

**Telecom Regulatory Authority of India  
Mahanagar Doorsanchar Bhawan,  
Jawahar Lal Nehru Marg (Old Minto Road, New Delhi – 110 002**

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Dated 6<sup>th</sup> March, 2017

**CLARIFICATIONS ON TENDER DOCUMENT FOR DRIVE TEST OF CELLULAR  
MOBILE NETWORKS IN SELECT CITIES, HIGHWAYS AND  
RAILWAY ROUTES (IN TRAIN)**

**1. For Highways and Railway - As per the tender, drive test for Highways and Railways seem to be only for voice and not for data. Request you to please confirm (Page 16, clause 1.2(c):**

**Clarifications:** The drive test for highways and railway routes will be for voice only, including VOLTE.

**2. It has been mentioned in the tender to cover 150 KMs in a city, minimum 250 Kms for a highway in day and 250-350 for railways in a day. It would be difficult to cover such KMs in hilly terrains i.e. both within city and highways:**

**Clarifications:** From the previous drive tests undertaken by TRAI through independent agencies, it is seen that it is possible to cover 150 KMs in a city and minimum 250 KMs on highways. However, in case the drive tests on highways is carried out in hilly terrains the minimum KMs to be covered in a day will be 150 KMs, subject to prior acceptance of such drives by TRAI. In the case of drive tests on highways covers both hilly terrain and normal areas (plains) the total kilometers to be covered in a day will be in proportion to the kilometers of drive tests in hilly terrains and normal areas.

**3. If an agency can't complete 250 KMs a day on a highways due to any reason, as times it becomes difficult cover 250 KMs at a stretch, how will it be adjusted? Will agency have to cover the balance KMs on the same route next day or the balance KMs can be adjusted in some other route (Page 20, clause 2.6):**

**Clarifications:** As per the explanation given in Clause 17, where the required route kilometer is not covered for a service in a day such drive test will not be counted towards the required number of drive test for that service. The required KMs have to be covered in a day. However, minor shortfall may be accepted at the discretion of TRAI.

**4. How to define the days and kms in case of railways. Which one will be given a priority over other or both the conditions i.e. Kms and days have to be met? (Page 20, clause 2.6):**

**Clarifications:** TRAI will finalise the train route as well as the train in which the drive test to be undertaken. The day will start upon departure of the train and the route to be

covered in 8 hours would be indicated. Should there be dislocation of services or abnormal delays, the quantum of work may be modified with approval of TRAI.

**5. Please let us know the routes that TRAI is planning to cover across highways and railways for all 4 zones (Page 20, clause 2.6):**

**Clarifications:** The highways and railway routes to be covered and the period in which this will be covered will be decided by TRAI later. The highways and railway routes could cover one or more service areas in the contracted Zone.

**6. Please provide the required regulations for 4G and 4G VOLTE operators. Also provide the required benchmark for the parameters of 2G, 3G, 4G and 4G VOLTE for voice and data both [Page 20-21, clause 2.7(i)]:**

**Clarifications:** Please refer to Section-II, clause 1.2 to 1.7 of the Tender Documents.

**7. As a part of clause 2.7 (x) on data drive test drive, hot spots measurement needs to be conducted. Would request to please let us know as a part of tender requirement, how many hotspots are required to be covered/conducted per day (Page 20-21, clause 2.7(x)):**

**Clarifications:** The number of hotspots to be covered in a day will depend on the number of service providers and the time taken to cover all the service providers in a hotspot. The maximum number of hotspots possible to be covered in a day has to be covered. As such, the number of hotspots to be covered in a day is not specified in the Tender Documents.

**8. As a part of the data test drive, at a point of time usually a single operator is getting covered with one system and that takes nearly an hour, would request to please confirm the current requirement. Do you want an agency to cover all the operators at a time for a data using different systems or is there a requirement for covering few operators at a time for upload/download/ video stream and other activities [Page 20-21, clause 2.7(xi)]:**

**Clarifications:** It may not be necessary to cover all the operators at a time using different systems. However, the agency should have different systems to cover multiple operators and technologies so that more hotspots can be covered in a day.

