

Government of India
Ministry of Communications and IT
Department of Telecommunications
AS Cell
Sanchar Bhavan, 20, Ashok Road, New Delhi

No.842-1117/2011/AS-IV | 1335

Dated 7th September 2012

Subject: Test Schedule Test Procedure (TSTP) for roll out obligations of 3G Spectrum under CMTS/UAS Licence using WCDMA technology.

With reference to above mentioned subject, I am directed to forward a copy of the provisional TSTP for street level coverage testing for roll out obligations of 3G spectrum using WCDMA technology under CMTS/UAS License for further necessary action.

ADG(VAS-I)

To

1. Sr. DDG (TEC), Kurshidala Bhawan, Janpath Road, New Delhi
2. DDG (Security-TERM), DoT, Sanchar bhawan New Delhi, for necessary information & circulating among TERM Cells
3. DDG(C&A), DoT for posting on DoT website.

Copy to:

1. M/s Bharti Airtel Limited/ M/s Bharti Hexacom Limited
2. M/s Tata Teleservices Limited / TTML
3. M/s Vodafone Limited (Including its subsidiary companies holding 3G spectrum)
4. M/s Idea Cellular Limited.
5. M/s S Tel Pvt. Limited
6. M/s Aircel Ltd/ M/s Dishnet Wireless Limited
7. COAI/AUSPI

4/9/12

ADG(IT)

1223-L

4/9/12

S3S/Dix(IT)
4/9/12

**Provisional
Test Schedule
for
Roll out Obligation
of**

3G Spectrum under UASL/CMTS License

(Refer to UASL/CMTS License amendment dated 1st September 2010 in respect of also authorizing Licensee for using assigned 3G spectrum)

(3G spectrum- street level coverage testing with UMTS technology as Part-IV of Existing Test Schedule for Service Approval under UASL/CMTS License)

September 2012

Sub-Section-A

A. Pre-requisite checks for 3G (UMTS) Spectrum Coverage

1 Name of Licensee (also authorized to use the 3G spectrum block):

2 Name of License Service Area:

3 Assigned frequency spots (UARFCN):

Table 1: NodeB/ NodeB -Remote RF Head (RRH) Verification

Based on the results of Table 2	Observation	Remarks
Final observation of Node B/ Node B-RRH Verification	OK/ FAIL	

Table 2: NodeB Verification Test Details

S. N.	NodeB	Site Location/ Cell IDs	Latitude/ Longitude ¹	Frequency (UARFCN)	Power ²	Infrastructure Sharing ³ (As per UASL/CMTS)	Intra-Service Area Roaming ⁴ (As per UASL/CMTS)	Complied /Not Complied
1.	Details As per SACFA Approval Details as per Inspection							
2.								
3.								

Signature
Name & Designation
Office Stamp

Note:

¹ The Maximum allowable deviation in geo-coordinates for sites/towers located in the urban/semi urban areas falling within 7 Kms of an Airport Reference Point (ARP) should be +_ 1 "(one second) which is equivalent to +_ 30 meters and deviation allowed in geo-coordinates for sites/towers located far away from Airports (more than 7 Kms) and rural areas should be +_ 10 "(ten second) which is equivalent to +_ 300 meters.

² Provisionally, transmitted power to be Measured at OMC.

³ Coverage is to be tested from NodeB sites which are allowed for fulfilling Roll out Obligation requirements under UASL/CMTS License. In this regard, undertaking from Licensee for compliance of license condition of infrastructure sharing for roll out to be taken or latest instructions from DoT for testing will be applicable.

⁴ Coverage is to be tested from NodeB sites which are allowed for fulfilling Roll out Obligation requirements under UASL/CMTS License. In this regard, undertaking from Licensee for compliance of license condition of intra service area roaming for roll out to be taken or latest instructions from DoT for testing will be applicable.

Sub-Section-B

B.Street Level Coverage Testing using assigned 3G Spectrum

(As per UASL/CMTS License amendment)

1,Pre-requisite

- i)Municipal map, drawn to scale, of the DHQ/ Town in lieu of DHQ/ Rural SDCA showing the municipal area, Local body limits and Rural SDCA boundary, all major and minor roads, commercial area, uninhabited land (if any); duly authenticated by the concerned authority. *(To be submitted by the applicant)*

- ii)The digital map, clearly showing the features mentioned in Para 1(i) above with positional details of the NODE Bs/ NodeB (RRH) superimposed on this map. *(To be submitted by the applicant).*

- iii)Necessary tools: Drive Test Tool, Test Mobile, Post Processing Tool, and Walk Test Kit/suitable arrangement.

- iv)Drive test tool/ Test mobile shall select "3G/UMTS only" to check coverage using the assigned 3G spectrum.

2,Route Selection

- i)With the help of above mentioned maps, the test in-charge shall survey the offered DHQ/ Town in lieu of DHQ/ Rural SDCA to identify the drive test routes covering places like Railway Station(s), Main Hospital(s), Bus Stand(s), Shopping Center(s), Stadium(s), College(s), Cinema Hall(s), Exhibition Ground(s), Airport(s), VIP area(s), Important Govt. office(s)/Court(s), Congested residential/commercial area(s). These landmarks shall be clearly marked on the map submitted by the applicant.

- ii)The drive test route shall be decided in consultation with the operator. The drive test route shall be a fair mix of open area, periphery of the service area, important public places etc, mentioned in Para 2(i) above.

- iii)The area offered for testing shall be divided into 50 mX50m cell grid.

iv)The drive test route will be planned to ensure street level coverage by assigned 3G spectrum in each grid cell of size 50 m X 50 m. The grid should encompass complete area offered for testing.

