

Atria Convergence Technologies Private Limited
An ACT Group Company



24/08/2016

To

Shri. Arvind Kumar,
Advisor (Broadband & Policy Analysis)
Telecom Regulatory Authority of India
New Delhi – 11002.

broadbandtraigmail.com

Sub: Response to TRAI consultation paper on proliferation of Broadband through Public Wi-Fi Networks dated 13th July 2016 – Reg.

Atria Convergence Technologies Private Limited (ACT) is a licensed Class – A, Internet Service Provider (ISP) and have been providing internet broadband services in the cities of Bangalore, Hyderabad, Chennai and few other cities in the state of Andhra Pradesh.

At the outset, we thank the Authority for providing us an opportunity to respond to this consultation paper. In response to the consultation paper, we request the Authority to take note of our reply against each of the questions raised by the Authority.

Yours Sincerely

For Atria Convergence Technologies Private Limited

Authorized Signatory

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Response from Atria Convergence Technologies Private Limited to the consultation paper on proliferation of Broadband through Public Wi-Fi Networks.

1. Are there any regulatory issues, licensing restrictions or other factors that are hampering the growth of Public Wi-Fi Services in the Country?

We would like to stress that the most easiest and efficient model in order to ensure proliferation of internet broadband is to create a platform whereby existing ISPs may choose to act only as Wi-Fi service providers in cities and rural areas. It is to be noted that existing ISPs who provide wired internet broadband services might want to create Wi-Fi hotspot in many rural areas or tier II towns and in many strategic locations in various parts of the cities such as Airports, SEZ etc. It is to be noted that internet bandwidth can be sold by one ISP to another ISP only when the ISP holds a valid Internet Gateway License, failing which the same would amount to re-selling of bandwidth and is prohibited under the ISP License Agreement. This licensing restriction will have to be relaxed and sale of bandwidth between one ISP to another ISP should be allowed. This would definitely help many stand-alone ISP license holders/wired internet broadband service providers to tie up with other existing ISPs and will be very effective for effective proliferation of broadband and Public Wi-Fi in rural areas and cities.

The concept of restriction on re-sale was relevant a few years back when the country did not have sufficient infrastructure. Now the policy is to promote infrastructure sharing. So it is high time that this restriction is removed.

Further, Telcos may be more interested to promote the use of licensed spectrum while the ISPs who do not own licensed spectrum would be keen to promote the use of delicensed spectrum such as WiFi.

2. What regulatory/licensing or policy measures are required to encourage the deployment of commercial models for ubiquitous city-wide Wi-Fi networks as well as expansion of Wi-Fi networks in remote or rural areas?

In order to create ubiquitous city-wide Wi-Fi networks and for expansion of Wi-Fi networks in remote or rural areas, we completely support various models prescribed by TRAI under Chapter-III of this Consultation Paper.

In furtherance to the regulatory/licensing aspects pointed out in our reply to Query #1 above we submit that existing ISPs and in specific ISPs like ACT, who provide wired internet broadband services find it very cumbersome to establish feasibility due to lack of proper policy framework in place for obtaining ROW permissions. Further, the roll out of wired ISP network is also highly capital intensive. Hence policy decision needs to be brought in to ease ROW hassles. As per the Indian Telegraph Act, when Government was the service provider, there was no RoW charges. It was only restoration charges. It

is well accepted fact that the growth of broadband or telecom has multifold effect on the growth of the economy. So there should be no RoW charges and it should only be restoration charges. The RoW should not be a source of income to the various Govt or local authorities/agencies. Even though the DOT has come up with Draft Indian Telegraph Right of Way Rules, 2016, the same needs to be duly passed and notified officially in the gazette.

With respect to other aspects which hampers the growth of Wi-Fi Services are permissions for installation of Wi-Fi equipment at various public or private locations and most importantly securing proper power supply to the Wi-Fi network and other equipment installed at the various locations. The Wi-Fi network created by the Service Providers are being viewed as a commercial transaction by the respective electricity departments across the Country and ISPs are forced to obtain commercial power for each of the Wi-Fi equipment in each and every location. A policy framework which would enable ISPs to get permission from various Electricity Department across the country enabling for provisioning of power supply and assessment to various network equipment installed by service providers would help a lot in resolving ground level practical difficulties.