**9. Would request to please specify the file size to be uploaded/downloaded as a part of data test for 2G, 3G and 4G. During data drive, what would be the standard file size for download speed and any specific FTP server? [Page 20-21, clause 2.7(xi)(a)] :**

**Clarifications:** The test file should consist of incompressible data i.e. a data file that is already compressed, e.g. like a zip or jpg file. The test file should have at least twice

the size (in Kbit) of the theoretically maximum data transmission rate per second (in Kbit/s) of the Internet access under consideration.

**10. Would request to please specify the detail for the servers on which the testing to be done. Will it be on agency server or TRAI servers? [Page 20-21, clause 2.7(xi)]:**

**Clarifications:** Server here means server of cellular mobile telephone service providers or any other server as may be specified by TRAI.

**11. Would request to please specify what will be the time duration and number of files to be uploaded/downloaded/ online video streaming for data test drive 2G, 3G and 4G [Page 20-21, clause 2.7(xi)(a,b,c)]:**

**Explanation:** The measurement methodology as prescribed in the Standards of Quality of Service for Wireless Data Services Regulations, 2012 dated 4<sup>th</sup> December, 2012 has to be followed.

**12. Web browsing with 3 links of e-commerce/m-commerce websites - Please let us which 3 sites do you want us to cover as a part of the data test drive. Kindly elaborate [Page 20-21, clause 2.7(xi)(c)]:**

**Clarifications:** This may be decided by the agency, in consultation with TRAI.

**13. For data test drive, we need to capture online payments on hotspots. Would request to please specify, what all activities/information are required to be captured as a part of this activity. Online payment will be on which sites, how to be paid and [Page 20-21, clause 2.7(xi)(e)]:**

**Clarifications:** The agency may not make online payment, but the access to these sites need to be checked.

**14. As the percentage of customers of CDMA is very less in comparison of the total subscribers, can we request TRAI to remove CDMA ? [page No.20, clause 2.1]:**

**Clarifications:** The agency has to cover all service providers, including service providers providing CDMA service.

**15. Covering 150Km in a day in Metro's is not feasible between 10AM -8PM, Can we request - reduction in per day KM OR extension of working hrs, say from 8 AM to 10PM [page No.20, clause 2.6]:**

**Clarifications:** The drive test shall be held from 09:00 hrs. 21:00 hrs to cover the required kilometers in a day.

**16. Clarification needed, "Measurement using engineering handsets would not be acceptable. " [page No.21, clause 2.7(ix)] & due to natural advent of technological platforms available, we request clarification that latest techniques based on cloud platforms and handsets is allowed to provide the data reports requested:**

**Clarifications:** The drive test has to be conducted using licensed drive test tool of latest version, which should support multiple SIMs. Various Mobile Handsets are available in the market, which is also used for measuring Quality of Service. However, for the purpose of this Tender, such mobile handsets shall not be used for drive tests.

**17. Service coverage is through scanner or idle mode [page No.20, clause 2.7]:**

**Clarifications:** The drive test is to be conducted in dedicated mode for measuring performance of the required Quality of Service parameters.

**18. Data drive for all the hotspots of all the operators could be difficult to be completed in a single day. Need to specify hotspots to cover per operator per technology:**

**Clarifications:** Please refer to clarifications against Point No.7. Further, the Authority may reduce the number of days of drive tests in a city and correspondingly increase the number of days of drive test for data. Also considering the large areas and customers being served by metro cities the number of days of drive tests for data services is increased to two days in the metro cities of Delhi, Mumbai, Chennai, Kolkata, Bengaluru and Hyderabad. The agency shall undertake drive test of data service accordingly.

**19. In case of VoLTE, Bands to be specified and VoLTE Configuration (Adding Binary in the handsets) should be TRAI/ Operator responsibility so that the respective handset becomes capable of measuring VoLTE parameters and can be integrated with the licensed tool [page 16, clause 1.2]:**

**Clarifications:** VoLTE measurement must support all channel bandwidth such as 5, 10, 15, 20MHz etc. across all frequency band on which the service provider is in operation. Hence, the MS/UE used during drive test must support all LTE bands (including channel bandwidth).

