



TCL/RA/TCL/TRAI CP-M2M/2016/10

January 12, 2017

Mr. Sanjeev Banzal  
Advisor (Networks, Spectrum and Licensing),  
Telecom Regulatory Authority of India,  
Mahanagar Doorsanchar Bhawan,  
Jawaharlal Nehru Marg (Old Minto Road),  
New Delhi 110002

Sub: TCL Response to TRAI Consultation Paper on Spectrum, Roaming and QoS related requirements in Machine-to-Machine (M2M) Communications.

Dear Sir,

Kindly find attached herewith Tata Communications Ltd. response on the TRAI Consultation Paper dated 18<sup>th</sup> October, 2016 on "Spectrum, Roaming and QoS related requirements in Machine-to-Machine (M2M) Communications".

It is requested that the same may kindly be taken on record.

With kind regards,

For Tata Communications Ltd.

(Praveen Sharma)  
Authorized Signatory

Encl: a/a.

**TATA COMMUNICATIONS**

**Tata Communications Limited**

VSB Bangla Sahib Road New Delhi 110 001 India

Tel +91 11 6650 1111 6650 1234 Fax +91 11 6650 1121 Website: [www.tatacommunications.com](http://www.tatacommunications.com)

Regd Office: VSB, Mahatma Gandhi Road, Fort, Mumbai 400 001 India

CIN No.: L64200MH1986PLC039266

## **TCL Response to TRAI Consultation Paper on ‘Spectrum, Roaming and QoS related requirements in Machine-to-Machine (M2M) Communications’**

**Q1. What should be the framework for introduction of M2M Service providers in the sector? Should it be through amendment in the existing licenses of access service/ISP license and/or licensing authorization in the existing Unified License and UL (VNO) license or it should be kept under OSP Category registration? Please provide rationale to your response.**

### **TCL Response:**

We are of the view that a simple registration process as is done in case of OSP will be most suitable for M2M service provider. In our view M2M/IoT services are the application services which will ride on the access services/internet access being provided by the TSPs and ISPs respectively. The nature and character of the services does not get covered under Section 4 of the Indian Telegraph Act and in a way similar to that of OSPs and other Application Service Providers.

We are in agreement with document circulated by DoT as draft guidelines for M2M service provider registration in May 2016. We believe this would lead to orderly and rapid growth of this industry.

**Q2. In case a licensing framework for MSP is proposed, what should be the Entry Fee, Performance Bank Guarantee (if any) or Financial Bank Guarantee etc? Please provide detailed justification.**

### **TCL Response:**

As registration similar to OSP category registration is proposed, there should be no Performance Bank Guarantee (if any) or Financial Bank Guarantee etc.

**Q3. Do you propose any other regulatory framework for M2M other than the options mentioned above? If yes, provide detailed input on your proposal.**

### **TCL Response:**

We do not propose any other framework for M2M service provider.

**Q4. In your opinion what should be the quantum of spectrum required to meet the M2M communications requirement, keeping a horizon of 10-15 years? Please justify your answer.**

**TCL Response:**

Singapore, Europe (Switzerland, Belgium, Netherlands, Spain, Italy, Denmark, Germany, France, Luxembourg), USA, Australia have seen LPWAN deployment at country level (deployed or announcement of deployment). South Korea, South Africa, Russia are coming close behind with tests on going. China is testing the technology but where it stands actually is unknown. All existing deployment are made in ISM (license free band). This is an essential point to keep the LPWAN communications costs low.

In consideration of usage of unlicensed band, FCC and European Regulatory Authorities have introduced some limitations like max EIRP (which exists in India) and duty cycle (ie max time computed over a day a LPWAN base station can transmit; same applies to devices; it does not exist in India).

More importantly FCC and European Regulatory Authorities are considering extending the unlicensed band (the French Regulatory Authority has already announced they will do so by 2017). Widening the unlicensed band is seen as a pro competition move enabling new actors competing against the mobile giants; and good for the economy / GDP growth.

In this context, the current 2MHz (865-867 MHz) is insufficient to cater to the billions of M2M devices and the same is noted and reflected in Nov-2015 TEC report, **TECTRS& DM2M00202 in section 3.3.5.**

The US and European regulators are in the process to extend the ISM band by a minimum to 17MHz in a move to push their respective IOT ecosystem. India with high potential to be a leader in IOT, will lag the global position if additional spectrum is not released and dedicated for IOT usage.

Continuous 10-12MHz bandwidth unlicensed frequency and Maximum channel Band width of 200 kHz is recommended to be allocated for MSP

**Q5. Which spectrum bands are more suitable for M2M communication in India including those from the table 2.3 above? Which of these bands can be made delicensed?**

**TCL Response:**

Sub 1G band is recommended to be earmarked for MSP. As per table 2.3, over 35 MHz have been provisioned for PMRTS and CMRTS. There may be a possibility of freeing spectrum after the

examination of the current usage of PMRTS and CMRTS. Freed spectrum can be earmarked to meet the demand of M2M communications.

