

**Information note to the Press**  
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**Telecom Regulatory Authority of India**

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**TRAI Releases Report of the independent agencies engaged for the Objective Assessment of Quality of Service and Customer Satisfaction Survey of Telecom Services in Haryana service area**

New Delhi, 24<sup>th</sup> December, 2008 - TRAI engaged [M/s. IMRB International](#) as independent agency for conducting an objective assessment of the Quality of Service provided by basic and cellular mobile telephone service providers and broadband service providers and [Voluntary Organization in interest of Consumer Education \(VOICE\)](#) for conducting the subjective customer satisfaction surveys for assessing the customers' perception of the service and to assess the implementation and effectiveness of Telecom Consumers Protection and Redressal of Grievances Regulations, 2007.

**2. Methodology**

2.1 The audit and objective assessment of QoS has been done with the following aspects in view: –

- The scope of the audit and assessment work included a three stage verification process. The first stage consisted of auditing the records of the service providers and verifying the Performance Monitoring Report (PMR) data submitted to TRAI. The second stage involved three days live measurement of all the network parameters and determination of busy hour. The third stage consisted of collection and verification of one month Quality of Service performance data.
- audit of telephone exchanges for basic service, Mobile Switching Centers (MSCs), network operating centre/point of presence for broadband service spread in the service area on sample basis;
- assessing the network conditions of each cellular mobile service provider through drive tests;
- inter-operator call assessment of cellular mobile operator through inter-network test calls;
- assessing the effectiveness of the customer care help lines of each operator through test calls;

2.2 The subjective assessment of customer perception of service and assessment of implementation and effectiveness of Telecom Consumers Protection and Redressal of Grievances Regulations, 2007 was made through a survey using questionnaire approved by the Authority. The sample size of customers for survey was determined for confidence level of 95% and with a confidence interval of 4% for B category Service Area for each of

the service provider. All the subscribers in the sample selected in the rural areas, were interviewed personally and in urban areas 75% were personally interviewed and 25% were interviewed telephonically.

### **Findings of the independent agency on Quality of Service**

#### **3 Cellular Mobile Telephone Service:**

3.1 In Haryana service area the audit of quality of service data of service providers, namely, Bharti Airtel, BSNL, Vodafone, Tata Teleservices, Reliance Communications and Idea was conducted.

3.2 **Objective Assessment/Audit of Quality of Service performance:** For almost all network parameters, all the service providers meet the TRAI specified benchmark. The Time Consistent Busy Hour (TCBH) reported by all the service providers except RCom matched the network busy hour calculated by IMRB auditors. Service Provider's performance in respect of cellular mobile telephone service based on one month data is given in Annex-`1A'. The areas of concern i.e. parameters, for which benchmark is not met by the service providers, are identified based on analysis of one month QoS performance data and live measurement.

3.3 **Drive Test:** The drive tests were conducted to verify parameters like Call Drop Rate, Call Set-up Success Rate, Blocked Call Rate and Percentage of Connections with Good Voice Quality. The areas of concern (i.e. parameters) are identified as below:

- Connections with good voice quality
- Call Drop Rate

3.4 **Customer perception of service:** Service Providers' performance in respect to the level of customer perception of service against the specified benchmark is given in Annex-`1B'.

3.5 **Percentage of Customers Satisfied:** The gradation on "Satisfaction" score scale i.e. scores of "Very Satisfied" to "Satisfied" is given in Table-1 below. The survey results reveal that there is a need to improve the satisfaction level of subscribers with respect to the Help services, billing performance and Network performance across the service providers.

**Table-1 (Cellular Mobile Telephone Service)-Haryana Service Area**

| S. No. | %Customer Satisfied   | Bharti Airtel | Vodafone | Idea  | BSNL  | RCOM  | TATA  |
|--------|---|---------------|----------|-------|-------|-------|-------|
| 1      | % satisfied with the provision of service                     | 98.7%         | 98.8%    | 90.0% | 93.3% | 95.8% | 93.5% |
| 2 a    | % satisfied with the billing performance (Postpaid customers) | 98.1%         | 85.4%    | 89.6% | 95.0% | 96.5% | 94.7% |
| 2 b    | % satisfied with the billing performance (Prepaid customers)  | 98.8%         | 95.6%    | 96.1% | 99.1% | 94.7% | 93.9% |
| 3      | % satisfied with help services                                | 94.8%         | 93.7%    | 86.0% | 92.8% | 92.0% | 89.1% |

