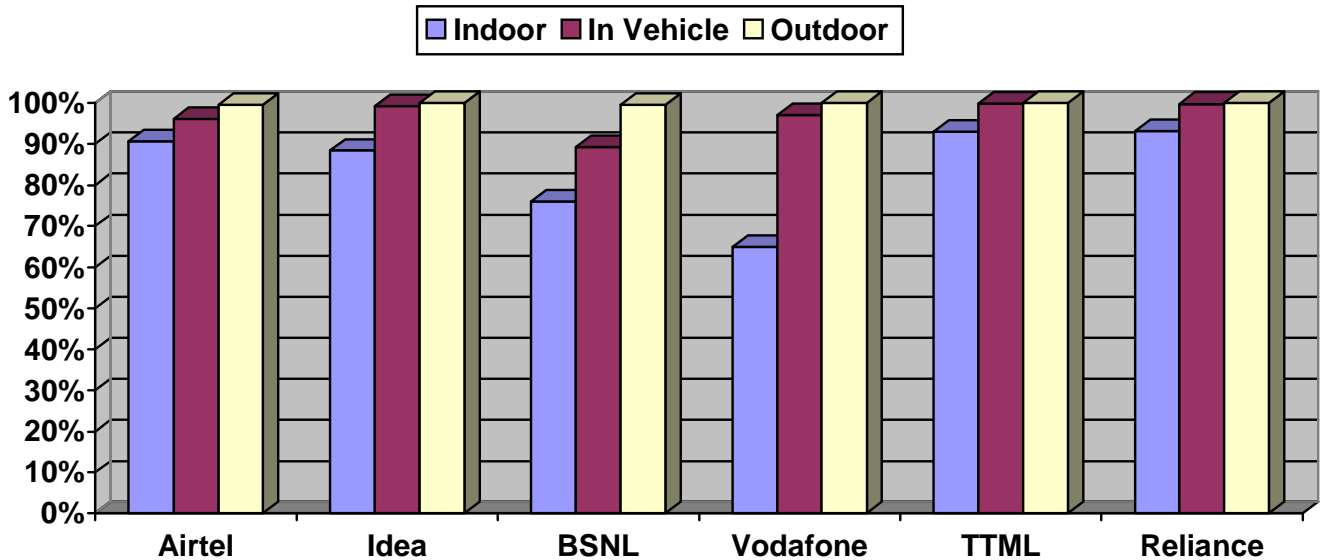
VII.   POI Congestion:

All operators meet benchmark except for Airtel (14.96%) and Idea (8.9%).
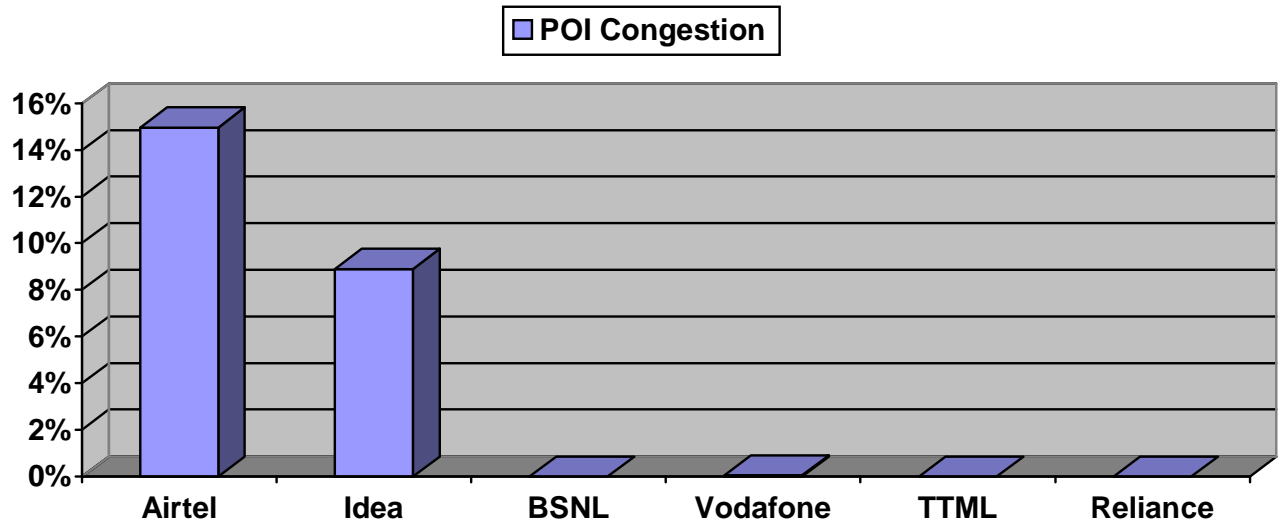
B)   CUSTOMER HELPLINE PERFORMANCE

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

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

With in 60 sec: All operators meet benchmark except Airtel (48%).
With in 90 sec: All operators meet benchmark except for Airtel (91%).
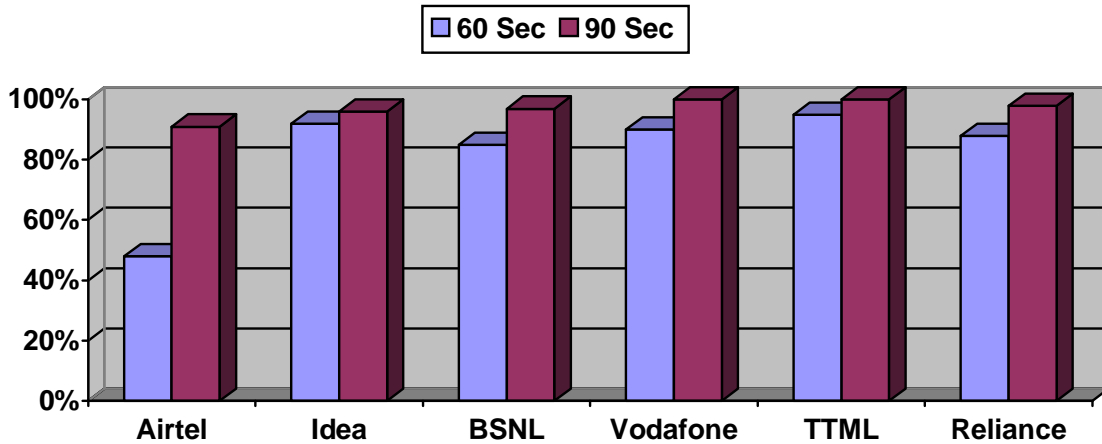
6.3 Broadband Services

6.3.1 Data Audited during 3 days live measurements.

S.N.	Parameters	Benchmark	Bharti	Hathway	BSNL	Reliance	SIFY	TTML	YOU Telecom	VSNL
1	Response time to the customer for assistance									
	% age of calls answered by operator (Voice to Voice)									
	Within 60 seconds	>60%	57%	67.44%	96%	93%	67%	97.08%	100%	91%
	Within 90 seconds	>80%	80%	81.78%	98%	97%	98%	99.03%	100%	98%
2	Bandwidth Utilization/ Throughput:									
	Bandwidth Utilization	<80%								
	i) POP to ISP Gateway Node [Intra-network] Link(s)		64.81%	68%	45%	54.67%	54.35%	64%	70.42%	<80%
	ii) ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity		71.32%	<80%	NA	NA	50.56%	84%	71.33%	75%
	Broadband Connection Speed (download)	>80%	93.83%	93.14%	92.50%	87.22%	90.23%	97%	88%	90%
3	Packet Loss	<1%	0.00%	0.02%	0.00%	0.00%	0.00%	0.53%	0.00%	0.00%

| S.N.	Parameters	Benchmark	Bharti	Hathway	BSNL	Reliance	SIFY	TTML	YOU Telecom	VSNL
4	**Network Latency (for wired broadband access)**									
4.1	User reference point at POP / ISP Gateway Node to International Gateway (IGSP/NIXI)	< 120ms	36ms	14ms	18.67ms	9.26ms	7ms	32ms	22.2ms	50ms
4.2	User reference point at ISP Gateway Node to International nearest NAP port abroad (Terrestrial)	< 350ms	318ms	313.33ms	307.67ms	281.75ms	147ms	228ms	245.83ms	86ms
4.3	User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite)	< 800ms	NA	NA	NA	NA	NA	NA	NA	NA

(NA - NOT APPLICABEL)

6.3.2 DATA ANALYSIS

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 except for Bharti deviating marginally (57%).

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

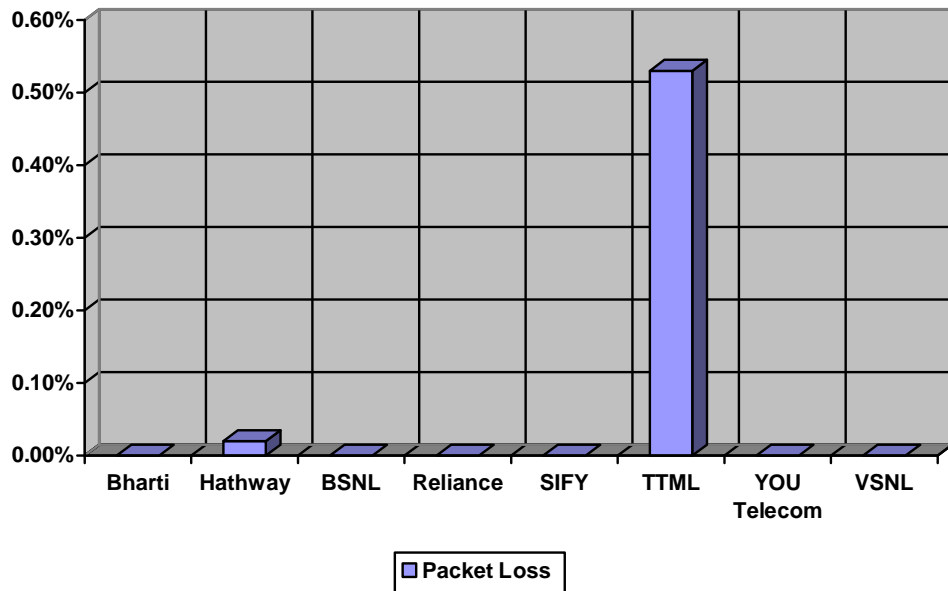**Response Time to the customer for assistance**
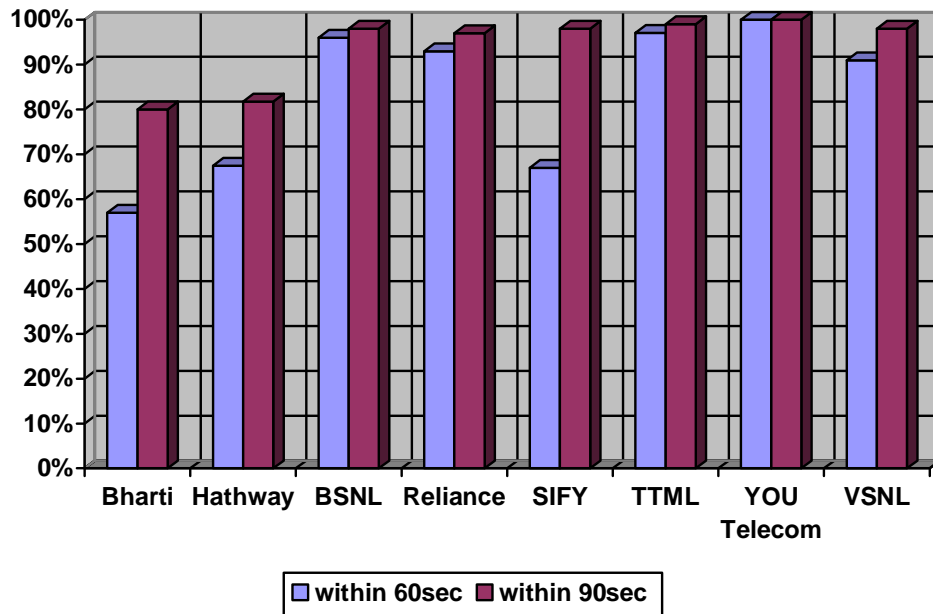
2.0 Bandwidth Utilization/ Throughput:

- POP to ISP Gateway Node [Intra-network] Link(s): All the operators meet the benchmark.

- ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity: All the operators meet the benchmark except for TTML deviating marginally (84%).

- Broadband Connection Speed (download) (>80%): All the operators meet the benchmark.

Bandwidth Utilisation/Throughput

Legend: ■ BW Utilisation: POP to ISP Gateway ■ BW Utilisation : ISP Gateway to IGSP/NIXI □ Downloadspeed
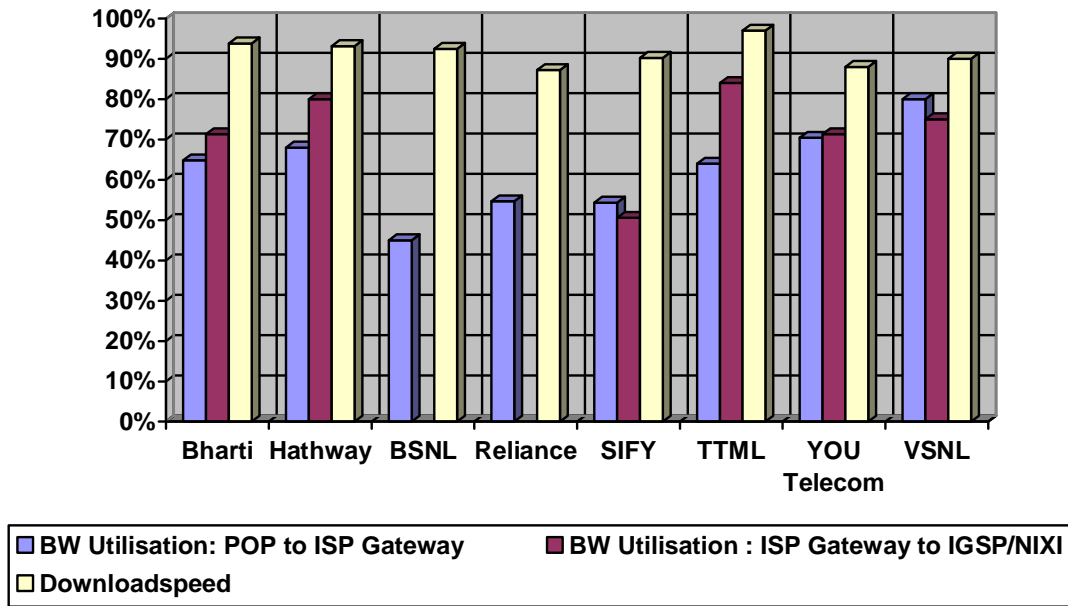
3.0   Packet Loss: All the operators meet the benchmark.

Legend: ■ Packet Loss

4.0   Network Latency:

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

- User reference point at ISP Gateway Node to International nearest NAP port abroad (Terrestrial): 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.

Network Latency

□ User reference point at POP / ISP Gateway Node to International Gateway (IGSP/NIXI)
□ User reference point at ISP Gateway Node to International nearest NAP port abroad (Terrestrial)
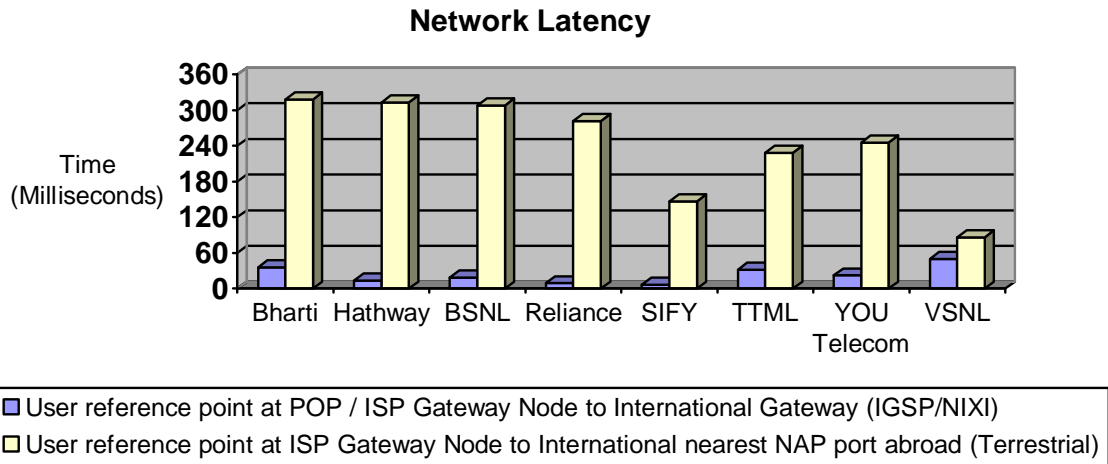
CHAPTER – 7

PERFORMANCE / STATUS OF OPERATORS WRT QoS

**7.1   QUALITY OF SERVICE ASSESSMENT : WIRELINE**

7.1.1   OPERATOR PERFORMANCE BASED ON ONE MONTH DATA VERIFICATION IN WHICH AUDIT WAS CONDUCTED (JUNE – AUGUST 2008).

S.N.	Parameters	BENCH-MARKS	AIRTEL	BSNL	RELIANCE	TTML
1	Provision of a telephone after registration of demand					
	100 % cases within 7 days (subject to technical feasibility)	100%	99%	74%	35%	83%
2	Fault incidences					
	(No. of faults/100 subscribers /month)	< 3%	0.85%	7.87%	1.25%	1.48%
	By 31st june 2008					
3	Fault repair by next working day					
	By next working day	>90%	98.40%	88.87%	98.22%	100%
	Within 3 days	100%	100%	92.75%	100%	100%
4	Mean Time To Repair (MTTR)	<8 Hrs	8.3	9.24	4.7	7.9
5	Call Completion Rate within a local network					
	Should be better than 55%	>55%	62.50%	57.36%	77.62%	56%
6	Metering and billing credibility					
	Disputed Bills over bills issued	< 0.1%	0.004%	0.02%	0.02%	0.07%

| S.N.	Parameters	BENCH-MARKS	AIRTEL	BSNL	RELIANCE	TTML
7	Customer Care					
	(Promptness in attending to customers requests) 95% of requests					
	- Shifts (< 3 days)	95%	92.60%	77.00%	100%	100%
	- Closures (< 24 Hrs.)	95%	91.83%	90.64%	98%	100%
	- Additional Facility (< 24 Hrs.)	95%	86.42%	94.40%	96%	100%
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%	85.83%	100%	99%	92%
	within 90 seconds	95%	91.83%	100%	100%	95%

7.1.2   Data Analysis – Monthly Data Assessment.

1.0   Service Provisioning /Activation Time:
BSNL(74%) & Reliance(35%) and TTML(83%) deviates from benchmarks. Airtel with 99% deviates marginally.
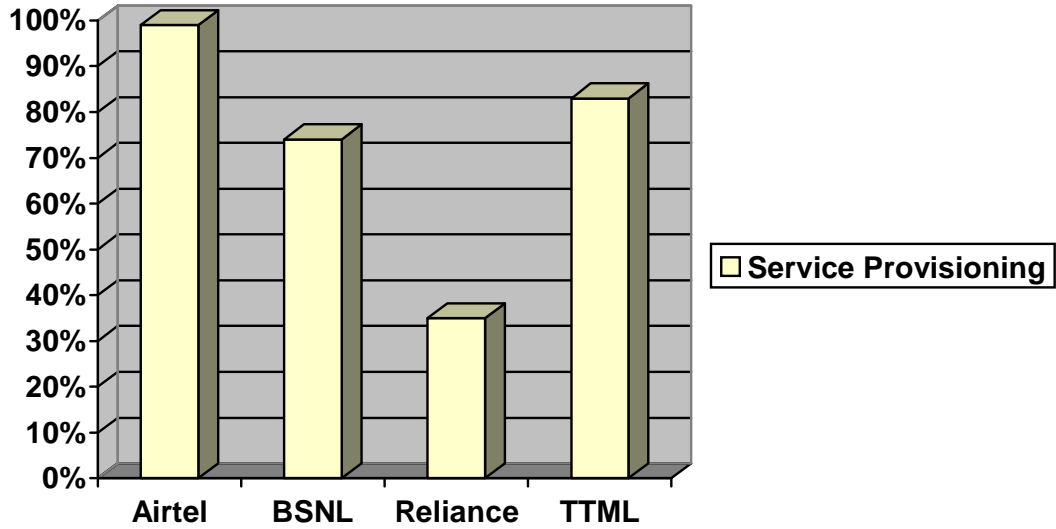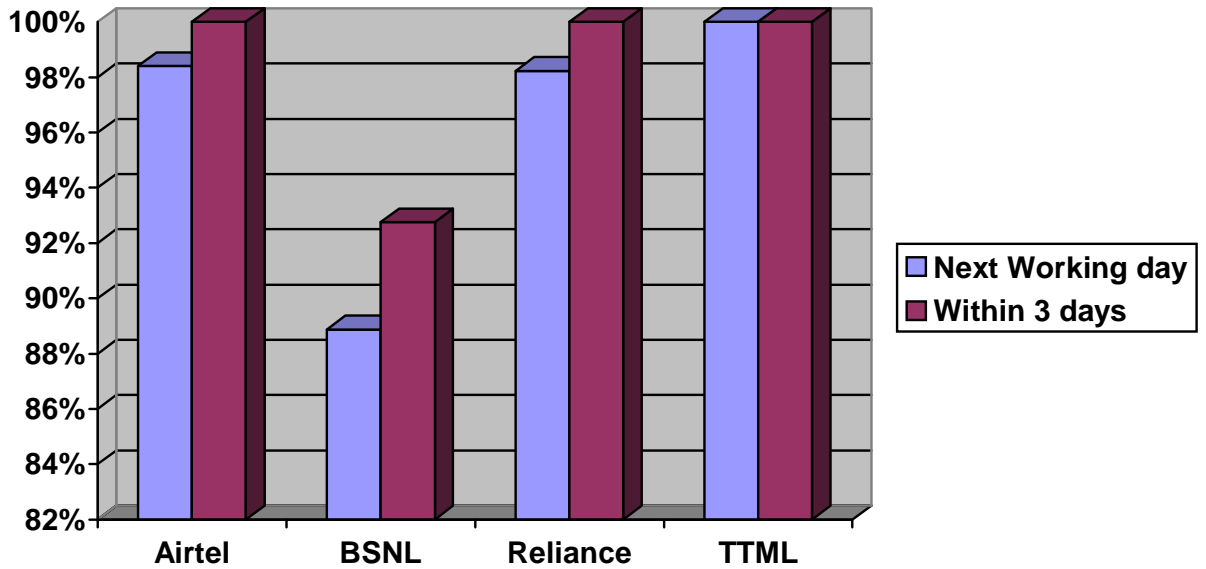

