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29 May 2017

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Telecom Regulatory Authority of India
Mahanagar Doorsanchar Bhawan
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New Delhi 110002

Subject: Consultation Paper on “Network Testing before Commercial Launch of Services”

Dear Sir,

This is with reference to the above referred TRAI consultation paper No. 5/2017 dated 01.05.2017. In this regard, please find enclosed our response to the consultation paper as an annexure to this letter.

We hope that the TRAI will find our response useful and consider our inputs while finalising the recommendations on this subject.

Thanking you,

Yours sincerely,

For Telenor (India) Communications Pvt. Limited
(Erstwhile Telewings Communications Services Private Limited)

A handwritten signature in black ink, appearing to read "P. Sharma", is written over a blue circular stamp.

(Pankaj Sharma)
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Telenor (India) Response to TRAI Consultation Paper on Network Testing before Commercial Launch of Services (No 05/2017 dt. 1st May'17)

Preamble

The present licensing framework has clearly defined steps to be undertaken before commercial launch of services. Post launch of services the telecom service provider (TSP) has to meet the Quality of Service standards as prescribed by Licensor or TRAI.

The onus is on the TSP to install applicable systems and test the new network or '**Network under test**' to its fullest satisfaction before commercially launching its services. These tests broadly fall into two categories:-

- a) **Intra-network testing** – These tests can be carried within its own network to evaluate the proper functioning of the '**Network under test**'. The TSPs technical department may compile a comprehensive set of test cases and use it for testing, correction/ rectification and evaluation of network parameters and charging mechanism. They may also prefer to undertake a **stress test** of the network to test its performance under loaded conditions. Since, the new network is untested, various methodologies can be used viz. simulation tools or simple loop back methods within its own network.
- b) **Inter-network testing** – Once the intra-network testing has been successfully carried out, the already tested network of an existing TSP and the new network of an upcoming TSP can also be tested for few functional checks for inter-network calls/messages. Since the existing TSP's network has live customers, care should be taken while connecting to a new network or '**Network under test**' to an existing live network. Under no circumstances a stress test can be carried with an existing network which has live customers.

Benchmarking from past experience – In the past 22 years of existence of mobile networks, the most comprehensive inter-network testing on a live network was carried out for MNP in the year 2010. All access, NLD, ILD and MNP service providers licensed in India participated in the month long process of acceptance testing. Practically all network elements had to be upgraded to accommodate the location routing number (LRN) and enable all call query methodology adopted by licensor. Nevertheless these networks were tested and live traffic was migrated along with more than 75 crore wireless subscribers, there were no reported disruption of service.

The test procedure of MNP AT was published by TEC and DOT in Y2010; this was done after a yearlong deliberation with service providers and MNPOs. In our opinion such voluminous and comprehensive inter-network testing can be taken as benchmark while arriving at the requirements of the number of Test SIMs, duration of testing etc.

In view of above, Telenor India's response to the specific questions is as follows:

Question wise comments

Question 1: Should a TSP be allowed to enroll subscribers as test users and in such case, should there be any restrictions on the number of test SIM cards and the period of such use? Please justify your response.

Response:

- Test SIMs are not associated with a subscriber, it is internally allotted to the network test engineers for the sole purposes of testing. It is also shared with roaming networks to undertake testing. These SIM cards are the sole property of the Company and are used by network test engineers only. No CAF forms are filled for these SIM cards and are always kept under lock and key. Internal checks are put in place to keep an account of traceability of these Test SIMs. The records of Test SIMs are being maintained by the corresponding employee under whose custody these SIMs are allotted for testing. To prevent misuse, small value of talk time (in case of pre-paid) and small value of credit limit (in case of post-paid) is allotted to these numbers.
- As per the present licensing norms, there is no concept of test user or test subscriber. Hence, TSPs should not be allowed to enroll subscribers as test users.
- TSP should provide Test SIMs only to its employees and not to business partners, vendors and friends & family of the employees. This will lead to misuse of regulations and likely to distort the competition.
- During the MNP testing in Y2010-11, DOT had advised all TSPs to report with the list of Test SIMs to circle TERM Cell. The maximum number such Test SIMs as prescribed by TEC was 69 nos. per TSP per circle. There were 13 combinations including access and ILD service providers. The maximum number of such Test SIMs was $23 \times 3 \times 13 = 897$ per circle. This was the maximum number required for simultaneous testing of all the live networks licensed and operational in India, together having more than 75 crore wireless subscribers. Going by the last precedence of testing live network with 75 crore+ subscribers, we recommend that **the maximum number of test SIMs should be 897 in a circle.**
- The above is irrespective of the technology deployed. As already explained in preamble, the new network or '**Network under test**' cannot conduct a **stress test** with a live network of other TSP.
- **Timelines** – In the past 22 years of existence of mobile networks the most comprehensive inter-network testing at a pan-India level was conducted on live

network during MNP testing in Y2010-11. **The timelines for inter-network testing was 30 days** as prescribed by TEC, it is recommended that same should be prescribed for future inter-network testing for new technologies or new networks. In so far as intra-network testing is concerned, the TSP is free to use any methodology and continue to seek real time feedback as per his convenience.