**20. Indoor, needs to be clarified, is it inside the building or only limited to the campus, up to where car can go. How many indoor sites to be covered? [page 20, clause 2.5(f)]**

**Clarifications:** Indoor sites does not mean measurement inside the building, but include important colonies, housing societies, software technology parks, Universities, office complexes etc., which can be covered in-vehicle in the drive test. The indoor sites will be part of the 150 KMs to be covered in a day and the selection of the sites is

left to the agency, in consultation with TRAI or its officers who will be present during such drive test.

**21. For Voice or Data testing, since there are multiple technologies for all operators , multiple Laptop based kits would have to be used. Is there any cap on number of UEs connected that can be connected to a Laptop or number of laptops that can be used in a single vehicle [page 18, clause 2.1]:**

**Clarifications:** It is left to the agency about the number & type of vehicle to be used, licensed tool kit, number of UEs that can be connected to a Laptop or number of Laptops that can be used in a single vehicle. However, the agency has to ensure that the drive test of all the operators for all services is conducted in accordance with the tender conditions and the quality of drive test should not suffer.

**22. Alternately, can on device measurement system be used wherein the measurements are done on the handheld itself and logs are also captured in the same device and testing is done through an automated script ? [page 18, clause 2.1]:**

**Clarifications:** This is not permitted as per the tender conditions.

**23. For respective LSA , the GRID size should be pre determined since drive tests also has to be done grid wise . Size of grid will impact the commercials due to the time and effort factor. [page 18, clause 2.1]. Also grid size will have an impact on post processing too since smaller the grid size, there are more grids to be processed and analysed [page 22, clause 2.11]:**

**Clarifications:** The grid size will depend on the type of city and number of days of drive test. Since the kilometers to be covered in a drive test in a day and the number of days of drive test is fixed there is no need for pre-determining the grid size. Further, in such scenario the grid size will not impact the commercials.

**24. SDCCH/Paging Channel Congestion/TCH Channel Congestion: In drive test, these parameters are measured under parameter blocked call rate as the calls are blocked due to congestion on SDCCH / Paging and TCH Channels. Hence, measurement of Blocked call reflects the congestion on these channels [Page no 17- (A) 2G].**

**Clarifications:** Para 2.7 may please be referred to. Drive test has to capture Blocked Call, with bifurcation of SDCCH/Paging Channel blocking and TCH Channel blocking.

**25. Worst affected cells having more than 3% Circuit switched Voice Drop rate: How we can extract worst affected cells wise data by drive test? [Page 18 (B) 3G]:**

**Clarifications:** The parameter “Worst affected cells having more than 3% Circuit switched Voice Drop rate” cannot be captured through drive test. Therefore, this parameter need not be assessed through drive tests.

**26. What would be the procedure to conduct data drive: Moving, Stationary or Indoor and Outdoor? [Page 18 (B) 3G]:**

**Clarifications:** The data drive has to be done through stationary mode, indoor and outdoor.

**27. Post processing and grid based analysis. What would be the standard of Grid size? Needs elaboration pl.? [Page 23, clause 2.11]**

**Clarifications:** The grid size will be decided based on the type of city and the number of days of drive tests to be undertaken.

**28. For Railway routes drive test: Permission would be required from TRAI, as Railway Authority may cause objection to conduct the drive test by TRAIN. In case no network of any operator, calls would be not initiated that time. What methodology or procedure needs to follow?**

**Clarifications:** The Authority had undertaken drive tests in-train on select railway routes. At the request of TRAI, the Railway Authorities had extended all cooperation for such drive tests. The stretch of railway network where there is not network needs to be captured as no coverage area.

**29. In 4G VOLTE how the call drop is to be captured:**

**Clarifications:** Call drop will be captured by VOLTE drive test tool kit which takes into all aspects such as measurement of delay in packet, latency, error/drop in packets, voice over muting analysis etc

**30. (a) Does It mean 50% routes of particular city, railway, highway need to be covered? If yes, what will be kilometers for each city to be driven? Because there is limitation in terms of number days per city.**

**(b) 50% of city cannot be covered in specified number of days, 1 day for data and 6/4 days for voice. Especially for Metro cities (clause 17.7 fourth proviso, Penalty Clause):**

**Clarifications:** The clause is self explanatory. The fourth proviso to clause 17.7 does not provide that 50% routes of particular city, railway, highway need to be covered.