2.0   Fault Incidence:

Nos of Faults per 100 subscribers per month : All the operators comply with the TRAI benchmark except for BSNL (7.87%)
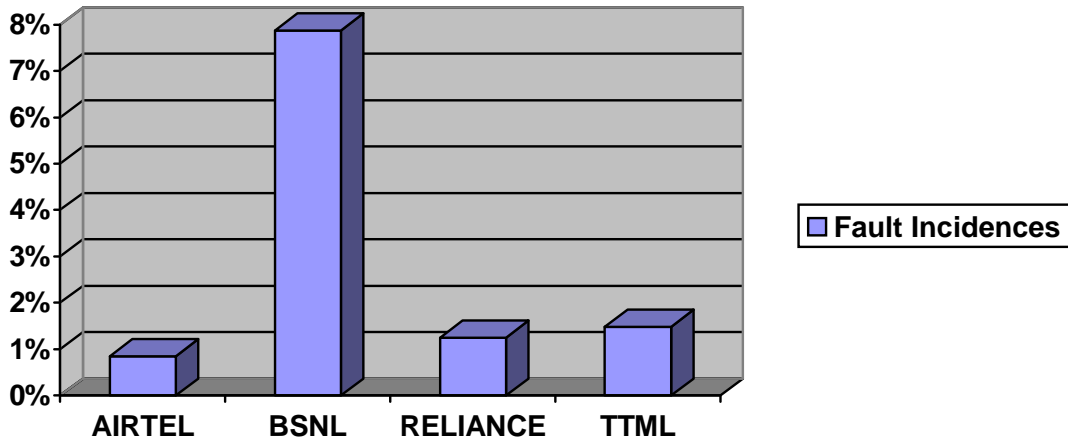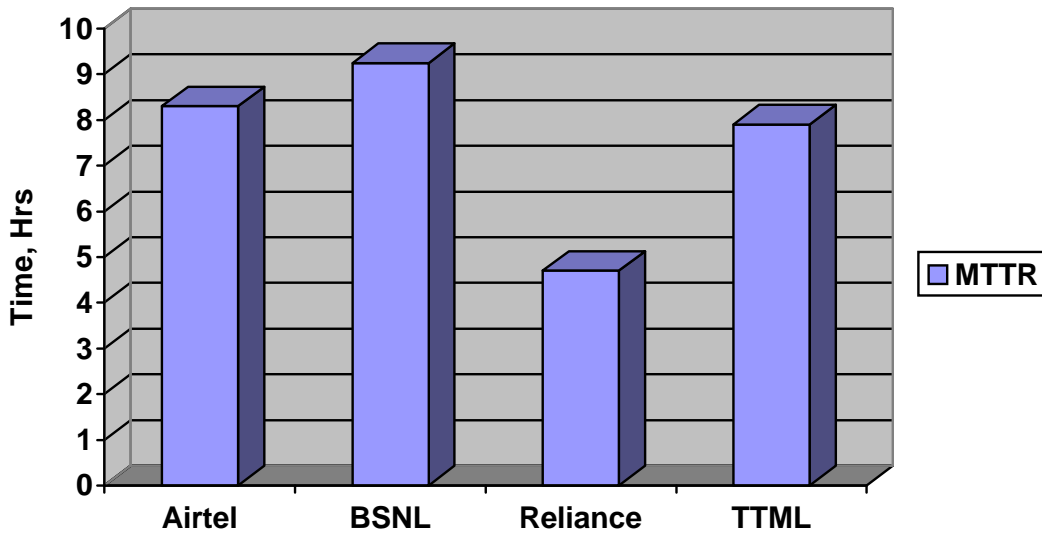
3.0   Fault Repair:

- **By next working day:** All the operators comply with the TRAI benchmark of 90% except for BSNL (88.87%).

- **within 3 working days:** All the operators comply with the TRAI benchmark of 99% except for BSNL (92.75%).
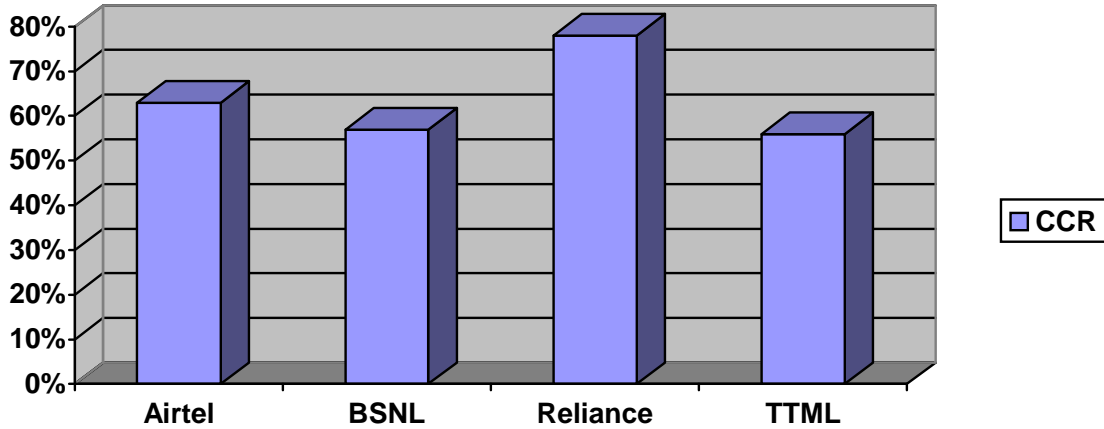

4.0   **Mean Time to Repair (MTTR):**

All the operators comply with the TRAI benchmark except for Airtel (8.3) and BSNL (9.24).
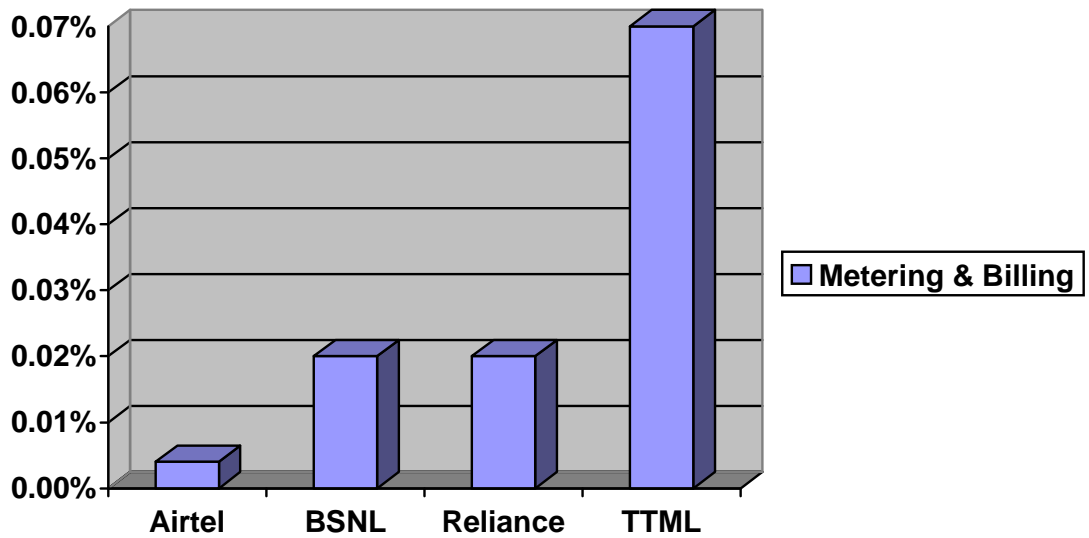
5.0   Call Completion Rate (CCR):

All the operators comply with the TRAI standards.

6.0   Metering and Billing Credibility:

Disputed Bills over Bills issued:- All the operators comply with the TRAI standards.
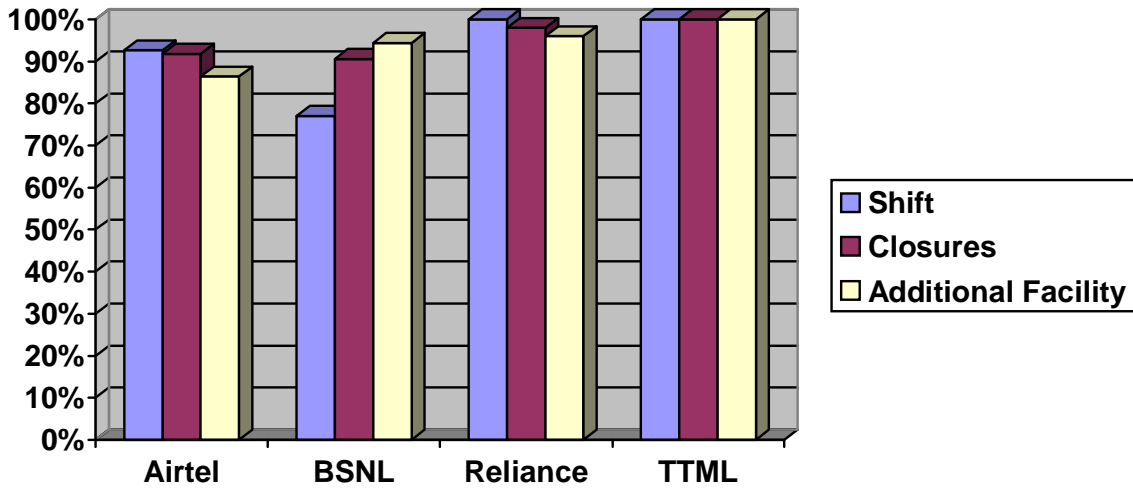
7.0   Customer Care:

Shifts : Airtel & BSNL deviates marginally.
Closures : Airtel, BSNL and Reliance deviates marginally.
Additional Facility : Airtel, BSNL and Reliance deviates marginally.
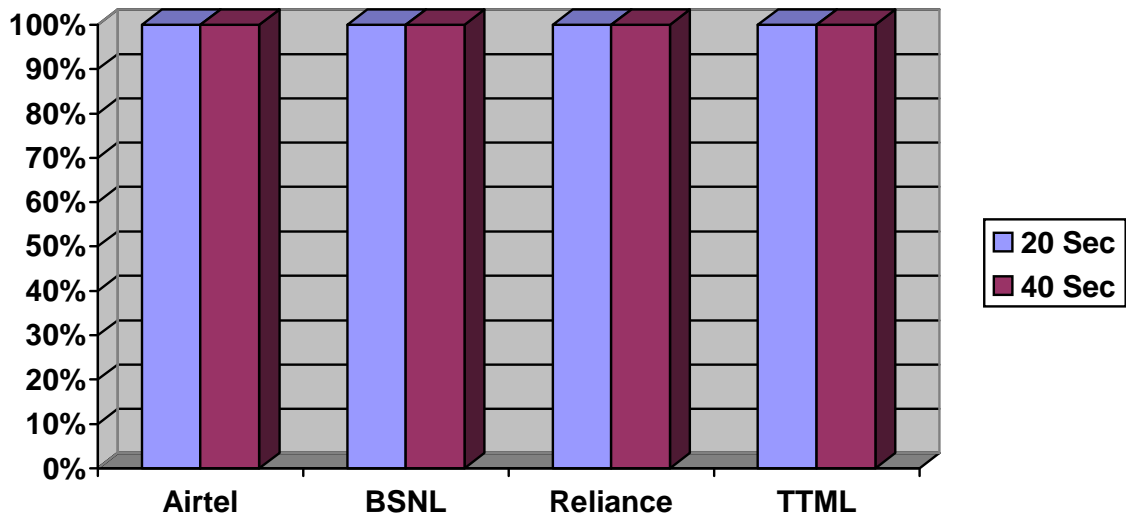