|   |   |        |        |        |       |       |       |
|---|---|--------|--------|--------|-------|-------|-------|
| 4 | % satisfied with network performance, reliability and availability    | 86.8%  | 83.4%  | 90.7%  | 90.0% | 87.7% | 91.2% |
| 5 | % satisfied with maintainability                                      | 98.8%  | 98.5%  | 97.8%  | 98.3% | 97.7% | 99.3% |
| 6 | Overall customer satisfaction   | 97.5%  | 90.8%  | 98.3%  | 98.7% | 97.2% | 99.0% |
| 7 | Customer satisfaction with offered supplementary services % satisfied | 100.0% | 100.0% | 100.0% | 98.2% | 99.0% | 98.9% |

## 4 Basic Service (wire line)

### 4.1 Objective Assessment/Audit of QoS performance

Basic (Wire line) services audit for Haryana circle broadly indicates that most of the service providers are not meeting the benchmarks for some of the Parameters. Service Provider's performance in respect of basic service (wire line) based on one month data is given in Annex-'2A'. The areas of concern i.e. parameters, for which benchmark is not met by the service providers, are identified based on analysis of one month QoS performance data and live measurement as below:

- Fault repaired by next working day/ within three days
- mean time to repair (MTTR)

**4.2 Customer perception of service:** Service Providers' performance in respect to the level of customer perception of service against the specified benchmark is given in Annex-'2B'.

**5.3 Percentage of Customers Satisfied:** The gradation on "Satisfaction" score scale i.e. scores of "Very Satisfied" to "Satisfied" is given in Table-2 below. In Haryana service area the survey results reveal that there is a need to improve the satisfaction level of subscribers with respect to provision of service.

**Table-2 {Basic Service (Wire line)} -Haryana Service Area**

| S. N. | Customer Perception of Services   | Bharti | BSNL  | R.Com  | TATA   |
|-------|---|--------|-------|--------|--------|
| 1     | %age subscribers satisfied with the provision of service                          | 88.1%  | 85.4% | 98.7%  | 88.9%  |
| 2     | %age subscribers satisfied with the billing performance (Post paid customers)     | 98.6%  | 93.5% | 98.2%  | 98.6%  |
|       | %age subscribers satisfied with the billing performance (Pre paid customers)      | 98.5%  | 96.0% | 97.9%  | 97.9%  |
| 3     | %age subscribers satisfied with help services                                     | 99.1%  | 93.5% | 96.8%  | 90.3%  |
| 4     | %age subscribers satisfied with network performance, reliability and availability | 95.7%  | 96.3% | 97.6%  | 98.0%  |
| 5     | %age subscribers satisfied with maintainability                                   | 95.1%  | 95.0% | 99.3%  | 100.0% |
| 6     | Overall customer satisfaction   | 94.4%  | 92.5% | 97.7%  | 94.0%  |
| 7     | %age subscribers satisfied with offered supplementary services                    | 100.0% | 99.2% | 100.0% | 100.0% |

## 5. Broadband Service

5.1 **Objective Assessment/Audit of QOS performance:** The audit for Broadband Service Providers was conducted at their respective network operating centre/point of presence (POPs) in the Haryana Service Provider's performance based on one month data is given in Annex -`3A'. The area of concern (i.e. parameters) for which benchmark is not met by the service provider is identified based on analysis of one month QoS performance data and live measurement as below:

- Service provisioning (%age Connection provided within 15 days)
- Fault repaired by next working day.

5.2 **Customer perception of service:** Service Providers' performance in respect to the level of customer perception of service against the specified benchmark is given in Annex-`3B'.

5.3 **Percentage of Customers Satisfied:** The gradation on "Satisfaction" score scale i.e. scores of "Very Satisfied" to "Satisfied" is given in Table-3 below. The survey results reveal that Help Services, Network performance, Maintainability and supplementary services are areas where all service providers have scored relatively lower score as compared to other parameters.