Finally, Govt. may also consider reduction or complete waiver of the import duty on the Wi-Fi Equipment.

3. What measures are required to encourage interoperability between the Wi-Fi networks or different type of service providers, both within and internationally?

The reply to Q.No.1 may be considered as our reply to this query.

4. What measures are required to encourage interoperability between cellular and Wi-Fi networks?

The technology provides for switching between various networks. As regards interconnection is concerned, the standard rules of interconnection between service providers should apply. The bottomline is that, regulatory regime should never a bottleneck in implementing technological solutions.

Standardization is lacking for cellular & Wi-Fi interoperability. Every Cellular provider has customized way of interoperability with Wi-Fi for data offloading purpose. This is primarily to free up the licensed spectrum by offloading data to unlicensed Wi-Fi. Standardization will help independent Wi-Fi deployers to collaborate with multiple service providers and help in providing affordable data to customers.

5. **Apart from frequency bands already recommended by TRAI to DOT, are there additional bands which need to be de-licensed in order to expedite penetration of broadband using Wi-Fi technology? Please provide international examples, if any, in support of your answer.**

De-licensed frequency bands, apart from typically being utilized under the Wi-Fi standard, would give a strong impetus to the proliferation of broadband services in the country.

As highlighted by the authority the frequency bands of 5.725 - 5.825 GHz for outdoor use is still licensed and as recommended by the Authority on “Delivering Broadband Quickly: What do we need to do?” dated 17 April 2015 “the de-licensing of the 5.725 - 5.825 GHz band for outdoor usage needs to be carried out in the next 6 months. DoT must release larger quantities of unlicensed spectrum (as has been done in many parts of the world) for better quality of service and reducing the strain on existing networks.”

Most countries have already delicensed the 60 GHz band and this band has a good device ecosystem. The 60 GHz band is also known as V-band or WiGig band (Wi-Fi at 60 GHz) using IEEE 802.11ad protocol.

In its Recommendations on “Allocation and Pricing of Microwave Access (MWA) and Microwave Backbone (MWB) RF carriers” dated 29 August 2014, the Authority recommended that, in order to increase broadband penetration in India, the usage of high capacity backhaul Eband (71-76 / 81-86 GHz) and V-band (57-64 GHz) may be explored for allocation to the telecom service providers.

Recommended that: (a) Channel bandwidth for E-band (71-76 GHz and 81-86 GHz) should be 250MHz with a guard band of 125MHz at the top and bottom of each 5 GHz band and more than one channel can be allowed and allocated for aggregation. (b) Channel bandwidth for V-band (57-64 GHz) should be 50MHz with a 100MHz guard band at the beginning of the band and more than one channel can be allowed and allocated for aggregation.

Another avenue being explored by certain jurisdictions, is that of utilizing TV White Spaces, i.e. unutilised frequency bands which were earlier used to prevent channel leakages between analogue broadcasts of television programming, to create a wireless backhaul for supporting further development of wireless Internet access, and other experimental technologies. B. Business viability and

Further frequencies in the 5.15 GHz-5.35 GHz bands, as well as 5.725-5.775 GHz bands are unlicensed for indoor use only. These bands should be unlicensed for outdoor use as

well in order to facilitate the creation of wider wireless communication networks and the use of innovative technologies.