8.0   Response time to the customer for assistance:

(i) % age of calls answered by operator (Electronically)
 - Within 20 seconds (>80%): All the other operators except Airtel meet the benchmark. Data not received from Airtel.
 - 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 operators meet the benchmark.
- Within 90 seconds (>95%): All the operators meet the benchmark except for Airtel.
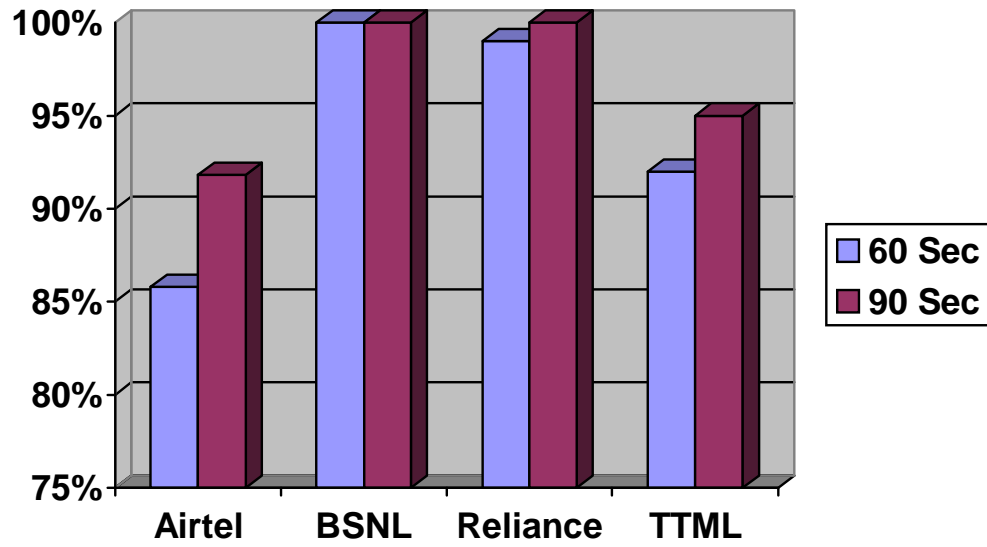
7.2   QUALITY OF SERVICE ASSESSMENT : WIRELESS BASIC AND CELLULAR MOBILE

7.2.1   OPERATOR PERFORMANCE BASED ON ONE MONTH DATA VERIFICATION IN WHICH AUDIT WAS CONDUCTED (JUNE – AUGUST 2008).

S.N.	Parameters	Benchmark	GSM OPERATORS				CDMA OPERATORS	
			Airtel	Idea	BSNL	Vodafone	TTML	Reliance
1	Network Performance							
1.1	Accumulated down time of Community Isolation	< 24 Hrs	300.47	1.1	0	0.28	2.33	1.11
1.2	Call set-up Success Rate (within licensees own network) (%)	> 95%	92.8%	100%	100%	96.3%	99.3%	100%
1.3	Service Access Delay (Sec)	9 – 20 Sec	17.4	10.6	5	NR	10.1	4.04
1.4	Blocked Call Rate							
	(i) SDCCH Congestion (%)	< 1%	0.39%	0.84%	0.81%	0.08%	0	0.00
	(ii)TCH Congestion (%)	< 2%	0.56%	0.84%	1.93%	0.44%	0.5%	0.50%
	(iii) Cell exceeding 80% TCH utilization (Nos)		5021	191	NR	1086	47	20
1.5	(i) Call Drop Rate (%)	< 3%	1.6%	1.5%	2.65%	1.3%	0.8%	1.16%
	(ii) Cell exceeding 3% TCH drop (Nos)		595	1757	397	297	45	34
	(iii) Cell exceeding 3% TCH drop (%)		4%	14.28%	5.1%	2.97%	4%	3.70%
1.6	Percentage of connections with good voice quality (%)	> 95%	93.7%	97.20%	99%	95.5%	96.50%	97.57%
1.8	POI Congestion (%)	< 0.5%	13.1%	0.22%	0%	0.02%	0%	0%

S.N.	Parameters	Benchmark	GSM OPERATORS				CDMA OPERATORS	
			Airtel	Idea	BSNL	Vodafone	TTML	Reliance
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%	NR	100%	97.9%
	within 40 seconds (%)	> 95%	100%	100%	100%	NR	100%	97.9%
	(ii) % age of calls answered by operator (voice to voice):							
	Within 60 seconds (%)	> 80%	85.78%	99.24%	83.07%	NR	92%	93.87%
	Within 90 seconds (%)	> 95%	91.84%	99.54%	95.16%	NR	95%	96.48%
3	**Billing Complaints**							
3.1	Billing complaints per 100 bills issued (%)	0.1%	0.07%	0.95%	0.43%	0.087%	0.1%	0.08%
3.2	% of billing complaints resolved within 4 weeks (%)	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 week	2 days.	NA	< 4 weeks	< 4 weeks	< 4 weeks

(NR – DATA NOT RECEIVED)

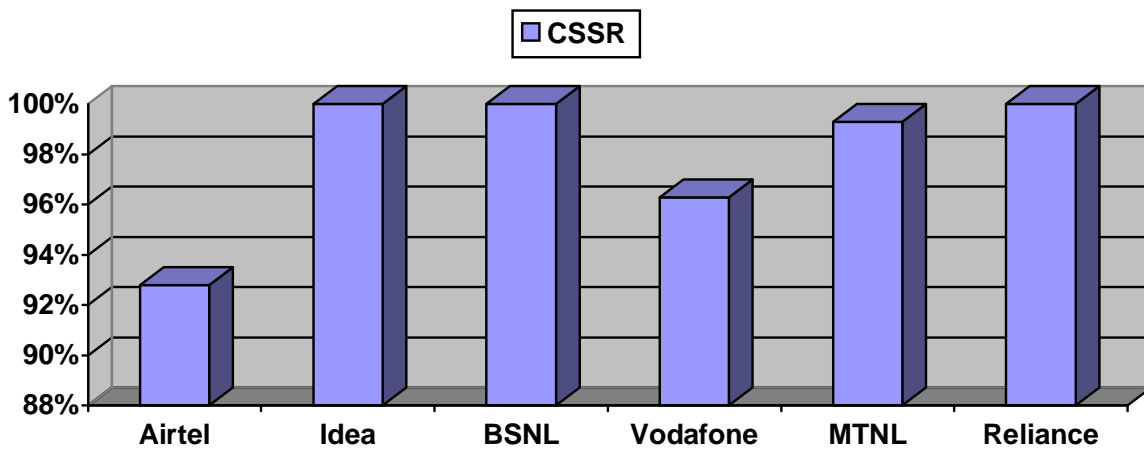**7.2.2   DATA ANALYSIS**

A)   NETWORK PERFORMANCE

I.   Accumulated down time of Community Isolation: All operators meet TRAI regulations except Airtel.

■ Community Isolation
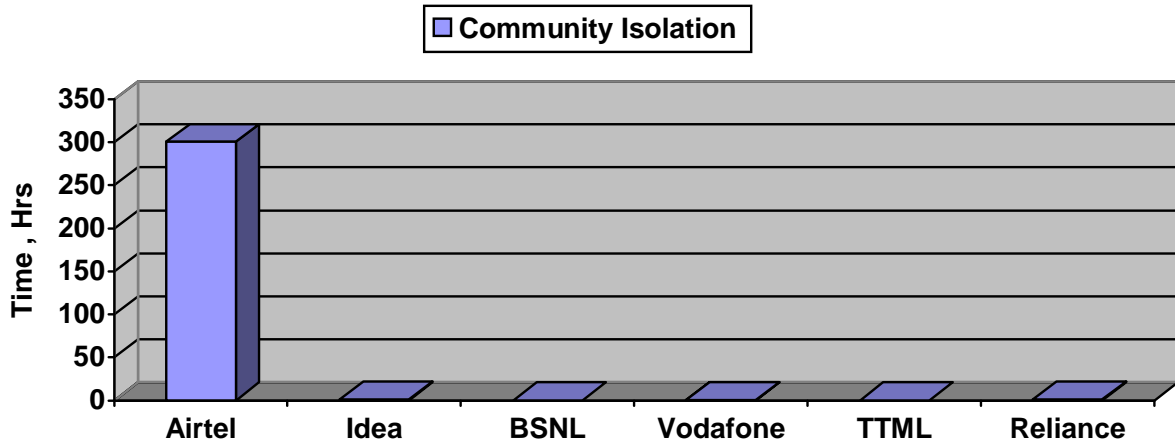
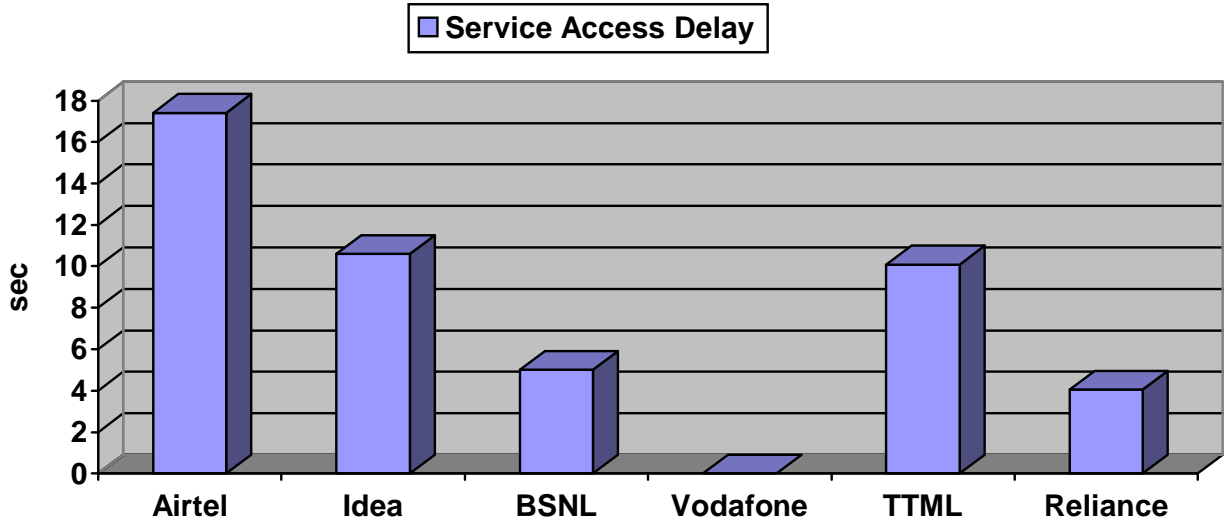II.   Call setup success rate:

All operators meet benchmark except Airtel.