Question 2: To clearly differentiate test phase from commercial launch, which of the options discussed in Para 1.12 would be appropriate? Please provide justification. Please explain any other method that, you feel, would be more appropriate.

Response:

- In reference to the options in Para 1.12 , please find below our para wise comments

Para 1.1	TRAI consultation paper	Telenor (India) comments
a.)	Testing may be restricted within own network of the concerned Licensee/TSP. For testing of processes/ systems which may require connectivity with the other networks i.e. other TSPs, the same could be carried out using the test SIMs given to <u>business partners or employees</u> on a small scale.	<ul style="list-style-type: none"> • Please refer our Preamble to the response. • The intra-network testing and its methodology should be left to the TSP to decide. The inter-network testing should be as per prescribed standards only. This testing can be comprehensively carried out using 897 Test SIMs in 30 days. • The Test SIMs are not associated with an individual, it should only be issued to the employees of new TSP or shared with employees of other TSPs to undertake roaming tests. • Test SIMs cannot be issued to business partners as it is fraught with interpretation/ extrapolation and hence misuse.
b.)	Put a limit on the time period for which any <u>test subscriber</u> can be provided the services during test phase.	<ul style="list-style-type: none"> • Time period and past precedence - The most comprehensive inter-network testing in live network was conducted in 30 days as prescribed by TEC. Same may be adopted here. • There is no concept of test subscribers. The <i>'Network under test'</i> is not a proven

		<p>network by definition. Hence, it cannot have any subscribers. We can take example from automobile or pharmaceutical industry, where the new automobile or new medicine is not tested on test subscribers.</p>
c.)	<p>Provide a temporary number series to the TSP for testing of network before commercial launch of services, which would be withdrawn upon commercial launch by the TSP and a fresh number series would be issued for enrolling commercial subscribers. This would ensure that enrolment of subscribers prior to commercial launch is not exploited or misused by a TSP to circumvent the regulatory provisions and compliances.</p>	<ul style="list-style-type: none"> • Please refer to our response to Question 2. • There is no need of a temporary number series. The maximum number of Test SIMs being 69 per circles should be informed to circle TERM cells and defined under the category of TEST SIMs. This is as per the earlier instructions of DOT during MNP testing in T2010-11. • This will resolve the issue of any TSP trying to circumvent the regulatory provisions and compliances. • The Authority is within its powers to intervene at the first sign of attempted misuse by any TSP.
d.	<p>To limit the number of test subscribers by way of allotment of smaller chunks of numbers, say 10000, as against about 10 lakh per series, during test phase. The test subscribers may be enrolled purely on temporary basis.</p>	<ul style="list-style-type: none"> • Please refer to our response to Question 1. • In our opinion when all access, NLD and ILD network in the entire country can be tested in a live environment. Then there cannot be any higher requirement of number of Test SIMs and more time for a new TSP having NIL subscribers.
e.)	<p>Perform intensive testing on the radio access network (RAN) in a relatively smaller geography, for which small number of test users/subscribers would be required. The TSP could perform load testing in one city or a couple of cities and tune the network in other parts of the service area. In any case, the network tuning is a</p>	<ul style="list-style-type: none"> • Please refer our Preamble to the response. • A distinction has to be made between inter-network testing and intra-network testing. • A load test or stress test cannot be performed by 'Network under test' which has no subscribers with a existing network which has large number of test subscribers.

	<p>continuous exercise performed by the network providers so as to optimally meet the dynamic demand.</p>	<ul style="list-style-type: none"> We have also not come across an equivalent example of other industries where test subscribers users/ subscribers are used to test a new car or new medicine or new elevator etc.
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In addition to the options listed in the Consultation paper, there are few other important aspects that can be used while testing any network. The newer networks being launched today or in future will be data centric networks. These data networks do not necessitate any inter-network testing. However, for voice / message can also be tested by the following methods.

- **Loop back testing¹** - This is a standard method used to test end to end testing of all network elements. It is presently being used to test inter-working of calls in Access, NLD and ILD networks of different technologies.
- **Traffic simulator** – The signals can be generated using the test equipments rather than a live Test SIM (anyway there is no concept of test subscriber) and put in Loop back. It can be used both for radio (3G/ 4G/ 5G) as well as wired part of network.
- The network testing with other commercially live networks should be done with minimum interconnection requirement in a very controlled environment. The other TSPs should provision ports basis new TSP's request which will be sufficient for testing with their network on mutual consent and same should be decommissioned post completion of the testing at the end of 30 days.
- TERM Cell and TRAI should also be informed about such inter network testing by the TSP testing the network with complete details and also share the test results along with the observations, if any. The reporting requirements for network testing are imperative so that other service providers in the market can be informed about the progress of testing and readiness for commercial launch.
- The excess time taken by any TSP in the garb of network testing should be accessed by the Licensor and Regulator in the light of spectrum hoarding and (non)-applicability of minimum presumptive AGR. This should be reviewed and cleared under the competition laws.