**Table-3 (Broadband Service) -Haryana Service Area**

| S. N. | Customer Perception of Services  | Bharti Airtel | BSNL  |
|-------|--|---------------|-------|
| 1     | % satisfied with the provision of service  | 75.1%         | 84.3% |
| 2a    | % satisfied with the billing performance (Prepaid customers)   | 69.2%         | 90.5% |
| 2b    | % satisfied with the billing performance (Postpaid customers)  | 98.9%         | 97.0% |
| 3     | % satisfied with help services   | 97.9%         | 93.8% |
| 4     | % satisfied with network performance, reliability and availability   | 86.2%         | 90.4% |
| 5     | % satisfied with maintainability   | 81.9%         | 61.2% |
| 6     | % satisfied Overall customer satisfaction  | 84.8%         | 90.0% |
| 7     | % satisfied with customer satisfaction with offered supplementary services such as allocation of static / fixed IP addresses, email ids etc. | 90.6%         | 83.4% |

6. **Telecom Consumers Protection and Redressal of Grievances score:** The Authority noted with concern that the awareness of subscribers of all the service providers regarding the three stage grievance redressal mechanism is still very low. The summary of survey results for assessment of implementation and effectiveness of Telecom Consumer Protection and Redressal of Grievances Regulations in respect of Cellular Mobile Service, Basic (Wire line) Service and

Broadband Service is given in Annex-'1C', Annex '2C' and Annex "3C' respectively.

**7. The detailed Report on Quality of Service – Audit/Objective Assessment and Customer Satisfaction Survey, including grievance redressal mechanism, conducted during the period May , 2008 to August, 2008 is placed at TRAI Website ([www.trai.gov.in](http://www.trai.gov.in)).**

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## Annex-`1A`

### Objective Assessment of Quality of Service - Service Provider's Performance in respect of Cellular Mobile Telephone Service-Haryana Service Area

| S.N  | QOS Parameter   | Bench mark | Bharti       | BSNL         | Vodafone     | TATA       | RCOM       | IDEA         |
|------|---|------------|--------------|--------------|--------------|------------|------------|--------------|
| 1    | Accumulated downtime of community isolation                         | <24 Hrs    | 0.00         | 0.00         | 0.00         | 0.00       | 0.00       | 15.87        |
| 2    | Call Setup Success Rate   | >95%       | 98.56%       | 96.30%       | 99.91%       | 97.79%     | 98.85%     | 99.28%       |
| 3    | Service Access Delay  | <20 Sec    | 10.40        | 9.10         | 13.00        | 10.00      | 4.00       | 10.41        |
| 4    | SDCCH / Paging Channel congestion                                   | <1%        | 0.34%        | 0.55%        | 0.02%        | 0.00%      | 0.00%      | 0.34%        |
| 5    | TCH Congestion  | <2%        | 0.29%        | 1.42%        | 0.24%        | 0.09%      | 0.57%      | 0.79%        |
| 6    | Call Drop Rate  | <3%        | 1.07%        | 2.70%        | 1.58%        | 1.15%      | 1.52%      | 1.56%        |
| 7    | % of connections with good voice quality                            | > 95%      | 90.91%       | 79.36%       | 96.13%       | 98.72%     | 99.43%     | 95.03%       |
| 8    | POI Congestion  | >0.5%      | Complied     | Complied     | Complied     | Complied   | Complied   | Complied     |
| 9(a) | % Call answered electronically within 20 seconds within 40 seconds  | 80%<br>95% | 100%<br>100% | 100%<br>100% | 100%<br>100% | DNP<br>DNP | 98%<br>98% | 100%<br>100% |
| 9(b) | % Call answered by the operator within 60 seconds within 90 seconds | 80%<br>95% | 97%<br>97%   | 81%<br>95%   | 91%<br>97%   | DNP<br>DNP | 81%<br>87% | 96%<br>97%   |
| 10   | Complaints per 100 bills issued                                     | <0.1%      | 0.30%        | 0.20%        | 0.09%        | 0.50%      | 0.08%      | 0.08%        |
| 11   | % of Billing complaints resolved within 4 weeks                     | 100%       | 100%         | 100%         | 100%         | 100%       | 100%       | 100%         |
| 12   | Period of refunds from the date of resolution of complaints         | 100%       | 100%         | 100%         | 100%         | DNP        | 100%       | 100%         |