■ CSSR

III.   Service access delay:

Data not received from Vodafone. All other operators meet the benchmark

Service Access Delay

IV.   Blocked call rate:

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

SDCCH Congestion TCH Congestion
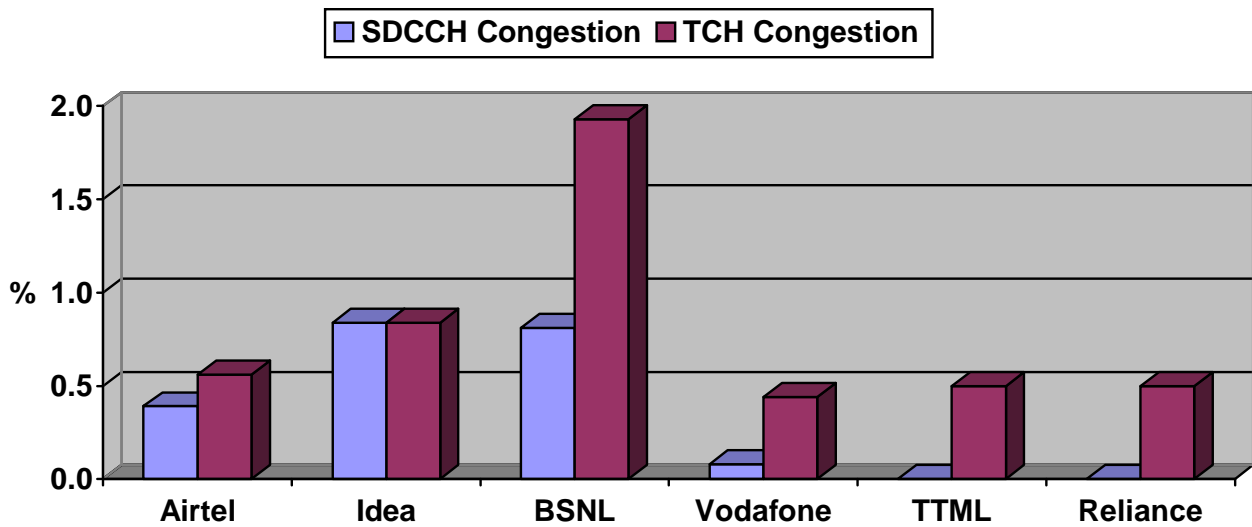
V. Call drop rate (%):
All operators meet benchmark.
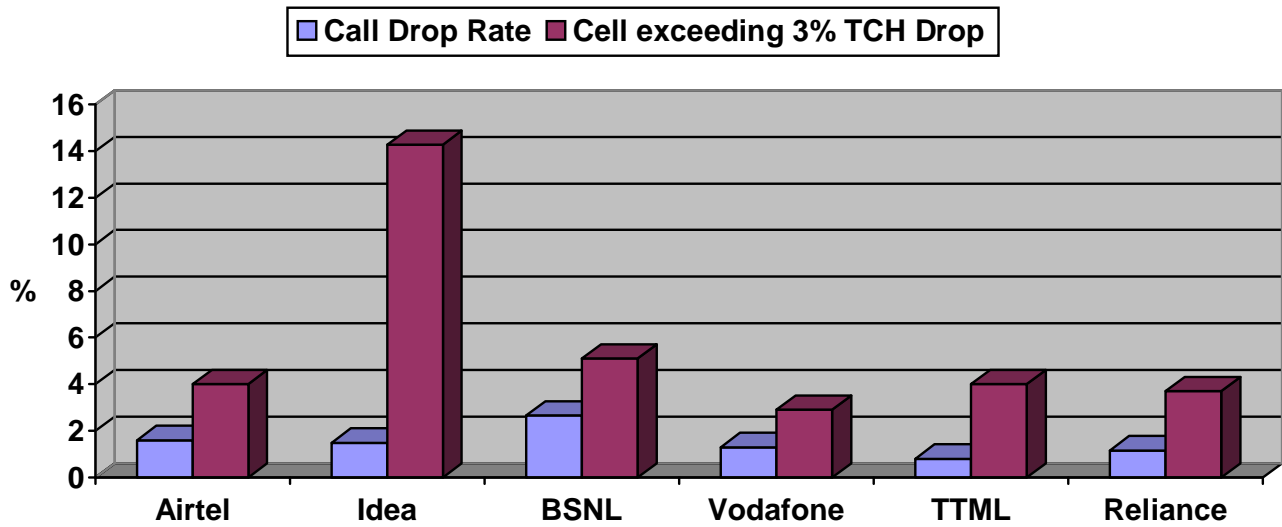
VI. Percentage of connections with good voice quality:

All the operators meets the TRAI benchmarks except for Reliance not known as data not received from them.
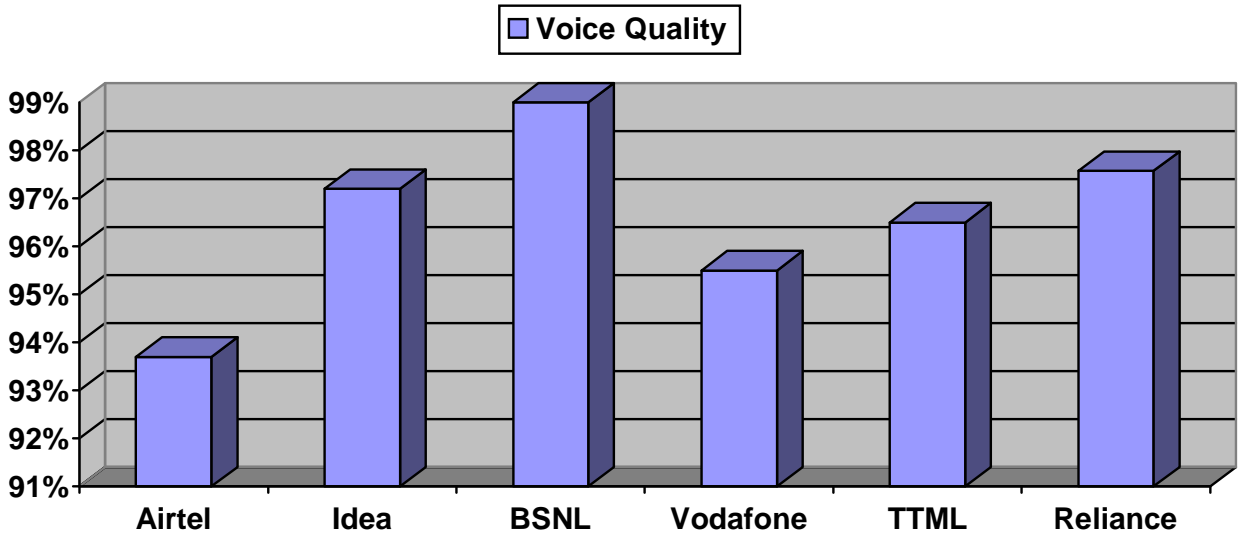
VII.   POI Congestion:

All operators meet benchmark except for Airtel (13.1%)
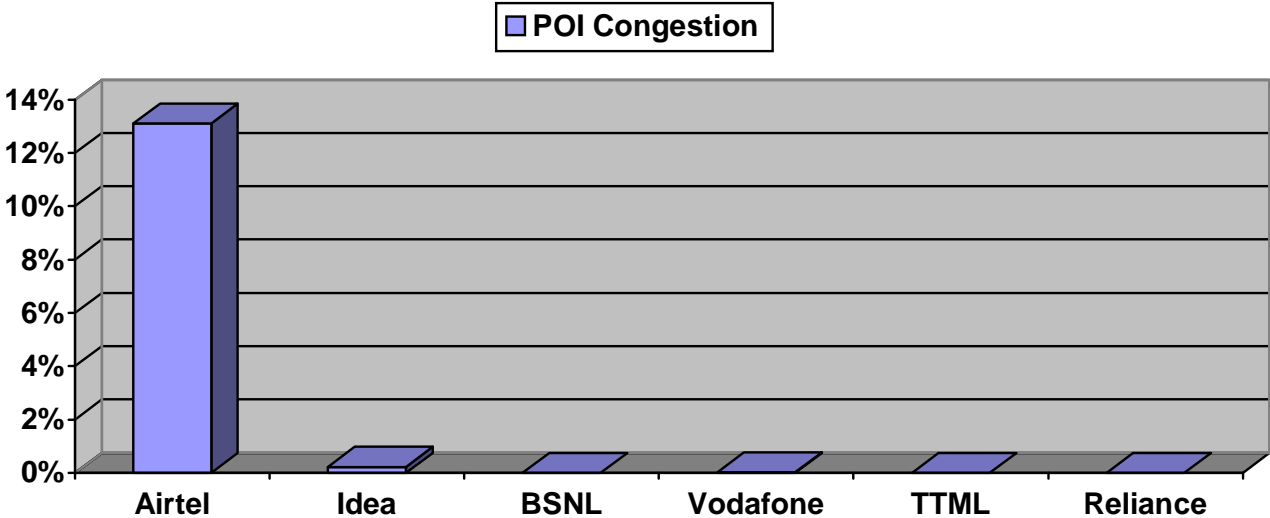
□ POI Congestion

B) **CUSTOMER HELPLINE PERFORMANCE**

Response time to the customer for assistance:
I. Percentage of call answered (Electronically);
With in 20 sec (%): All meet TRAI benchmark except data not submitted by Vodafone.
With in 40 sec (%):All meet TRAI benchmark except data not submitted by Vodafone.
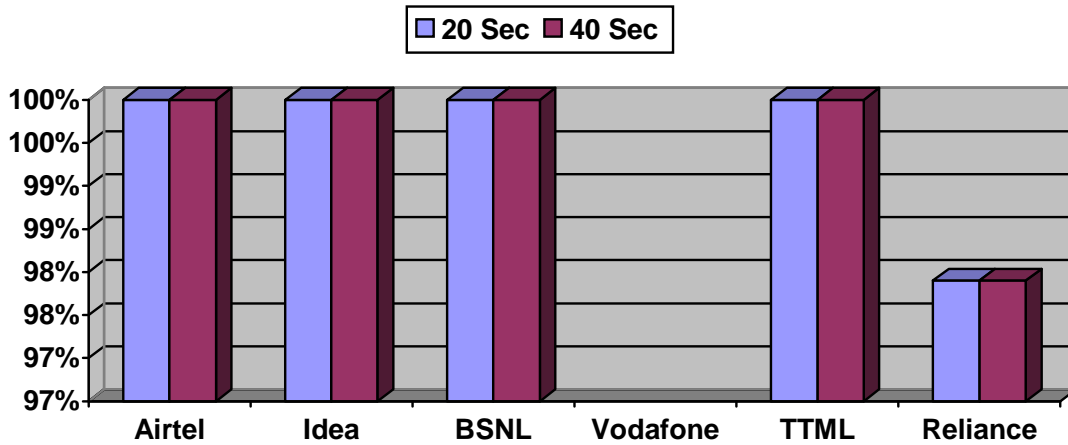
II. Percentage of call answered by operators (Voice to voice);

With in 60 sec (%):All meet benchmarks except data not provided by Vodafone.
With in 90 sec (%):All meet benchmarks except data not provided by Vodafone.
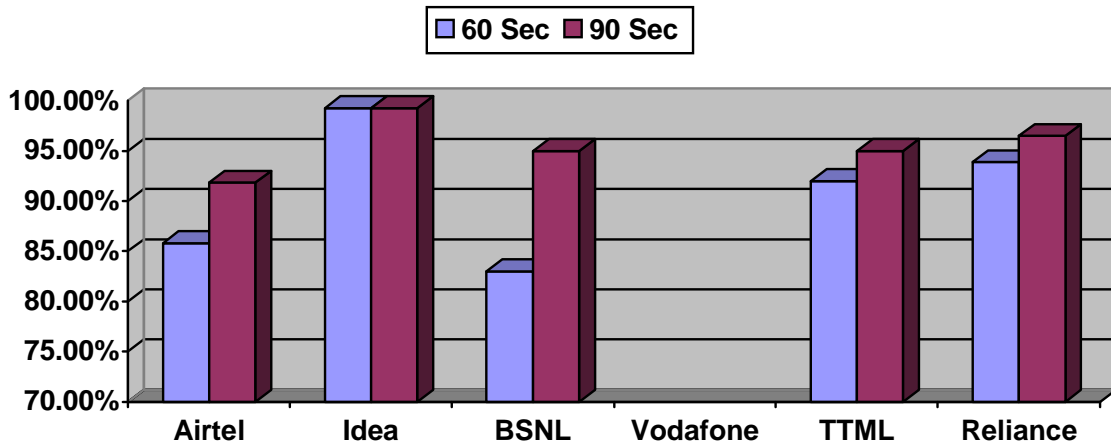
C)   BILLING COMPLAINTS

I.   Billing Complaints per 100 bills issued

Airtel, Vodafone, Reliance and TTML meet the benchmarks. Idea (0.95%) and BSNL (0.43%) do not meet the TRAI Benchmarks.

