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Counter Comments
TRAI CP Dated 20210312[1,2,3]

Introduction:

CP is regarding *'Licensing Framework for Satellite-based connectivity for low bit rate applications'*.

2.

TRAI CP is woven round key acronym 'IoT' as it is occurring '144' times in it albeit this acronym is not appearing even once in the reference[4] received by TRAI from DoT.

3.

There is focus on following areas to achieve the perceived perception of TRAI of IoT through Satellite based Solutions arising out of DoT reference:
a)Spectrum requirements in different frequency bands.
b)Tweaking existing licences to enable provision of IoT in the scope of these licenses.
c)Reiterating the TRAI recommended approach of Open Sky Policy to meet the requirement of IoT of Space Segment.

4.

Low Bit Rate has not been quantified either in Reference from DoT or extant TRAI CP. In fact
a)Lowest Bit Rate appearing in TRAI CP[5](para 3.18 page'39') is 300bps
b)Highest Bit Rate appearing in TRAI CP[6](Table 3 page '17') is 200 Mbps.

5.

An 'Introduction to the Internet of Things'[7] is a good source material for IoT journey from its very beginning quite relevant to extantCP[8].

6.

ITU Definition[9]• Recommendation ITU-T Y.2060 provides an overview of the Internet of Things (IoT). It clarifies the concept and scope of the IoT, identifies the fundamental characteristics and high-level requirements of the IoT and describes the IoT reference model. • Date: 2012-06-15

7.

Nomenclature of Frequency and wavelength bands and their use is defined in Articles 2.1,2.2 of RR220.However nomenclature L-band, S-band, C-band, Ku-band, Ka-band used in Q.3 of Issues for Consultation of TRAI CP is different from RR nomenclature[10].

8.

Inter-alia 'establishment of space based systems for communications over India – using Indian orbital resources' is covered in Para 4.1A of (Spacecom NGP-2020)[11].

9.

'The performance audit was conducted during October 2016 to January 2017 with a view to examine the efficiency and effectiveness of the spectrum management functions of Department of Telecommunications (DoT)' by CAG. As per 'Report No. 21 of 2018[12]***inter-alia:***
(a)Monitoring of spectrum use was not adequate due to various reasons(para 2.1.11).
(b)Non-updation of National Frequency Register (NFR)(para 2.1.11.1)
(c)Non-updation of National Frequency Register (NFR) in ASMS
(d)Non-availability of updated database of wireless licensees with WMO headquarter and Monitoring Stations(para2.1.11.2).
(e)Establishing and strengthening Institute of Advanced Radio Spectrum Engineering and Management Studies (IARSEMS) Foundation stone for establishing Institute of Advanced Radio Spectrum Engineering and Management Studies (IARSEMS) was laid in March 2011with the

objective to ensure an efficient spectrum planning and engineering to achieve optimal spectrum use in present and future(2.1.12.1).

(f)In conclusion ***inter-alia*** it has been observed that 'Although Spectrum Audit has been initiated by DoT in October 2017, action was still due in most of the areas of Spectrum Management by DoT. The NFAP 2011 was not updated although two World Radio Congresses have taken place in 2012 and 2015. The National Frequency Register remained un-updated and was not the correct reflection of the frequency assignments with various users'.

10.

Situation has not improved as now updation of NFAP 2018 as per ITURR2020[13],one of the outcomes of WRC2019, is still awaited.

11.

As per 'Press Information Bureau Government of India Ministry of Communications 10 DEC 2020 6:06PM[14] by PIB Delhi BSNL is already into NBIoT.

12.

As per ETTelecom April 12, 2021, 17:06 IST[15] 'Jio deploys NB-IoT service for Tata Power-DDL's smart meters'.

Issues for Consultation

Q1.

There are two models of provision of Satellite-based connectivity for IoT and low-bit-rate applications — (i) Hybrid model consisting of LPWAN and Satellite and (ii) Direct to satellite connectivity. (i) Whether both the models should be permitted to provide satellite connectivity for IoT devices and low-bit-rate applications? Please justify your answer. (ii) Is there any other suitable model through which the satellite-based connectivity can be provided for IoT devices? Please explain in detail with justifications.

Q2.

Satellite-based low-bit-rate connectivity is possible using Geo Stationary, Medium and Low Earth orbit Satellites. Whether all the above type of satellites should be permitted to be used for providing satellite-based low-bit-rate connectivity? Please justify your answer.

Q3.

There are different frequency bands in which communication satellites operate such as L-band, S-band, C-band, Ku-band, Ka-band and other higher bands. Whether any specific band or all the bands should be allowed to be used for providing satellite-based IoT connectivity? Please justify your answer.

Q4

(i) Whether a new licensing framework should be proposed for the provision of Satellite-based connectivity for low-bit-rate applications or the existing licensing framework may be suitably amended to include the provisioning of such connectivity? Please justify your answer.

(ii) In case you are in favour of a new licensing framework, please suggest suitable entry fee, license fee, bank guarantee, NOCC charges, spectrum usage charges/royalty fee, etc.

Q5.

The existing authorization of GMPCS service under Unified License permits the licensee for provision of voice and non-voice messages and data services. Whether the scope of GMPCS authorization may be enhanced to permit the licensees to provide satellite-based connectivity for IoT devices within the service area? Please justify your answer.