Additionally we would like to submit the following:

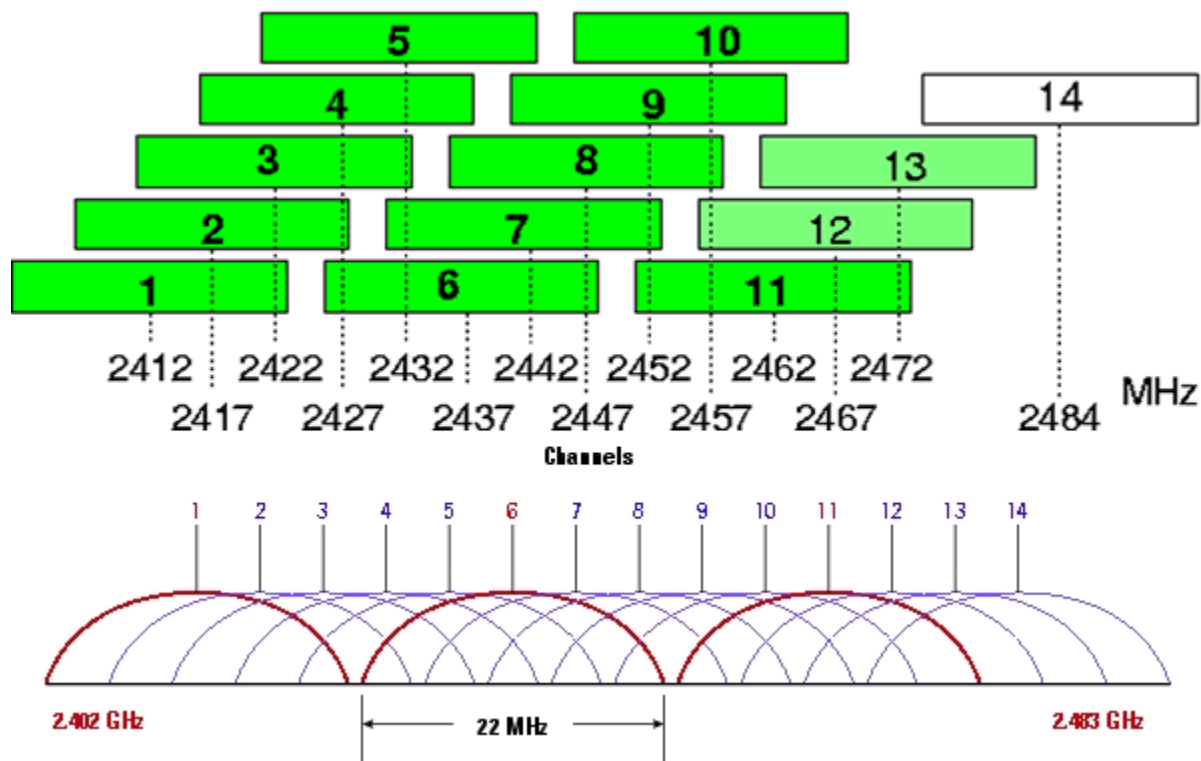
1. Current de-licensing in India is different from ITU T & Worldwide norms in ISM bands; we should align ourselves with ISM Bands. In 5.8 GHz band only 50 MHz have been de-licensed vs 120 MHz available in all other countries. This will bring in economies of scale.
2. Most of the countries have already unlicensed 60 GHz band and this band has a good device ecosystem, India should also delicense 60 GHz band immediately and make it available for consumers. 60 GHz band is also known as WiGig band (Wi-Fi at 60 GHz) using IEEE 802.11ad protocol. At present dual band WiFi in 2.4 GHz and 5 GHz spectrum bands is deployed for WiFi. Now tri band WiFi chips are available and shortly tri band WiFi routers devices shall be also available in India. 60 GHz Band is already license exempt spectrum band in countries like USA, UK, Australia and Japan.

Existing Difficulties in current De-licensed frequency:

2.4 GHz Wireless LAN Channels

When using 2.4 GHz Wireless LAN there are 14 channels however as these channels are 22Mhz wide there are in reality only three usable channels can simultaneously existing practically in one area due to channels overlap. Consequently in cases where wireless LAN is congested choosing an adjacent channel may not resolve a problem of interference, so a combination of both spacing channels apart as far as possible and changing polarization maybe advisable to maximize the quality of connections.

Note : Maximum EIRP is 4000mW.