II.   Percentage of Billing Complaints resolved within 4 weeks

All meet the benchmarks.
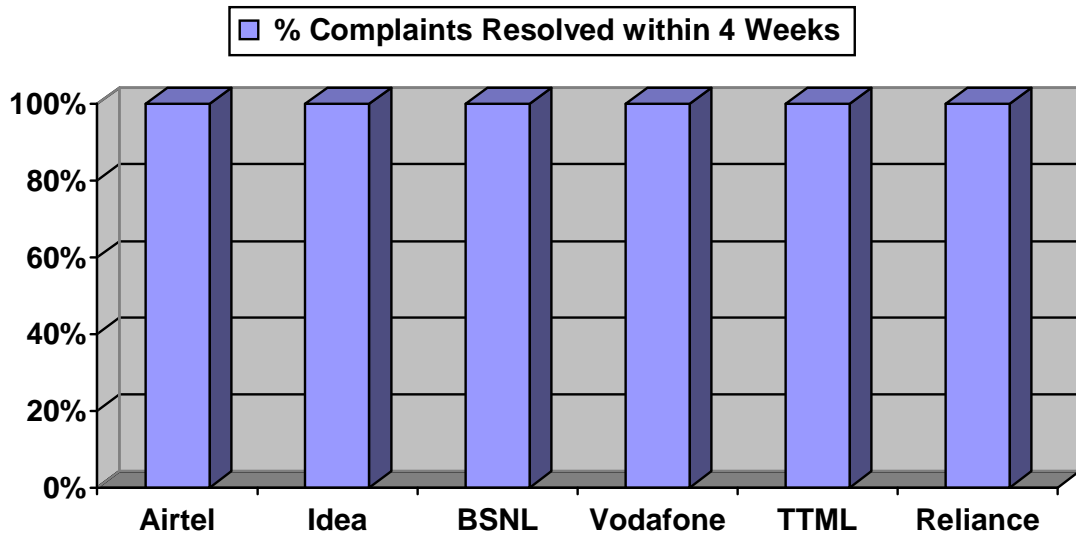
7.3   QUALITY OF SERVICE ASSESSMENT : BROADBAND

7.3.1   OPERATOR PERFORMANCE BASED ON ONE MONTH DATA VERIFICATION IN WHICH AUDIT WAS CONDUCTED (JUNE – AUGUST 2008

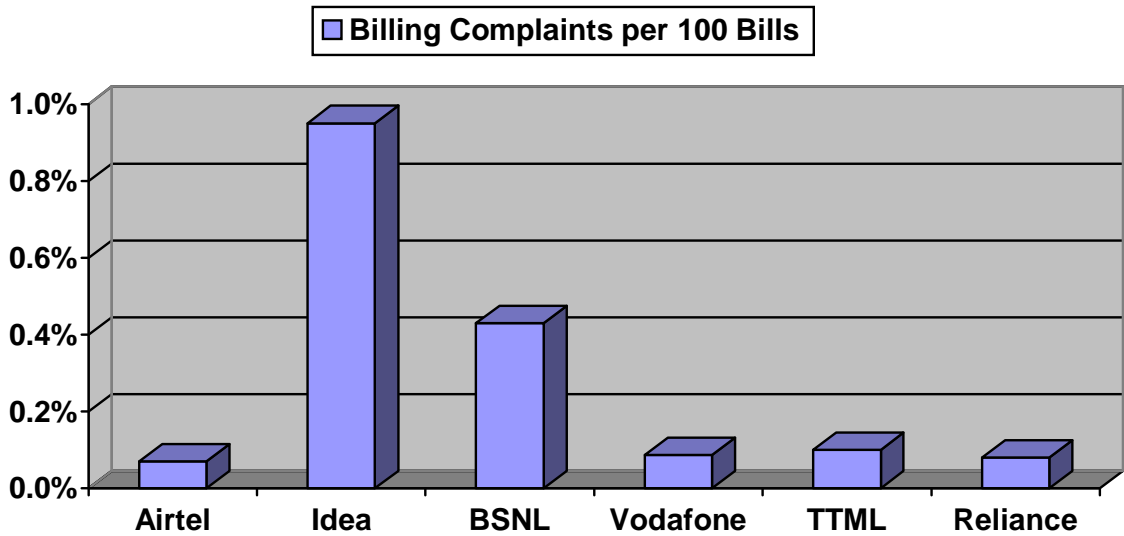| S.N.	Parameters	Benchmark	Bharti	Hathway	BSNL	Reliance	SIFY	TTML	YOU Telecom	VSNL
1	Service Provisioning /Activation Time									
1.1	100% cases in days (subject to technical feasibility)	<15 working days	98.46%	99.86%	2.38%	78.64%	100.00%	94.80%	100.00%	100.00%
1.2	In all cases where payment towards 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	100%	No such provision is available for broadband. Hence no compensation provided.	NIL	NA	NA	NA	NA
2	Fault Repair / Restoration Time									
	By next working day:	> 90%	97.59%	87.45%	No record is available.	98.00%	88.88%	95.65%	97.81%	83.00%
	within 3 working days:	99%	99.51%	98.73%	No record is available.	99.00%	100%	100.00%	99.64%	96.00%

S.N.	Parameters	Benchmark	Bharti	Hathway	BSNL	Reliance	SIFY	TTML	YOU Telecom	VSNL
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)		3	31	This data is only applicable incase of landline and not incase of Broadband. Hence, BSNL is not giving this rebate on proactive basis. This compensation is provided to the customers who are approaching for compensation	30	0	3	2	13067
	Faults Pending for > 7 working days and < 15 working days: (Rebate equivalent to 15 days of minimum monthly charge or equivalent usage allowance)		nil	24		25	0	1	NA	351
	Faults Pending for > 15 working days: (Rebate equivalent to one month of minimum monthly charge or equivalent usage allowance)		nil	11		1	0	1	NA	101
3	Billing Performance									
	Billing complaints per 100 bills issued	< 2%	* Refer Analysis on page 50	1.53%	0.76%	0.15%	NA	0.30%	0.16%	1.89%
	%age of Billing Complaints resolved	100% within 4 weeks	NA	100%	100%	100%	NA	100%	100%	100%
	Time taken for refund of deposits after closure:	100% within 60 days	100%	100%	79.80%	100%	NA	100%	100%	100%

S.N.	Parameters	Benchmark	Bharti	Hathway	BSNL	Reliance	SIFY	TTML	YOU Telecom	VSNL
4	Response time to the customer for assistance									
	% age of calls answered by operator (Voice to Voice)									
	Within 60 seconds	> 60%	90%	60-80%	NR	80.84%	91%	90.00%	86.91%	90.18%
	Within 90 seconds	> 80%	93%	80-90%	NR	85.99%	97%	94.00%	91.13%	97.39%
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)		71.40%	<80%	48.75%	55.00%	54.76%	70%	63.12%	<80%
	ii) ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity		77.60%	<80%	NA	NA	54.19%	89%	76.67%	<80%
	Broadband Connection Speed (download) - from ISP Node to User	> 80%	93.5%	85.18%	92.50%	92.59%	94.91%	97.16%	96.72%	85.00%

S.N.	Parameters	Benchmark	Bharti	Hathway	BSNL	Reliance	SIFY	TTML	YOU Telecom	VSNL
6	Service Availability / Uptime (for all users)									
	With effect from quarter ending September 2007 and onwards	> 98%	99.92%	99.10%	100%	99.59%	100%	99.73%	98.07%	96.10%
7	Packet Loss	< 1%	0%	0.12%	<1%	0.00%	<1%	0.50%	<1%	0.00%
8	**Network Latency (for wired broadband access)**									
	User reference point at POP / ISP Gateway Node to International Gateway (IGSP/NIXI)	< 120 msec	79.1ms	20ms	48.26ms	3.35ms	<45ms	40ms	30ms	80ms
	User reference point at ISP Gateway Node to International nearest NAP port abroad (Terrestrial)	< 350 msec	286.9ms	320ms	NR	271.3ms	<300ms	240ms	295ms	180ms
	User reference point at ISP Gateway Node to International nearest NAP port abroad (Satellite)	< 800 msec	NA	NA	NA	NA	NA	NA	NA	NA

7.3.2   Data Analysis – Monthly Data Assessment

1.0   Service Provisioning /Activation Time:

Only Sify, You Telecom and VSNL comply with the TRAI benchmark of 100%. Major deviation with BSNL is 2.38%.

Service Provisioning/Activation Time
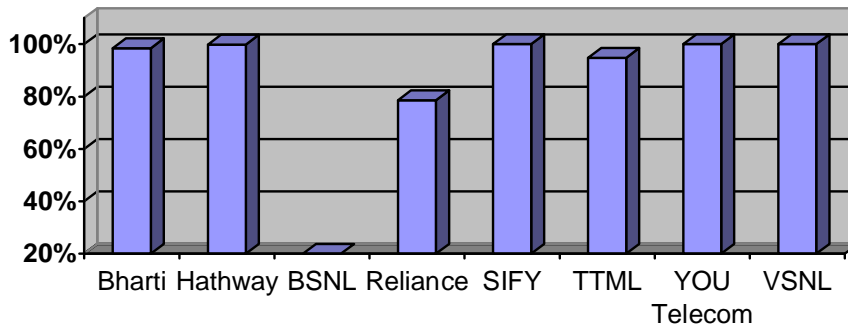
2.0   Fault Repair / Restoration Time:

- By next working day: Reliance, You Telecom, Bharti and TTML comply with the TRAI benchmark of 90%. VSNL (83%), Hathway (87.45%) and Sify (88.88%) deviates marginally and data for BSNL is not available.

- within 3 working days: All the operators comply with the TRAI benchmark of 99% except for VSNL (96%) deviating marginally. Data for BSNL is not available.

- Rebate: All the operators are giving rebate to the eligible customers.

Fault Repair/ Restoration Time
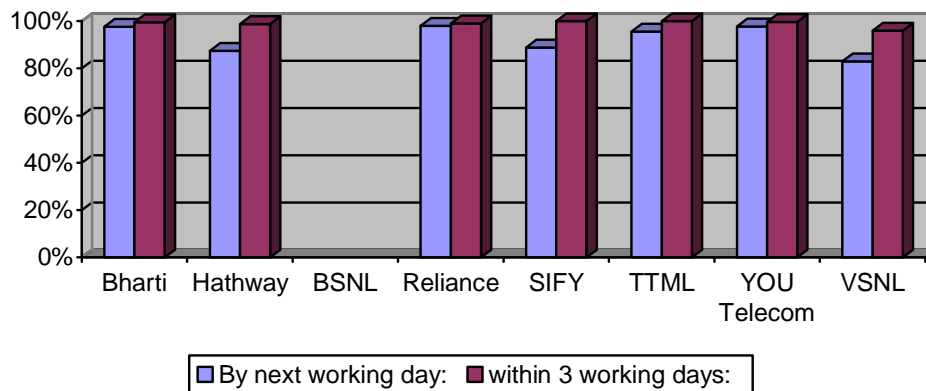
3.0   Billing Performance:

All the operators comply with the TRAI standards. Bharti is having billing complaints in the system but has shown '0', as per Bharti they are filing it with wireline service following the guidelines of wireline service laid by TRAI, Bharti is considering only metering complaints under this head. As per Bharti, they don't have any broadband guideline for the same.