¹ Loopback testing is a diagnostic procedure in which a signal is transmitted and returned back to the same sending device after passing through all or a portion of a network to test transportation or transportation infrastructure. A comparison of the returned signal with the transmitted signal conveys the integrity of the transmission path. A loop plug, called a wrap plug, is inserted into the port of a communication device to facilitate the loopback test. More details are available on : <https://www.techopedia.com/definition/25794/loopback-test>

Question 3: Do you agree that the provisions discussed in Para 1.13 viz. information to the subscribers about test SIM being temporary etc., should be put in place for the TSP testing its network involving test users/subscribers? Please suggest other provisions which should be mandated during test phase?

Response:

- There is no concept of Test users / test subscribers. Hence, the question of enrollment in a network or preventing these test subscribers from registration with banks and educational institutions etc. does not arise.
- The Test SIMs are not associated with any subscriber, that is the reason no CAF forms are filled for these numbers. However, the list of test numbers is maintained internally by the company and details are informed to circle TERM in advance.
- We have not come across a new car or new medicine or new elevator being tested with large number of Test users / test subscribers before making it available commercially. These can always be tested using own employees conducting the tests in a controlled environment.
- Alternate view - In case the Authority decides to prescribe to regulation for enrolling test subscribers prior to commercial launch then as recommended by TRAI, TSP enrolling test users should inform them about the modalities of testing, tentative testing period, mechanism for recording the feedback and deactivation of test SIM post completion of network testing. In that conditions the test series should be specially earmarked for testing and be different from commercial number series.

Question 4: Is there a need to have a defined timeline for testing phase i.e. period beyond which a TSP should start offering commercial services? If yes, what should be the timeline? Please justify your response.

Response:

- Please refer our response to Question 2 (last para). The Licensor and Regulator should evaluate the timelines for testing phase in the light of spectrum hoarding and (non)-applicability of minimum presumptive AGR. This should be reviewed and cleared under the competition laws.
- In so far as the inter-network testing is concerned a time limit of 30 days is more than sufficient. This timeline was defined by TEC for the comprehensive testing of live network of the entire country, it should definitely suffice the time required for a new network under test with NILL subscribers.

Question 5: In case enrolling of subscribers as test users before commercial launch is allowed, whether subscriber related conditions and regulatory reporting requirements laid down in the license, be imposed for the test subscribers enrolled before commercial launch? Please provide justification to your response.

Response:

- As suggested in our response to Question 1, TSP should not be allowed to enroll subscribers as test users before the commercial launch of the services. TSP should provide test SIMs only to its employees free of charge and refrain to extend the test SIMs to business partners, vendors and friends & family of the employees.
- The TSP before commencing the network testing should duly inform the local TERM Cell and TRAI about the test schedule, testing methodology, estimated number of test users and tentative testing period time frame. Such information should be published on TRAI website to maintain transparency among other service providers.
- Alternate view – In case the Authority decides to prescribe the regulation for enrolling test subscribers prior to commercial launch then as recommended by TRAI, there should be a separate test number series and these SIMs should be deactivated prior to commercial launch. New numbers from the commercial number series should be allotted post commercial launch.

Question 6: Should test users/subscribers of such licensees be given the facility of MNP? Please justify your answer.

Response:

- Port In and Port Out of few test numbers is part of the standard MNP testing process defined by Licensor.
- The very purpose of reporting the Test SIMs to circle TERM is the following :-
 - Test SIMs does not have an associated CAF, so exemption from CAF audit.
 - Test SIMs cannot be Ported Out, so to allow rejection under 90 days age on network criteria.
 - In other cases allow Port Out in less than 90 days and also to allow number return within the next few days.
- As can be seen from above, the test numbers are a tool in the hands of a test engineer, an ordinary subscriber who is not an employee of the company cannot be burdened with such responsibilities.

Question 7: If there are any other issues/suggestions relevant to the subject, stakeholders may submit the same, with proper explanation and justification?

Response:

- The period of availability of free services / offer of any kind should be limited to 30 days with no exception. Any non compliance to such action should be examined and assessed by the licensor and/ or regulator from the long term sustainability of the tariffs offered and long term impact on the competition to ensure no surge in the pricing at later stage.
- Economic analysis should take precedence in policy making with regards to tariffs besides checking for anti-competition, non-predatory, non-discrimination, not below cost, transparency, consistency and non-misleading.