List of License free frequencies in India for Wireless usage

Frequency Band: 865-867 MHz

Low power RFID equipment's or any other low power wireless devices or equipment's
 Power: Maximum transmitter output power of 1 Watt (4 Watts Effective Radiated Power)
 Carrier Bandwidth: 200 KHz
 Reference: GSR 564 (E) dated 30 July 2008

Frequency Band: 2.4-2.4835 GHz

Use : Low power equipments
 Power: Maximum transmitter output power of 1 Watt (4 Watts Effective Radiated Power)
 Carrier Bandwidth: spectrum spread of 10 MHz or higher
 Reference: GSR 45E dated 28.1.2005

Frequency Band: 5.150-5.350 GHz, 5.725 - 5875

Use : Low power equipments for Cellular telecom systems including Radio Local Area Networks, Indoor applications
 Power: maximum mean Effective Isotropic Radiated Power of 200mW, maximum mean Effective Isotropic Radiated Power density of 10mW/MHz in any 1 MHz bandwidth,
 Carrier Bandwidth: 1MHz
 Reference: GSR No 46E dated 28.1.2005

Frequency Band: 5.825 to 5.875 GHz

Use : Low power equipment

Power: maximum transmitter output power of 1 Watt (4 Watts Effective Radiated Power)Carrier Bandwidth: spectrum spread of 10 MHz or higher

Reference: GSR no 38E dated 19.1.2007

Frequency Band: 26.957-27.283 MHz

Use : Wireless equipment intended to be used while in motion or during halts

Power: maximum Effective Radiated Power (ERP) of 5 Watts

Reference: GSR no 35 E dated 10.01.2007

Frequency Band: 335.7125, 335.7375,335.7625, 335.7875, 335.8125 and 335.8375MHz

Use : Low power equipment's for the remote control of cranes

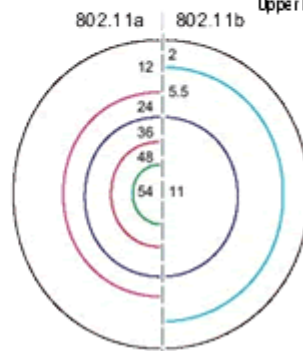
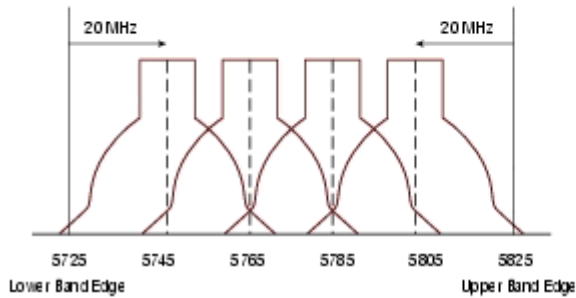
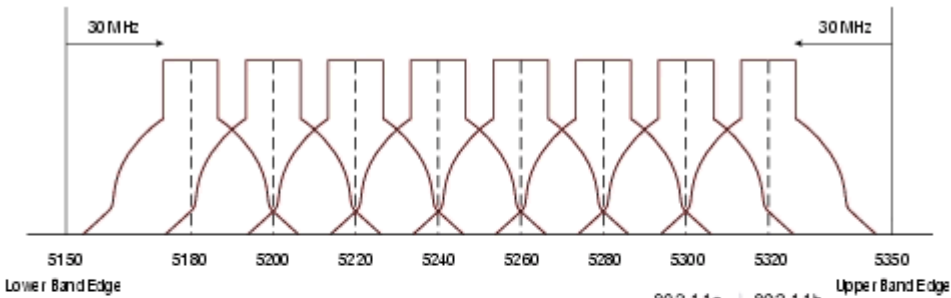
Power: maximum transmit power of 1mW

5.8GHz Wireless LAN Channels

Wireless LAN Channels for the 5.8 GHz Band do not have the same problem of overlapping channels as occurs on the 2.4 GHz Band. However there are limits to the channels that can be used in Australia and the EIRP used on specific channels.