Billing Performance
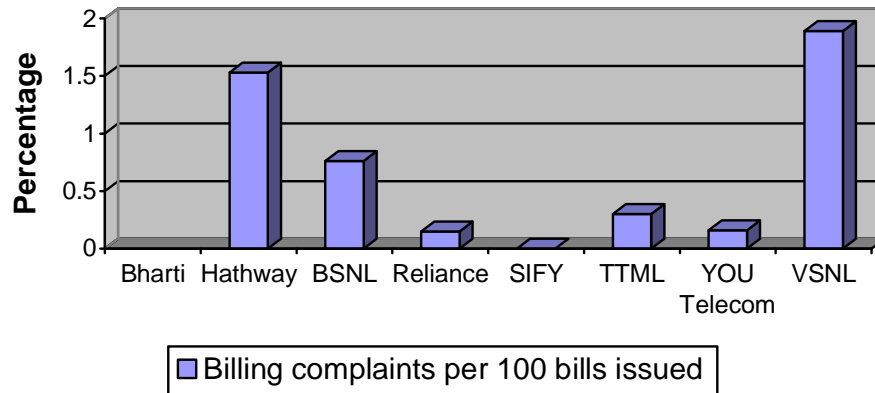
Billing complaints per 100 bills issued

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

Within 60 seconds   Within 90 seconds
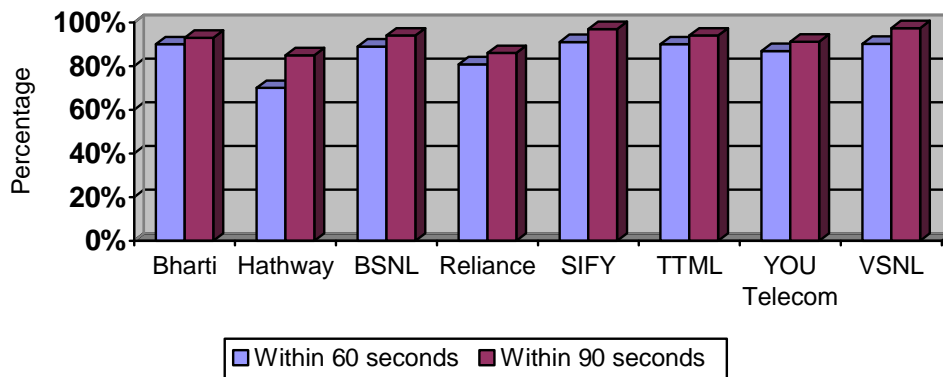
5.0   Bandwidth Utilization/ Throughput:

- POP to ISP Gateway Node [Intra-network] Link(s): All the operators meet the benchmark.

- ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity: All the operators meet the benchmark except for TTML (89%).

- Broadband Connection Speed (download) (>80%): All the operators meet the benchmark.

Bandwidth Utilisation

POP to ISP Gateway Node [Intra-network] Link(s)
ISP Gateway Node to IGSP / NIXI Node upstream Link(s) for International connectivity
Broadband Connection Speed (download)
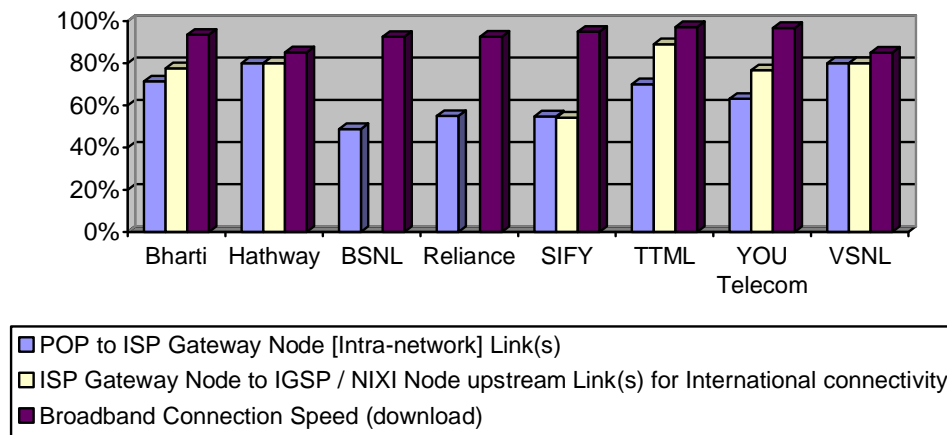
6.0   Service Availability / Uptime (for all users):

All the operators comply with the TRAI standards of >98%, except for VSNL(96%).

Service Availability/ Uptime
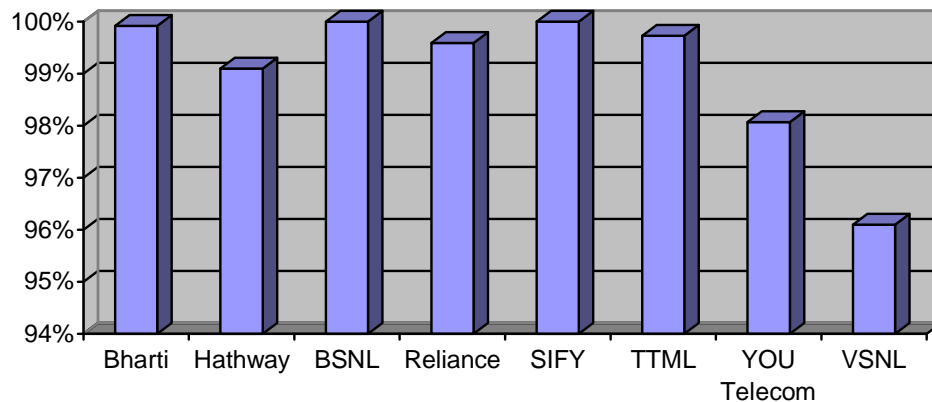
7.0   Packet Loss:
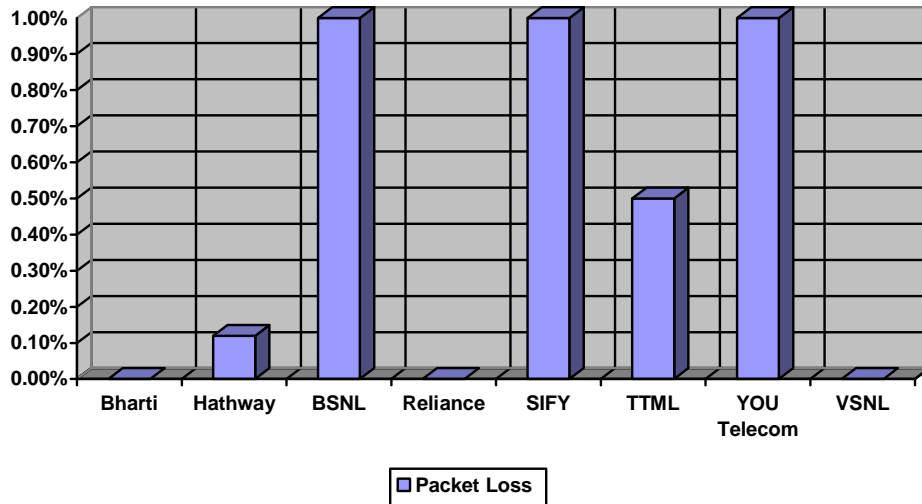
8.0   Network Latency:

- User reference point at POP / ISP Gateway Node to International Gateway (IGSP/NIXI): All the operators meet the benchmark. Data for Sify is not available.

- User reference point at ISP Gateway Node to International nearest NAP port abroad (Terrestrial): All the operators meet the benchmark. Data for BSNL is not available.

- 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
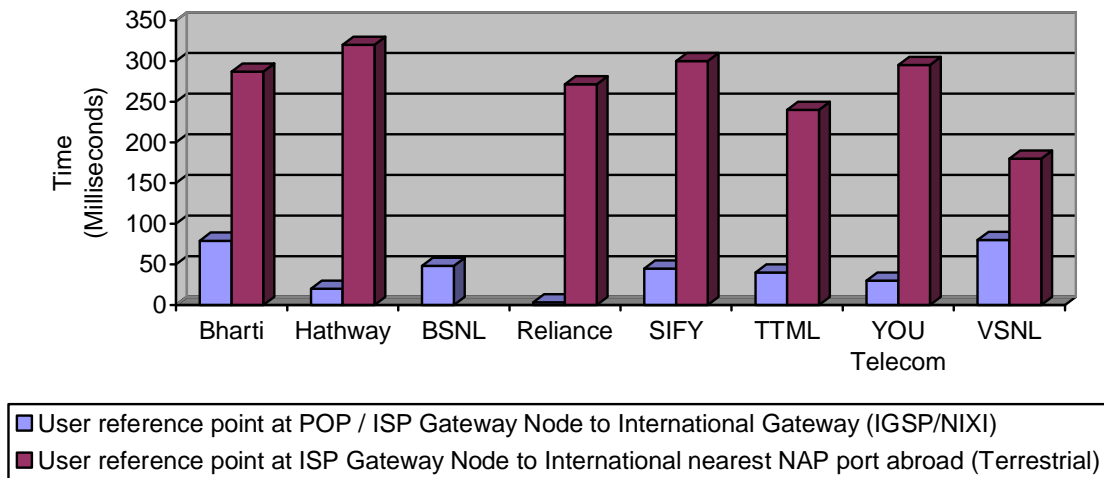
CHAPTER – 8

DRIVE TEST FINDING

8   DIVE TEST DATA ANALYSIS

8.1   PUNE

S.N.	Parameters	Airtel	IDEA	BSNL	Reliance	TTSL	Vodafone
1	Drive Test						
1.1	Call Attempts	116	131	117	138	127	110
1.2	Blocked Call	1	1	1	2	1	0
1.3	Dropped Call	2	7	4	0	0	2
1.4	Percentage of connections with good voice quality (%)						
	(i) 0-4 (w/o frequency hopping)			87.3%			
	(ii) 0-5 (with frequency hopping)	93%	92.6%	90%	97.5%	96%	95.6%
1,5	Service Coverage						
	In door (>= -75dBm)	90.7%	88.4%	76%	93.2%	93.6%	65%
	In-vehicle (>= -85dBm)	96.1%	99.2%	89.3%	99.8%	100%	97.3%
	Out door- in city (>= -95dBm)	99.5%	100%	99.5%	100%	100%	100%

8.2   KOLHAPUR

S.N.	Parameters	Airtel	IDEA	BSNL	TTSL	Vodafone
1	Drive Test					
1.1	Call Attempts	180	105	145	123	121
1.2	Blocked Call	4	3	7	0	0
1.3	Dropped Call	3	3	8	0	2
1.4	Percentage of connections with good voice quality (%)					
	(i) 0-4 (w/o frequency hopping)					
	(ii) 0-5 (with frequency hopping)	96.6%	82.6%	90.2%	96%	95.1%
1,5	Service Coverage					
	In door (>= -75dBm)	78%	66.3%	92.6%	93.5%	69.4%
	In-vehicle (>= -85dBm)	94.4%	92.3%	99.8%	99.8%	96.6%
	Out door- in city (>= -95dBm)	98.9%	100%	100%	100%	100%