**31. What is live measurements/ PMR/ audit? (Section II, clause 1.3(b):**

**Clarifications:** The clause 1.3(b) relating to “Transfer of data generated by the RF drive test/ live measurements/ PMR/ audit to the server located at TRAI premises immediately on completion of each activity.” is renumbered as 1.3(c) and the clause is revised as “Transfer of data generated by the RF drive test to the server located at TRAI premises.”

**32. We assume SDCCH block from drive test to be reported, is this correct? (Section II, 1.7, (i), (A)2G):**

**Clarifications:** The clarifications given in point No.24 may please be referred to.

**33. We assume TCH block from drive test to be reported, is this correct? (Section II, 1.7, (i), (A)2G):**

**Clarifications:** The clarifications given in point No.24 may please be referred to.

**34. What is the measurement criteria for connections with good voice quality? (Section II, Clause 1.7, (i), (A)2G):**

**Clarifications:** Please refer to TRAI report of pervious drive tests available on TRAI portal [www.trai.gov.in](http://www.trai.gov.in). For e.g voice quality is measure of RxQual samples on a scale from 0 to 7 for GSM operators, EcNo from 0 to -30 dBm and Frame Error Rate (FERs) for CDMA.

**35. We assume RRC failure rate while call setup to be measured from drive test (Section II, Clause 1.7, (i), (B)3G):**

**Clarifications:** RRC congestion is to be measured from drive test.

**36. We assume RAB failure rate while call setup to be reported from drive test (Section II, Clause 1.7, (i), (B)3G):**

**Clarifications:** Circuit Switched RAB congestion is to be measured from drive test.

**37. How many kilometer in each city we have to cover? Because it is mentioned that more than 50% of city to be covered as per point 6 above. Also there is limitation in terms of days for measurement. (Section II, clause 2):**

**Clarifications:** Clarifications to point No.30 may please be referred to.

**38. If 25% of cities of a circle to be covered in each quarter, then what about circles which have less than 3 cities? (Section II, Clause 2.5):**

**Clarifications:** The cities to be covered in a quarter will be selected in such a way that approximately 25% of the total number of cities to be covered in the entire Zone is covered in a Quarterly period. Hence, service areas which have less than 4 cities, for example Himachal Pradesh, Shimla may be covered in any one of the quarter of the year.

**39. It is mentioned that the agency shall undertake assessment of Quality of Service of cellular mobile networks through drive tests for “(i) voice service in 2G (GSM & CDMA), 3G and 4G VOLTE networks: (ii) data service in 2G (GSM & CDMA), 3G and 4G networks”. Is measurement of CDMA for data services required? (Section II, Clause 2.4):**

**Clarifications:** Clarifications to point No.14 may please be referred to.

**40. What will be technology configuration of each UE for each service providers in 2G, 3G & LTE/VoLTE. How many UE required in total per service provider? (Section II, Clause 2.4):**

**Clarifications:** Clarifications to point No.21 may please be referred to.

**41. Is CDMA required in highways/ railway? Because in point clause 2.4, it's mentioned 2G, 3G and 4G/ VoLTE service only for highways & railways and no CDMA. (Section II, 2.5, c):**

**Clarifications:** Drive tests in highways/ railway routes shall cover both GSM and CDMA services (for voice only).

**42. Indoor sites are also required? If yes, on road drive will be reduced in terms of days per city? How many indoor sites required in each city? (Section II, 2.5.f):**

**Clarifications:** Clarifications to point No.20 may please be referred to.

**43. 90 kilometers per day can be covered in a day (Section 2, Clause 2.5.f):**

**Clarifications:** Clarifications to point No.2 may please be referred to. Further, from the experience of earlier drive tests conducted through independent agencies it is seen that

150 KM in a day in a city is achievable in normal circumstances. But in case of circumstances beyond the control of the audit agency, lesser kilometers in a day will be acceptable.