**Annex-`1B`**  
**Customers Perception of Service for Cellular Mobile Telephone Service through Survey-Haryana Service Area**

| S. No. | Customer Perception of Services                                       | Bench mark | Bharti | Vodaf one | IDEA  | BSNL  | RCOM  | TATA  |
|--------|---|------------|--------|-----------|-------|-------|-------|-------|
| 1      | % satisfied with the provision of service                             | >95%       | 73.6%  | 79.6%     | 66.4% | 66.8% | 72.5% | 75.0% |
| 2 a    | % satisfied with the billing performance (Postpaid customers)         | >90%       | 66.7%  | 73.2%     | 63.5% | 66.7% | 66.0% | 69.5% |
| 2 b    | % satisfied with the billing performance (Prepaid customers)          | >90%       | 69.3%  | 65.9%     | 68.1% | 69.2% | 68.4% | 67.9% |
| 3      | % satisfied with help services  | >90%       | 68.0%  | 66.6%     | 62.6% | 67.9% | 68.8% | 67.9% |
| 4      | % satisfied with network performance, reliability and availability    | >95%       | 70.5%  | 69.1%     | 69.2% | 69.6% | 69.9% | 70.5% |
| 5      | % satisfied with maintainability                                      | >95%       | 71.2%  | 68.1%     | 67.9% | 71.4% | 73.7% | 70.6% |
| 6      | Overall customer satisfaction   | >95%       | 71.3%  | 70.0%     | 72.3% | 69.8% | 71.9% | 72.8% |
| 7      | Customer satisfaction with offered supplementary services % satisfied | >95%       | 72.1%  | 84.8%     | 72.1% | 73.5% | 77.6% | 77.2% |

**Annex-`1C`**  
**Assessment of implementation and effectiveness of Telecom Consumer Protection and Redressal of Grievances Regulations in respect of Cellular Mobile Telephone Service through Survey-Haryana Service Area**

| S.N. | Sub Parameter  | Bharti | Vodafone | IDEA  | BSNL  | R Com  | TATA   |
|------|--|--------|----------|-------|-------|--------|--------|
| 1    | Awareness of three stage grievance redressal mechanism   | 21.8%  | 15.8%    | 8.5%  | 12.3% | 12%    | 4.5%   |
| 2    | For pre-paid customers, awareness about item-wise call charge details on request                         | 40.5%  | 34.7%    | 21.6% | 24.7% | 26.6%  | 16.5%  |
| 3    | If aware (for pre-paid customers), ever denied of item wise usage charge details for pre-paid connection | 6.6%   | 0.5%     | 3.3%  | 4.1%  | 0.7%   | 1.2%   |
| 4    | For new customers, provisioning of 'Manual of Practice' while taking the new connection                  | 42.9%  | 35.9%    | 43.8% | 46.5% | 30.3%  | 33.3%  |
| 5    | Awareness of Call center for redressing grievances   | 99.7%  | 97.2%    | 95.2% | 89.2% | 95.2%  | 98.5%  |
| 6    | Percentage of consumers made any complaints to the toll free number within last 6 months                 | 34.3%  | 32.5%    | 25.0% | 31.3% | 19.5%  | 12.2%  |
| 7    | Call center informing about the action taken on complaints   | 98.5%  | 89.2%    | 74.0% | 73.4% | 78.6%  | 87.7%  |
| 8    | Resolution of complaint by customer care within 4 weeks of lodging complaint                             | 13.6%  | 65.7%    | 60.0% | 45.3% | 70.4%  | 100.0% |
| 9    | percentage satisfied with complaint resolution by call cente   | 100.0% | 97.0%    | 98.6% | 97.4% | 100.0% | 98.6%  |
| 10   | Awareness of Nodal officer for redressing grievances   | 2.2%   | 3.5%     | 3.9%  | 14.8% | 3.3%   | 1.6%   |
| 11   | Awareness of appellate Authority for redressing grievances   | 1.3%   | 3.1%     | 1.2%  | 1.3%  | 1.1%   | 1.1%   |