Q6.

Commercial VSAT CUG Service authorization permits provision of data connectivity using VSAT terminals to CUG users. (i) Whether the scope of Commercial VSAT CUG Service authorization should be enhanced to permit the use of any technology and any kind of ground terminals to provide the satellite-based low-bit-rate connectivity for IoT devices? (ii) Whether the condition of

CUG nature of user group should be removed for this authorization to permit provision of any kind of satellite-based connectivity within the service area? Please justify your answer.

Q7.

(i) What should be the licensing framework for Captive licensee, in case an entity wishes to obtain captive license for using satellite-based low-bit-rate IoT connectivity for its own captive use? (ii) Whether the scope of Captive VSAT CUG Service license should be modified to include the satellite-based low-bit-rate IoT connectivity for captive use? (iii) If yes, what should be the charging mechanism for spectrum and license fee, in view of requirement of a large number of ground terminals to connect large number of captive IoT devices?

Q8.

Whether the scope of INSAT MSS-R service authorization should be modified to provide the satellite-based connectivity for IoT devices? Please justify your answer.48

Q9.

(i) As per the scope mentioned in the Unified License for NLD service Authorization, whether NLD Service providers should be permitted to provide satellite-based connectivity for IoT devices. (ii) What measures should be taken to facilitate such services? Please justify your answer.

Q10.

Whether the licensees should be permitted to obtain satellite bandwidth from foreign satellites in order to provide low-bit-rate applications and IoT connectivity? Please justify your answer.

Q11.

In case, the satellite transponder bandwidth has been obtained from foreign satellites, what conditions should be imposed on licensees, including regarding establishment of downlink Earth station in India? Please justify your answer.

Q12.

The cost of satellite-based services is on the higher side in the country due to which it has not been widely adopted by end users. What measures can be taken to make the satellite-based services affordable in India? Please elaborate your answer with justification.

Q13.

Whether the procedures to acquire a license for providing satellite based services in the existing framework convenient for the applicants? Is there any scope of simplifying the various processes? Please give details and justification.

Ans.'Q1 to Q13'.Kindly refer to Ans.14.

Q14.

If there are any other issues/suggestions relevant to the subject, stakeholders are invited to submit the same with proper explanation and justification.

Ans14.

a)Notwithstanding that requirement of Spectrum for Satellite Communications has been projected in different frequency and wavelength bands having different nomenclature than the one of RR2020 as noted in para '7' of Introduction above the new NFAP may be awaited. As per DoT a committee[16] is working on revised NFAP as per RR2020.

b)Regarding Open Sky Policy referred in Para '3' of Introduction the information given in par '9' of Introduction may kindly be noted and action taken accordingly.

c)The tweaking of existing licences by enhancing their scope, having different criterion for SPECTRUM Allotment, SuC, Revenue Streams etc to accommodate IoT through Satellite may lead to non level playing field to existing TSPs/protracted litigation.

d)A new licensing framework may be created for IoT through Satellite is generically access service to Physical & Virtual Devices. Moreover Bit Rates are far from low bit rates as pointed in para for of Introduction above.

e)A periodic review of services provided as per paras '11','12' may be done and put in public domain for information/future reference.

General Observations & Suggestions

1.From paragraph ‘9’ it is obvious that Spectrum Management was not satisfactory in the past and it appears to be no better even now as:
(i)Current NFAP is still not available although WRC was held way back in 2019 and RR2020 were available more than a year back.
(ii)No Compliance Report is available in Public Domain in response to CAG Performance Report 21 of 2018 especially done regarding done regarding Spectrum Management in DoT.
(iii)No information is available in Public Domain regarding operationalisation of IARSEMS whose foundation stone was laid wayback in March 2011.
Thus there is an immediate need for a closer look at Spectrum Management in DoT and to bring it at par to the current and future needs of utilisation of a very important Natural Resource it is therefore suggested that;
*Revision of NFAP 2018 may be done very urgently and new NFAP may be made available sooner than yesterday in Public
**Compliance Performance Report of DoT w.r.t CAG report No.21,2018 may be put in public domain.
***The present status of ARSEMS[17] be placed in public domain for information of all stake holders.

REFERENCES

1.TRAIPR122021.
2.TRAI CP 1 of 2021 12032021.
3.TRAIPR252021
4.Annexure I supra 2.
5.supra 2.
6.supra 2.
7.ITU Introduction to the Internet of Things by Marco Zennaro, PhD Telecommunications/ICT4D Lab The Abdus Salam International Centre for Theoretical Physics Trieste, Italy.
8.supra 2.
9. Recommendation ITU-T Y.2060
10.RR 2020 Articles Vol. 1 Article2.1
11.DoS Spacecom NGP-2020.
12.CAG Report 21 of 2018.
13.supra 2 Article 5.
14.Press Information Bureau Government of India Ministry of Communications 10 DEC 2020 6:06PM
15.ETTelecom April 12, 2021, 17:06 IST
16.MoCDoTWPC T-11012/03/2020-Conf Dated 26022021
17.Establishment and Strengthening of ‘Institute of Advanced Radio Spectrum Engineering and Management Studies (IARSEMS)’ Report by:- Dr. Ashok Chandra (D. Sc.) Former Wireless Adviser to the Government of India Email: drashokchandra@gmail.com Mobile No: +919868131546

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