**44. Which parameter to capture for voice quality? MOS? (Section II, Clause 2.7(i), Voice):**

**Clarifications:** Clarifications to point No.34 may please be referred to.

**45. Need more clarification (Section II, Clause 2.7, ii):**

**Clarifications:** The audit agency shall be provided with complaints relating to network problems. The audit agency shall consider such areas from where the complaints have come while deciding on the drive test route.

**46. We suggest to keep time 8 am to 8 pm to capture morning and evening network busy hour. (Section 2,2.7,v):**

**Clarifications:** Clarifications to point No.15 may please be referred to.

**47. Voice call will be from Mobile to mobile?**

**Clarifications:** Voice calls will be from the drive test tool/user equipment to test numbers provided by service providers. Voice calls will be within the same network of the cellular mobile service provider.

**48. MOS measurement required?**

**Clarifications:** The speech quality can be represented with MOS. As per the terms and conditions of the tender, the scope of work does not require mandatory measurement of MOS. Also please refer to clarifications to point 34 for measurement of voice.

**49. We suggest speed limit on highways to be 80km/hr to capture actual user experience. (Section II, Clause 2.7,vii):**

**Clarifications:** Measurements at 80 km/hour on highways is not acceptable.

**50. Need more clarification. Is Layer's information required? (Section II, Clause 2.7, ix):**

**Clarifications:** Clarifications to point No.16 may please be referred to.

**51. Can Ondevice measurement model be used? Measurements will be stored in handset on first level and then transferred in laptop. (Section 2, 2.9, 4):**

**Clarifications:** Clarifications to point No.16 may please be referred to.

**52. Maximum only 7 EU in single car? (Section II, Clause 2.9,5)**

**Clarifications:** The clause is self explanatory.

**53. Will cost of recharges of all SIM cards for voice and data service usage also be provided by service providers? (Section II, Clause 3,3.1):**

**Clarifications:** The clause is self explanatory. Free SIM includes free recharges.

**54. Need more clarification on detailed analysis part which will be shared with provider. (Section II, Clause 5,5.3):**

**Clarifications:** Detailed analysis refers to analysis of the results of the drive tests. Further, Clauses 5.3, 5.4 and 5.5 are renumbered as 5.2, 5.3 and 5.4 respectively.

**55. Need more clarification (Section II, Clause 5,5.5):**

**Clarifications:** Clause 5.5 of Section II is deleted.

**56. Need more clarification (Section II, Clause 7, 3):**

**Clarifications:** The clause is self explanatory.

**57. In Railway/ highway drive test, effective number of days will be more than actual, considering travel time for coming back to original location or next planned highway/ railway start point. Please suggest how to consider this point. (Section 3):**

**Clarifications:** Clarifications to point No.4 may please be referred to.

**58. What are the documents to be submitted under financial bid?**

**Clarifications:** The financial bid shall be submitted as per the Schedule for financial bids available at Section-III. The financial bid shall be submitted in a sealed envelope. The sealed financial bids shall be placed inside the sealed envelope containing technical bid and earnest money, as specified in clause 4 of the Notice Inviting Tender.

**59. CSFB service for 4G operators to be measured? Because it will be covered in 2G & 3G voice service measurement.**

**Clarifications:** Since the drive test for voice in 4G network is not to be tested, other than for 4G VoLTE, CSFB service for 4G service providers is not applicable.

**60. Third column “Name of licensees (Service Provider)” indicates 2G service providers? (Annexure-3):**

**Clarifications:** The third column is for 2G service providers.

**61. Why has the minimum experience requirement has increased this time? Does this mean that the Government of India does not wish to work with deserving & capable startups? (Section I, Clause 4, Eligibility):**

**Clarifications:** The eligibility clause has been specified keeping in view the expectations that companies with considerable experience in the field of drive tests of mobile networks and having sufficient technical manpower and infrastructure may apply for this tender so that the work could be executed without any problem. This is the first time the tender is floated by TRAI exclusively for drive tests and the quantum of drive tests is considerably high as compared to the earlier tender for audit and assessment of Quality of Service, where independent drive test was a small component.

**62. Last date for receiving bids:** The last date for receiving bids is revised to **3.00 PM on the 21<sup>st</sup> of March, 2017.**