## Annex-`2A'

### Objective Assessment of Quality of Service - Service Provider's Performance in respect of Basic Service (Wire line) -Haryana Service Area

| S.no | Parameters  | B'mark   | Bharti                       | BSNL*   | RCOM*              | TATA teleservices* |     |
|------|---|----------|------------------------------|---|--------------------|--------------------|-----|
| 1    | Provision of telephone after registration of demand         |          |                              |   |                    |                    |     |
| 1.1  | Connections completed within 7 days                         | 100%     | 100%                         | 87%   | 99%                | 100%               |     |
| 2    | Fault incidence/clearance statistics                        |          |                              |   |                    |                    |     |
| 3    | Fault incidences(No. of faults/100 subscribers/month)       | <3       | 4.7                          | 24  | No faults reported | <1                 |     |
| 3.1  | Faults repaired within 24 hours                             | >90%     | 85%                          | 59%   |                    | 20%                |     |
| 3.2  | Faults repaired within three working days                   | 100%     | 85%                          | 68%   |                    | 100%               |     |
| 4    | Mean time to Repair (MTTR)                                  | <8 hours | 4.80                         | 21.96   |                    | 28.60              |     |
| 5    | Call Completion Rate (CCR)                                  | >55%     | 98%                          | 83%   | DNA                | 96%                |     |
| 6    | Metering and billing credibility                            |          |                              |   |                    |                    |     |
| 6.1  | Billing complaints per 100 bills issued                     | <0.1%    | 0.01%                        | 0.52%   | 0.02%              | NA                 |     |
| 6.2  | %age of billing complaints resolved within 4 weeks          | 100%     | 100%                         | 100%  | 100%               | NA                 |     |
| 7    | Customer care/helpline promptness                           |          |                              |   |                    |                    |     |
| 7.1  | <u>Shift requests attended</u>                              |          |                              |   |                    |                    |     |
|      | Shift requests attended within 3 days                       | 95%      | 88%                          | 81%   | NA                 | NA                 |     |
| 7.2  | <u>Closure request attended</u>                             |          |                              |   |                    |                    |     |
|      | Closure within 24 hours                                     | 95%      | 100%                         | 69%   | NA                 | NA                 |     |
| 7.3  | <u>Supplementary (additional) service requests attended</u> |          |                              |   |                    |                    |     |
|      | Additional facility provided within 24 hours                | 95%      | 96%                          | 90%   | 100%               | 57%                |     |
| 8    | Response time to customer for assistance                    |          |                              |   |                    |                    |     |
| 8.1  | % age call answered through IVR in 20 seconds               | 80%      | Not measured by the operator | Centralized call centre, details not available at the exchanges | 100%               | 100%               |     |
|      | % age call answered through IVR in 40 seconds               | 100%     |                              |   | 100%               | 100%               |     |
| 8.2  | % age calls answered by operator in 60 seconds              | 80%      |                              |   | 87%                | 99%                | 91% |
|      | % age calls answered by operator in 90 seconds              | 95%      |                              |   | 93%                | 100%               | 95% |
| 9    | Time taken for refund of deposits after closure             |          |                              |   |                    |                    |     |
| 9.1  | %age cases where refund received within 60 days             | 100%     | NA                           | 94%   | NA                 | NA                 |     |

{\*Note: For BSNL data pertains to the sample 5% of exchanges audited during the period of April to July 2008, whereas for rest of the operators figures pertain to all the exchanges present in the circle. Also TATA and RCOM have limited presence in Haryana circle for Basic Wireline services and cater primarily to corporate customers}

\*\* Methodology not in line with QoS ■ Figures provided on All Ind ■ Not meeting the benchmark **B'mark** = TRAI Benchmark, **DNA** = Details not available, **NA**: Not Applicable



**Annex-`2B`  
Customers Perception of Service for Basic Service (Wire line)  
through Survey-Haryana Service Area**

| S. N. | Customer Perception of Services   | Benchmark | Bharti | BSNL  | R.Com | TATA  |
|-------|---|-----------|--------|-------|-------|-------|
| 1     | %age subscribers satisfied with the provision of service                          | >95%      | 67.7%  | 63.3% | 67.5% | 63.0% |
| 2     | %age subscribers satisfied with the billing performance (Post paid customers)     | >90%      | 75.5%  | 68.9% | 72.9% | 68.3% |
|       | %age subscribers satisfied with the billing performance (Pre paid customers)      |           | 67.9%  | 65.7% | 66.3% | 66.3% |
| 3     | %age subscribers satisfied with help services                                     | >90%      | 76.1%  | 68.4% | 75.0% | 71.8% |
| 4     | %age subscribers satisfied with network performance, reliability and availability | >95%      | 78.9%  | 73.1% | 75.7% | 78.9% |
| 5     | %age subscribers satisfied with maintainability                                   | >95%      | 67.0%  | 66.2% | 69.5% | 70.8% |
| 6     | Overall customer satisfaction   | >95%      | 77.4%  | 71.0% | 78.0% | 68.0% |
| 7     | %age subscribers satisfied with offered supplementary services                    | >95%      | 81.6%  | 73.2% | 80.6% | 66.7% |