3 Conducting Tests (for data collection)

i)All data shall be collected using drive test tool in auto mode, placed in the mobile test van during drive-test. For the places that cannot be covered with drive test van, GPS enabled Walk Test Kit (or suitable alternate arrangements) shall be used (also kept in auto mode). Manual calls may be made to ascertain quality of calls and if any issues are observed then corresponding grid cell may be categorized accordingly.

ii)The drive test shall be conducted using 0 dB gain external antenna, fitted on the test mobile van. Speed of the van shall not exceed 30kmph.

iii)The test data file (log file) should be of maximum 30 minutes duration, in order to limit the file size. The log file of drive test for offered area shall be provided in a CD as record.

iv)Data shall be collected by setting up different types of calls and at least 10 calls in each grid cell (accessible), while traveling across the test drive routes:

a.Short duration calls of 60 seconds on and 10 seconds idle -- to be used to assess call set up success rate blocked calls, handoff/handover success rates, call drops rate etc.

b.Long duration calls of 30 minutes duration on and 10 seconds idle -- to be used for generating coverage plots.

v)Testing Scenarios with loading of 50% of loading of carrier:

a.AMR 12.2 kbps (Voice call) Mobile to Mobile (intra-operator) calls

b.CS Video (64 kbps) Mobile to Mobile (intra-operator) calls

c.PS 144 kbps Downlink (Vehicular Environment)

4 Post Processing of data

i)Data collected with the help of GPS enabled Walk Test Kit from congested area/narrow lanes where mobile test van could not reach, be merged with the data collected with mobile drive test van.

ii)The data collected using drive test tool for *short calls*, as mentioned in Para 3(iv) a is processed using post processing tool and required service quality reports are obtained.

iii)The data collected using drive test tool for *long calls*, as mentioned in Para 3 (iv) b, is processed using post processing tool and necessary coverage plots are obtained by superimposing the data on the digital map of the city/town as indicated in Para 1 (ii).

iv)Different software tools are available to perform post-processing of drive-test data and it is not possible to recommend a uniform criterion for post-processing. TERM units are advised to use discretion while choosing distance based/time based algorithms and intervals between samples, depending on the availability of tools, to assess the coverage percentage.

5 Submission of result

i)The network performance report obtained after post processing of data derived from short duration calls made (in auto mode) during drive test and using the drive-test tool software and report to be provided as per format given below:

Table 3

Parameter	Measured Value	Remarks
Call set-up success rate (within licensee own network): This shall be more than 95%		
Blocked call rate due to signaling/ Paging channel. This shall be less than 3%.		
Handover success rate: CS (Circuit Switched & PS (Packet Switched). This shall be more than 95%		
Call Drop Rate. This shall be less than 3%		

ii)A combined plot of RSCP and Ec/ Io to be generated for RSCP (≥ -93 dBm) and Ec/ Io (≤ -14 dB) = 1 in Green and not meeting requirement=0 in Red.

6 Interpretation of Results

- (i) Drive test plots mentioned in Para 5 above should be analyzed to check for compliance of meeting required street level coverage.
- (ii) The percentage of area with street level coverage using assigned 3G spectrum need to be evaluated.
- (iii) For this, total area is to be calculated using digital map. Area with street level coverage need to be evaluated by assessing each cell of grid as covered or not covered. Grid Cell of inaccessible area may be evaluated through appropriate interpolation of RSCP level.
- (iv) There may not be complete square size grid cell along the boundary of test area and good approximation as fraction of square cell size cell may carry out for evaluation purpose.
- (v) Particular grid cell may be declared as green grid cell, if more than 90% of cases taken in grid cell are meeting the required criteria. Green grid cells should be $\geq 90\%$ of total number of cells for each scenario to meet the coverage requirement.
- (vi) Once all grid cells are categorized as covered or not covered for meeting street level coverage requirement with assigned 3G spectrum, then number of grid cells covered may be divided by total number of grid cells to calculate area covered.
- (vii) **For AMR 12.2 kbps voice call**, a combined plot of RSCP (≥ -93 dBm) and E_c/I_o (≤ -14 dB) may be checked for meeting 90% requirement. The percentage of green plots (samples) should be $\geq 90\%$ to meet the coverage requirement.
- (viii) **For CS 64 kbps Video call**, a combined plot of RSCP (≥ -93 dBm) and E_c/I_o (≤ -14 dB) may be checked for meeting 90% requirement. The percentage of green plots (samples) should be $\geq 90\%$ to meet the coverage requirement.
- (ix) **For PS 144 kbps Data**, a combined plot of RSCP (≥ -93 dBm) and E_c/I_o (≤ -14 dB) may be checked for meeting 90% requirement. The percentage

of green plots (samples) should be $\geq 90\%$ to meet the coverage requirement.

(x) All types of scenarios are to be tested in loaded condition with 50% of loading of carrier.

Glossary

AGL: Above Ground Level

AMSL: Above Mean Sea Level

AMR: Adaptive Multi Range

CMTS: Cellular Mobile Telephone Service

CS: Circuit Switched

DHQ: District Head Quarter

GPS: Global Positioning System

PS: Packet Switching

RRH: Remote RF Head

RSCP: Received Signal Code Power

TERM: Telecom Enforcement, Resource and Monitoring

UARFCN: UMTS Absolute Radio Frequency Carrier Number

UASL: Unified Access Services License

UMTS: Universal Mobile Telecommunications System

WCDMA: Wideband Code Division Multiple Access

WPC: Wireless Planning & Coordination Wing

DoT: Department of Telecommunication