Following band can be considered for delicensing and are placed in order of preference:

- 1) 855-866 MHz (12 MHz).
- 2) 917-922 MHz (5 MHz).
- 3) 810-820Mhz. (10 MHz).

A strong Adjacent Channel Leakage Ratio (ACLR) guidelines should be in place for unlicensed spectrum usage. An ACLR of minimum 55dbm below the peak is recommended.

With low power devices allowed in 865-857Mhz band, and only 2MHZ separation from the high power 850 MHz cellular operation transmitters, Sensitivity of equipment in this band is highly degraded.

We recommend a minimum 3-4 MHz frequency separation from the BTS Transmitters of the licensed operations.

**Q6. Can a portion of 10 MHz center gap between uplink and down link of the 700 MHz band (FDD) be used for M2M communications as delicensed band for short range applications with some defined parameters? If so, what quantum? Justify your answer with technical feasibility, keeping in mind the interference issues.**

**TCL Response:**

Yes, Sensitivity of equipment in this band can be highly degraded due to high BTS transmitter's in licensed band.

We recommend a minimum 3-4 MHz frequency separation from the BTS Transmitters of the licensed operations.

**Q7. In your opinion should national roaming for M2M/IoT devices be free?  
(a) If yes, what could be its possible implications?  
(b) If no, what should be the ceiling tariffs for national roaming for M2M communication?**

**TCL Response:**

No, Roaming between operators should not be free and should be chargeable. Charges should be agreed between operators.

The charging mechanism, should be based on amount of information (Number of messages or Bytes) carried by the Roaming network.

- Q8. In case of M2M devices, should;**
- (a) Roaming on permanent basis be allowed for foreign SIM/eUICC; or**
  - (b) Only domestic manufactured SIM/eUICC be allowed? and/or**
  - (c) There be a timeline/lifecycle of foreign SIMs to be converted into Indian SIMs/eUICC?**
  - (d) any other option is available?**
- Please explain implications and issues involved in all the above scenarios.**

**TCL Response:**

Roaming on permanent basis may be allowed provided the customer related formalities are completed by the Application Service Provider in India. We also need to take in to account global practices while taking decisions on the issue.

- Q9. In case permanent roaming of M2M devices having inbuilt foreign SIM is allowed, should the international roaming charges be defined by the Regulator or it should be left to the mutual agreement between the roaming partners?**

**TCL Response:**

It should be left to the mutual agreement between roaming partners.

- Q10. What should be the International roaming policy for machines which can communicate in the M2M ecosystem? Provide detailed answer giving justifications.**

**TCL Response:**

Same as 7

- Q11. In order to provide operational and roaming flexibility to MSPs, would it be feasible to allocate separate MNCs to MSPs? What could be the pros and cons of such arrangement?**

**TCL Response:**

No comment.

**Q12. Will the existing measures taken for security of networks and data be adequate for security in M2M context too? Please suggest additional measures, if any, for security of networks and data for M2M communication.**

**TCL Response:**

We believe the level of security changes based on customer requirement and range from medium (Sensor Reporting) to high (Smart Grid).

Considering the variance of requirement we recommend level of security required for any application should be agreed between the M2M Service provider and the customer.

**Q13. (a) How should the M2M Service providers ensure protection of consumer interest and data privacy of the consumer? Can the issue be dealt in the framework of existing laws? (b) If not, what changes are proposed in Information Technology Act. 2000 and relevant license conditions to protect the security and privacy of an individual?**

**Please comment with justification.**

**TCL Response:**

We believe that the current IT policy framework can adequately deal with the data privacy.

**Q14. Is there a need to define different types of SLAs at point of interconnects at various layers of Heterogeneous Networks (HetNets)? What parameters must be considered for defining such SLAs? Please give your comments with justifications.**

**TCL Response:**

No separate framework required. Agreements between MSP`s should address the SLA.

**Q15. What should be the distributed optimal duty cycle to optimize the energy efficiency, end-to-end delay and transmission reliability in a M2M network?**

**TCL Response:**

For Co-existence of multiple operators on same Un-licensed M2M band:

- Device duty cycle of 5% is recommended with Channel BW of 200 KHz and max Device Transmit power- 30dBm. (EIRP) and

- Network duty cycle of 10% is recommended with Channel BW of 200 KHz and max transmit power- 36dBm. (EIRP)
- Allow transmit power of 36dBm EIRP and 250 KHz channel in a specific frequency.

This will ensure efficient usage of M2M unlicensed spectrum and avoid spectrum hogging by any single MSP.

**Q16. Please give your comments on any related matter not covered in this consultation paper.**

**TCL Response:**

- The policy should be forward looking, technology neutral, flexible, addressing end to end M2M requirements and able to prompt competition with focus on standardization of devices, interfaces and services covering.
- M2M Network base station shall be mandated to be IPv4/6 based however devices and sensors shall be up to best possible be IP/ IPv6 based, but not mandated.
- There is requirement of M2M product / service certification for adherence to safety standards, adherence to spectrum guidelines
- Import license requirements to be provided for M2M devices operating in un-licensed bands.

\*\*\*\*\*