Channel	Frequency MHz	EIRP
36	5180	200mw
40	5200	200mw
42	5210	200mw
44	5220	200mw
48	5240	200mw
50	5250	200mw
52	5260	200mw

56	5280	200mw
58	5290	200mw
60	5300	200mw
64	5320	200mw
149	5745	1000mw
152	5760	1000mw
153	5765	1000mw
157	5785	4000mw
160	5800	4000mw
161	5805	4000mw
165	5825	4000mw



6. **Are there any challenges being faced in the login/authentication procedure for access to Wi-Fi hotspots? In what ways can the process be simplified to provide frictionless access to public Wi-Fi hotspots, for domestic users as well as foreign tourists?**

With respect to foreign customers, the authority may recommend that OTP shall be considered like transactional message and provisions needs to be enabled so that OTP be sent on the foreign mobile number and services should be allowed on the same basis as roaming services are allowed.

The validity period for temporary login credentials need to be clarified by DoT for the adhoc customers.

Another important aspect for which policy decision needs to be made immediately is regarding implementation of Digital CAF is based on the Aadhar Card since it can be electronically verified by the public Wi-Fi provider.

7. **Are there any challenges being faced in making payments for access to Wi-Fi hotspots? Please elaborate and suggest a payment arrangement which will offer frictionless and secured payment for the access of Wi-Fi services.**

No Comments.

8. **Is there a need to adopt a hub-based model along the lines suggested by the WBA, where a central third party AAA (Authentication, Authorization and Accounting) hub will facilitate interconnection, authentication and payments? Who should own and control the hub? Should the hub operator be subject to any regulations to ensure service standards, data protection, etc?**

Wi-Fi hub or exchange model, is a very effective model and can provide a central connectivity point between the visited Wi-Fi networks and the user's home network. However important aspects pertaining to third party AAA such as

- Inter-connectivity – maintaining information associated with each Wi-Fi access point in each Wi-Fi network, and managing the authentication/authorization process of an end-customer.
- Settlement and clearing – accounting of usage between networks and reconciling that usage across the visited Wi-Fi networks.

Important security aspects with respect to third party authentication, accounting and authorization needs to be carefully deliberated. Considering the importance of the

services that the third party AAA may be providing, the ISP should be permitted to become the hub service provider. In case of independent hub service provider they will have to be subjected to a proper licensing and regulatory regime which would need to be worked out.

- 9. Is there a need for ISPs/ the proposed hub operator to adopt the Unified Payment Interface (UPI) or other similar payment platforms for easy subscription of Wi-Fi access? Who should own and control such payment platforms? Please give full details in support of your answer.**

The use of unified payment interface or any other payment platform should be left to the option of the service provider and the market forces. In respect of hub operator our response to earlier questions may be referred please.

- 10. Is it feasible to have an architecture wherein a common grid can be created through which any small entity can become a data service provider and able to share its available data to any consumer or user?**

We request you to consider the detailed reply given by us to Query #1 as a reply here. Further it is not clear as to what the authority means by small entity become Data service provider. It may be noted that Wi-Fi is one of the technology used to provide Internet Access services to the end consumers in India. As on date, the provision of Internet Access services by any entity can be done only after it obtains ISP license or becomes a VNO or a Franchisee of an ISP. The provision of Internet Access through Wi-Fi by any entity who is not an ISP would necessarily require VNO ISP license and we strongly suggest that provisioning of internet services may be through any of the framework suggested above. However, stand-alone ISPs licensees should be allowed to provide their bandwidth to other existing stand-alone ISPs without the same being looked upon as resale of bandwidth.

- 11. What regulatory/licensing measures are required to develop such architecture? Is this a right time to allow such reselling of data to ensure affordable data tariff to public, ensure ubiquitous presence of Wi-Fi Network and allow innovation in the market?**

Please see response to Question No.10 above.

12. What measures are required to promote hosting of data of community interest at local level to reduce cost of data to the consumers?

As discussed earlier, promoting infrastructure sharing between ISPs and bringing new RoW policy would give incentivize people to host data centers at local levels and this in turn would reduce cost of data to consumers.

13. Any other issue related to the matter of Consultation.

No Comments