**Annex-`2C`  
Assessment of implementation and effectiveness of Telecom Consumer  
Protection and Redressal of Grievances Regulations in respect Basic  
Service (Wire line) through Survey-Haryana Service Area**

| S.N. | Sub Parameter  | Bharti | BSNL  | R Com | TATA   |
|------|--|--------|-------|-------|--------|
| 1    | Awareness of three stage grievance redressal mechanism   | 16.1%  | 13.3% | 29.9% | 24.0%  |
| 2    | For pre-paid customers, awareness about item-wise call charge details on request                         | 0.0%   | 3.0%  | 13.7% | 14.3%  |
| 3    | If aware (for pre-paid customers), ever denied of item-wise usage charge details for pre-paid connection | ----   | ----  | ----  | ----   |
| 4    | For new customers, provisioning of 'Manual of Practice' while taking the new connection                  | 52.9%  | 30.0% | 89.8% | 50.0%  |
| 5    | Awareness of Call center for redressing grievances   | 98.8%  | 99.5% | 99.7% | 100.0% |
| 6    | Percentage of consumers making any complaints to the toll free number within last 6 months               | 58.4%  | 69.5% | 66.4% | 56.0%  |
| 7    | Call center informing about the action taken on complaints   | 96.7%  | 92.1% | 87.1% | 100.0% |
| 8    | Resolution of billing complaint by customer care within 4 weeks of lodging complaint                     | 76.5%  | 69.0% | 85.5% | 50.0%  |
| 9    | Level of satisfaction with the complain resolution by call center  | 98.8%  | 94.0% | 97.3% | 92.9%  |
| 10   | Awareness of Nodal officer for redressing grievances   | 1.6%   | 2.7%  | 3.8%  | 10.5%  |
| 11   | Awareness of appellate Authority for redressing grievances   | 2.8%   | 4.7%  | 1.7%  | 2.6%   |

## Annex-`3A`

### Objective Assessment of Quality of Service - Service Provider's Performance in respect of Broadband Service-Haryana Service Area

| S.no | Parameters  | B'mark | Bharti   | BSNL          | Sify     | Hathaway | VSNL     | RCOM     |
|------|---|--------|----------|---------------|----------|----------|----------|----------|
| 1    | <b>Service provisioning</b>   |        |          |               |          |          |          |          |
| 1.2  | Percentage connections provided within 15 days  | 100%   | 99%      | 100%          | 100%     | 93%      | 100%**   | 85%**    |
| 2    | <b>Fault repair / Restoration time</b>  |        |          |               |          |          |          |          |
| 2.1  | Percentage faults repaired by next working days   | > 90%  | 93%      | 91%           | 81%      | 83%      | 76%**    | 94%      |
| 2.2  | Percentage faults repaired within three working days  | 99%    | 96%      | 100%          | 100%     | 95%      | 92%**    | 99%      |
| 3    | <b>Billing performance</b>  |        |          |               |          |          |          |          |
| 3.1  | Billing complaints per 100 bills issued   | <2%    | 0.25%    | 0.02%         | Prepaid* | 3.43%    | 0.55%    | 0.10%    |
| 3.2  | %age of billing complaints resolved within 4 weeks  | 100%   | 100%     | 100%          | Prepaid* | 100%     | 100%     | 100%     |
| 3.3  | Time taken for refund of deposits after closure   | 100%   | 100%     | 100%          | 100%     | 82%      | 100%     | 100%     |
| 4    | <b>Customer care/helpline assessment</b>  |        |          |               |          |          |          |          |
| 4.2  | Percentage calls answered within 60 seconds by the operator   | > 60%  | 45%      | 98%           | 100%     | 80 - 90% | 93%      | 94%      |
| 4.3  | Percentage calls answered within 90 seconds by the operator   | >80%   | 56.4%    | 100%          | 100%     | 100%     | 98%      | 96%      |
| 5    | <b>Bandwidth utilization/Throughput time</b>  |        |          |               |          |          |          |          |
| 5.1  | Total number if intra network links crossing 90%  |        | 0        | 0             | 5        | 3        | 0        | 0        |
|      | <i>Upstream Bandwidth</i>   |        |          |               |          |          |          |          |
| 5.2  | Total number of upstream links (From ISP Gateway Node to IGSP/NIXI Node for international connectivity) |        | 1        | 36 + 1 (NIXI) | 28       | 6        | 35       | 7        |
| 5.3  | Total number of upstream links > 90%  |        | 0        | 1             | 0        | 1        | 0        | 0        |
| 5.4  | Percentage bandwidth utilised on upstream links   | <80%   | 81%      | 59%           | 64%      | 92%      | 74%      | 40%      |
| 6    | Broadband download speed  | >80%   | Complied | Complied      | Complied | Complied | Complied | Complied |
| 7    | <b>Service availability/uptime</b>  | >98%   | 100.00%  | 100.00%       | 100.00%  | 98.92%   | 98.48%   | 99.24%** |
| 8    | <b>Packet loss</b>  | <1%    | 0%       | 0%            | 0%       | 0%       | 0%       | < 1%**   |
| 9    | <b>Network Latency</b>  |        |          |               |          |          |          |          |
| 9.1  | POP/ISP Node to NIXI (In msec)  | <120   | <50      | <120          | <45      | <120     | <90      | <30      |
| 9.2  | ISP node to NAP port (In msec)  | <350   | <230     | <350          | <300     | <350     | <200     | <290     |