8.3   NASHIK

S.N.	Parameters	Airtel	IDEA	BSNL	TTSL	Vodafone
1	Drive Test					
1.1	Call Attempts	161	115	114	124	136
1.2	Blocked Call	8	27	4	0	1
1.3	Dropped Call	1	4	2	1	0
1.4	Percentage of connections with good voice quality (%)					
	(i) 0-4 (w/o frequency hopping)			93.2%		
	(ii) 0-5 (with frequency hopping)	97.53%	90.3%	91.8%	96.9%	94.3%
1,5	Service Coverage (%)					
	In door	69.9%	80.3%	83.6%	86.5%	67.6%
	In-vehicle	95.7%	97.3%	99.7%	99.4%	96%
	Out door- in city	99.9%	100%	100%	100%	100%

8.4   Independent Drive Test in Satara

S.N.	Parameters	Airtel	IDEA	BSNL	Vodafone
1	Drive Test				
1.1	Call Attempts	35	46	36	36
1.2	Blocked Call	0	0	0	1
1.3	Dropped Call	0	0	1	2
1.4	Percentage of connections with good voice quality (%)				
	(i) 0-4 (w/o frequency hopping)				
	(ii) 0-5 (with frequency hopping)	83.9	94.3	88.7	96
1,5	Service Coverage (%)				
	In door	44.60%	20.02%	76.50%	70.8%
	In-vehicle	85.60%	82.50%	96.5%	97%
	Out door- in city	98.8%	98.7%	98.5%	100%

CHAPTER – 9

POI CONGESTION: VOICE CALL TEST

9.1   INTER OPERATOR CALL CONGESTION ASSESSMENT

9.1.1   Summary

Calling Operator	Tata	Called Operator			
		Idea	Vodafone	Airtel	Reliance
Idea	92%	-	97%	98%	95%
Vodafone	100%	96%	-	99%	91%
Airtel	90%	99%	98%	-	95%
Reliance	100%	100%	97%	99%	-

9.1.2   Detailed Records

S. No	Calling Number Operator	Called operator	Total no of calls	Outcome (Success %)
1	Idea	Vodafone	50	100%
		Tata	50	100%
		Airtel	50	96%
		Reliance	50	100%
		Vodafone	50	94%
		Tata	50	84%
		Airtel	50	100%
		Reliance	50	90%
2	Vodafone	Tata	50	100%
		Reliance	50	100%
		Idea	50	100%
		Airtel	50	98%
		Tata	50	100%
		Reliance	50	82%
		Idea	50	92%
		Airtel	50	100%

S. No	Calling Number Operator	Called operator	Total no of calls	Outcome
				(Success %)
3	Airtel	Idea	50	100%
		Vodafone	50	100%
		Tata	50	96%
		Reliance	50	98%
		Idea	50	98%
		Vodafone	50	96%
		Tata	50	84%
		Reliance	50	92%
4	Reliance	Idea	50	100%
		Vodafone	50	96%
		Tata	50	100%
		Airtel	50	98%
		Idea	50	100%
		Vodafone	50	98%
		Tata	50	100%
		Airtel	50	100%

CHAPTER – 10

CUSTOMER CARE CALL CENTRE

10.1 Wireline services

S.N.	Parameters	Airtel	Reliance	TTML	BSNL
1	Parameters				
1.1	Complaints per 100 bills issued	1.00%	0.02%	0.05%	0.07%
1.2	Percentage of billing complaints resolved within 4 weeks	Nil	100%	100%	-
1.3	Response time to customer for assistance: % of calls answered by operator within 90 seconds	92.00%	97%	94.00%	95%
	Call Centre				
2.1	Total no of complaints received in the call centre	2400	733	86337	320180
2.2	Complaints per 100 customers per months	7.76%	1.25%	0.96%	8.68%
2.3	Total no of complaints redressed by the call centre within the specified time limit	2080	720	86324	-
3	Nodal Officer				
3.1	Total no of complaints received by the nodal officers	41	0	13	448
3.2	Percentage of complaints with reference to total no of complaints received at the call centre	0.30%	0	0.02%	0.14%
3.3	Total no of complaints redressed within the specified time limit	0	0	13	280
4	Appellate Authority				
4.1	Total no of appeals received by the appellate authority	0	0	0	8
4.2	Percentage of appeal received with reference to total no of complaints received by the nodal officers	0	0	0	1.79%
4.3	Total no of appeals decided within 3 months	0	0	0	6

10.2   Wireless Basic and Cellular Mobile Services

S.N.	Parameters	Airtel	BSNL	Idea	TTML	Vodafone	Reliance
1	Parameters						
1.1	Complaints per 100 bills issued	0.07	0.24	NA	0.1	0.02	0.08%
1.2	Percentage of billing complaints resolved within 4 weeks	100	100	NA	100	100	100%
1.3	Response time to customer for assistance: % of calls answered by operator within 90 seconds	95	95.85	99.3	94	100	96.48%
2	Call Centre						
2.1	Total no of complaints received in the call centre	62321	60882	22677	3181	59548	*
2.2	Complaints per 100 customers per months	17.27	1.19	0.44	1.29	2.2	*
2.3	Total no of complaints redressed by the call centre within the specified time limit	100%	6036	22447	3145	100%	*
3	Nodal Officer						
3.1	Total no of complaints received by the nodal officers	147	60882	548	36	114	1
3.2	Percentage of complaints with reference to total no of complaints received at the call centre	0.0024	100	2.4	1.13	0.19	-
3.3	Total no of complaints redressed within the specified time limit	147	60316	546	NA	100%	1
4	Appellate Authority						
4.1	Total no of appeals received by the appellate authority	57	0	0	0	0	1
4.2	Percentage of appeal received with reference to total no of complaints received by the nodal officers	38.78%	0	0	0	0	-
4.3	Total no of appeals decided within 3 months	57	0	0	0	0	1

* The data is not part of present QoS and new requirement. Hence will be provided from September 08.

10.3   Broadband Services

S.N.	Parameters	Airtel	Tatatel	Reliance	BSNL	Sify	Hathway	You Telecom	VSNL
1	Parameters								
1.1	Complaints per 100 bills issued	0 (Only Metering Complaints Considered)	0.31%	0.15%	0.76%	-	1.53%	.16%	1.89%
1.2	Percentage of billing complaints resolved within 4 weeks	NA	100%	100%	100%	-	100%	100%	100%
1.3	Response time to customer for assistance: % of calls answered by operator within 90 seconds	92%	94%	84%	NR	99%	80-90%	86.07%	97.89%
2	Call Centre								
2.1	Total no of complaints received in the call centre	2400	411	531	2406	1612	1746	569	21873
2.2	Complaints per 100 customers per months	.077	3.81	6.73	3.52	1.46%	14.78	6.31	73%
2.3	Total no of complaints redressed by the call centre within the specified time limit	2028	403	525	NR	100%	99%	569	97%
3	Nodal Officer								
3.1	Total no of complaints received by the nodal officers	41	8	2	1164	0	9	0	445
3.2	Percentage of complaints with reference to total no of complaints received at the call centre	9	1.95	.38%	48.38	0	.51	0	2%
3.3	Total no of complaints redressed within the specified time limit	0	8	2	NR	0	100%	0	445
4	Appellate Authority								
4.1	Total no of appeals received by the appellate authority	0	0	0	NR	0	3	0	37
4.2	Percentage of appeal received with reference to total no of complaints received by the nodal officers	0	0	0	NR	0	33.33	0	8%
4.3	Total no of appeals decided within 3 months	0	0	0	NA	0	100%	0	37

ANNEXURE - I

List of Exchanges / Switches

1. WIRELINE:

AIRTEL: PUNE

TTML : PUNE, NASHIK, KOLHAPUR, NAGPUR & GOA

RELAINCE: PUNE

BSNL: 184 EXCHANGES COVERING PUNE, NASHIK, AKOLA, NAGPUR, NANDED AND LATUR.

2. WIRELESS BASIC AND CELLULAR MOBILE

AIRTEL:
    PUNE : MSC1, MSC2, MSC3, MSC4, MSC5, MSC6
    KOLHAPUR : MSC1, MSC2, MSC3
    NAGPUR : MSC1, MSC2, MSC3

IDEA : MSCGOA, MSCNGP1, MSCNGP2, MSCPUN, MSCPUN3, MSCPUN4, PUGMSC1, PUGMSS1, PUNGMSC, PUNMSS1

TTML :
    PUNE : MSC1, MSC2, MSC3
    NASHIK : MSC1, MSC2, MSC3
    GOA : MSC1
    KOLHAPUR : MSC1
    NAGPUR : MSC1

RELAINCE:
    PUNE : MSC1 MSC2, MSC3 GMSC1
    NAGPUR: MSC1
    SOLAPUR : MSC1, MSC2
    KALYAN : MSC1, MSC2

BSNL(GSM) : MSC_PUNE, MSC_KOLHAPUR, MSC_NAGPUR, MSC_NASHIK, MSC_AURANGABAD.

VODAFONE: MSC1, MSC2, MSC3, MSC4, MSS1, MSS2, GMSC, GCS1

ANNEXURE - II

DRIVE TEST LOCATIONS:

A.   PUNE

1. IDEA & BSNL

(a)   Dense population
       Peth Area, Camp, Swargate
(b)   Medium Population
       Coth road, Karbe Nagar, Shivaji Nagar
(c)   Low population
       Old Pune, Mumbai Highway, Nigadi, Telco Road

2. RELIANCE

(a)   Dense population
       Nanapeth, Kasabapeth, Rastapeth, Rawripeth, Somwarpeth, Raviwarpeth
(b)   Medium Population
       PMC, SB Road, JM Road
(c)   Low population
       Mayur Colony, Bhelk Nagar

3. TTML

(a)   Dense population
       Peth Area, Camp, Swargate, Satara road
(b)   Medium Population
       Oundh, Shivaji Nagar, Model Colony, Karve road
(c)   Low population
       Pimpiri, Chinchwad, Nigadi, Pradhikaran

4. AIRTEL

(a)   Dense population
       Laxmi Raod
(b)   Medium Population
       Chafekar chowk road
(c)   Low population
       KSB Road

5. VODAFONE

(a)   Dense population
       Bhosari Midc, Tata Motors,Landewadi,Nashik Phata,Vallabhnagar, Pimpari,Sant Tukaram,Koyanangr,Benz Road,Ksb Chk

(b)   Medium Population
       Dahanukar Colony, Manmohan Soci.,Hingne Home Cly,Kothrud Depo,Bujbal Baug,Law Collage Rd,Karve Rd,Prabat Rd,Symboysis Coolage, Ghokale Ngr,Sb Rd,Chaturshringi,Model Colony,Fc Road,Ghole Rd,Jm Rd,Apte Rd,Pmc.

(c)   Low population
 Pune Rly Station,Raviwarpeth, Budhwarpeth, Guruwarpeth, Shukrawarpeth, Sadashivpeth, Mandai,Hirabag, Shankarsheth Rd, Golibar Maidan,Cantonzone, Rashtapeth,Tilakrd, Saniwarpeth,Kasbapeth,Sasoon,Nanapeth, Bhavanipeth,Mgrd, Swargate,Pullgate,

B.   KOLHAPUR

a) Dense Population
Manglawar peth, Sivaji Peth, Laxmipuri, Mahawad Road, Sahupuri, Subhash Park

b) Urban
Sita Colony, Nagla Park, Tarabai Park, Ramanlal, D Patil University

c) Suburban
Kagal, Kagal MIDC, Gopal, Shirgaon, Pachgaon, R K Nagar

C.   NASHIK

a) Dense Population
MG Road Ravivar Peth, Ravivar Kharanja, Doodt Bedaan, Dwarka

b) Urban
College Road, Gangapur Road, CBS, Mumbainaka

c) Suburban
Nashik Road, Indira Nagar, Ganeshbaba Nagar