DNA:- Detail not available NA:- Not applicable

**Annex-`3B`**  
**Customers Perception of Service for Broadband Service through Survey  
Haryana Service Area**

| S. N. | Customer Perception of Services  | Benchmark | Airtel | BSNL  |
|-------|--|-----------|--------|-------|
| 1     | % satisfied with the provision of service  | >90%      | 68.1%  | 69.9% |
| 2a    | % satisfied with the billing performance (Prepaid customers)   | >90%      | 59.0%  | 73.0% |
| 2b    | % satisfied with the billing performance (Postpaid customers)  | >90%      | 77.5%  | 78.0% |
| 3     | % satisfied with help services   | >90%      | 88.6%  | 80.0% |
| 4     | % satisfied with network performance, reliability and availability   | >85%      | 66.9%  | 72.5% |
| 5     | % satisfied with maintainability   | >85%      | 61.5%  | 56.4% |
| 6     | % satisfied Overall customer satisfaction  | >85%      | 62.8%  | 64.4% |
| 7     | % satisfied with customer satisfaction with offered supplementary services such as allocation of static / fixed IP addresses, email ids etc. | >85%      | 64.7%  | 72.7% |

**Annex-`3C`**

**Assessment of implementation and effectiveness of Telecom Consumer Protection and Redressal of Grievances Regulations in respect Broadband Service through Survey-Haryana Service Area**

| S.N. | Sub Parameter   | Bharti | BSNL  |
|------|---|--------|-------|
| 1    | Awareness of three stage grievance redressal mechanism  | 4.8%   | 6.7%  |
| 2    | Provision of Manual of Practice containing terms and conditions of service, grievance redressal mechanism etc | 80.0%  | 40.4% |
| 3    | For pre-paid customers, awareness about item-wise call charge details on request                              | 46.2%  | 19.0% |
| 4    | If aware (for pre-paid customers), ever denied of item-wise usage charge details for pre-paid connection      | ----   | ---   |
| 5    | Awareness of Call center for redressing grievances  | 94.8%  | 98.3% |
| 6    | Percentage of consumers made any complaints to the toll free number within last 6 months                      | 55.6%  | 60.0% |
| 7    | Call center informing about the action taken on complaints  | 40.5%  | 58.1% |
| 8    | Resolution of complaint by customer care within 4 weeks of lodging complaint                                  | 50.9%  | 21.9% |
| 9    | Percentage satisfied with the complaint resolution by call center   | 75.9%  | 63.3% |
| 10   | Awareness of Nodal officer for redressing grievances  | 0.7%   | 1.5%  |
| 11   | Awareness of appellate authority for redressing grievances  | 0.7%   | 0.7%  |