

Consultation Paper No.06./2015

Response to Consultation paper
on
Valuation and Reserve Price of Spectrum in 700, 800, 900, 1800, 2100, 2300 and
2500 MHz Bands

Zee Network



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Response to Consultation paper on Consultation Paper on Reserve Price of Spectrum bands

1. Introductory Comments

The Zee Network notes that the TRAI has floated a consultation paper on determining the reserve price of Spectrum bands in the 700, 800, 900, 1800, 2100, 2300 and 2500 MHz Bands. This is based on a request from the DoT, vide their letters on various dates as cited in the Consultation paper.

We also note that the TRAI has sought certain information from DoT and while the same has not been furnished so far, the TRAI has gone ahead with floating the consultation paper in the interim.

1.1 700 MHZ band

Vide Para 1.5 of the Consultation paper the TRAI has mentioned that the 700 MHz band, and specifically the APT-700 band plan (FDD option), designated as band B28 has been adopted as a prime band for Long Term Evolution (LTE) technology by a number of countries in the Asia-Pacific (APAC), Middle East, Europe, America and Latin American region.

Further in Para 1.6 of the consultation paper the TRAI has cited its earlier recommendation where it had suggested that “APT700 band plan should be adopted for the 700 MHz spectrum band (698-806 MHz) with FDD based 2x45 MHz frequency arrangement.”

In essence, there is a spectrum band of 108 MHz (698-806) MHz which TRAI has proposed be adopted for use of LTE and be auctioned.

1.2 Other Bands Proposed to be earmarked for LTE

TRAI had issued its recommendations on “Delivering Broadband Quickly” on 17th April 2015. This was a sequel to its consultation paper issued on 24th September 2014 to solicit stakeholders’ views on actions required to be taken both by the Government and the service providers to accelerate the proliferation and use of broadband in the country.

In the recommendations dated 17th April 2015, the TRAI had indicated the factual position of Spectrum allocated for various users vide Table 2.1 which is reproduced below:

Table 2.1 Allocation of Spectrum for Access Networks

S. No.	Spectrum Band	Earmarked/Assigned for commercial telecom services	Assignment for other agencies (Defence, State Police, Public Sector Undertakings, Railways, DoS for satellite networks)	Remarks
1	450-470 MHz	NIL (0 %)	20 MHz for Defence, PSUs and others (100 %)	
2	698-806 MHz	NIL (0 %)	15 + 15 MHz for Defence (33.33 %)	Balance 2x30 MHz will be available for assignment for commercial use.
3	824-844 MHz/ 869-889 MHz	40 MHz (2x20 MHz) (100%)	NIL	
4	890-915 MHz/ 935-960 MHz	Approx. 2x20 MHz (2x18.6 MHz to 2x22.2 MHz) (80 %)	1.6 + 1.6 MHz for railways; 1.2 to 4.8 MHz for defence (20 %)	
5	1710-1785 MHz/ 1805-1880 MHz	110 MHz (2x55 MHz) (73.33 %)	20 + 20 MHz for Defence (26.67 %)	
6	1920-1980 MHz/ 2110-2170 MHz	50 MHz (2x25 MHz) (41.67 %)	2x35 MHz for Defence (58.33 %)	Defence is likely to vacate additional 3 slots of 2x5 MHz for commercial use.
7	2300-2400 MHz	60 MHz (60 %)	20 MHz for Defence 20 MHz for Guard band requirements. (40 %)	
8	2500-2690 MHz	40 MHz (21.05 %)	150 MHz with DoS for satellite networks. (78.95 %)	
9	3300-3400 MHz	100 MHz assigned to ISPs (100 %)	NIL (0 %)	
10	3400-3600 MHz	NIL (0 %)	200 MHz with DoS for satellite networks. (100 %)	
	1078 MHz (Total available Spectrum)	440 MHz (40.82%)	638 MHz (59.18%)	

It may be seen from the above table, that the bands 450-470 MHz and 698-806 MHz were not shown as allocated to Telecom service providers. **However the TRAI had failed to mention that these bands, which comprise of VHF, UHF and Upper UHF bands were, and continued to be allocated for use of Television (Terrestrial Transmission) and are being used in Cable TV throughout the country with over 300 Million C&S households reach.**

In Para 4.18 and 4.19 of the recommendations, titled as Section D.2 (Cable (BB through Cable TV networks) the Authority clearly recommended that the vast Cable TV network in India be designated and encouraged to be a medium for Broadband delivery. The following were the recommendations of the TRAI:

4.19 There are 99 million households having Cable TV Access i.e. 37 per cent of the total households in India. The Multi System Operators (MSOs) and the Local Cable Operators (LCOs) have an inherent strength in providing last mile access. The sheer reach of the cable network to large number of households renders this infrastructure both amenable and ideally suited to the delivery of BB to a large segment of the population very quickly. Internationally, the growing convergence of broadcasting and BB is being recognized, yet the two have distinct markets for their own respective industries. In many developed countries BB is, in effect, delivered through the cable system. The MSOs and LCOs can play an important role in the delivery of BB as we move towards convergence.

As recommendations, following were cited:

Cable operators should be allowed to function as resellers of ISP license holders to enable them to take advantage of their cable network to provide BB.

Implementation of digitization of cable services to tier 2 and tier 3 cities in a time-bound manner. The digitization implementation schedule is given at 'Annexure I'. This timeline needs to be brought forward urgently if we are serious about quick BB delivery. In any event under no circumstances should it be further postponed (to expand outreach and hasten delivering of BB).

The above recommendations have given comfort to the Cable Operators and MSOs that their role was recognized and clearly defined and set out in the TRAI's vision for broadband in India. The DAS implementation by all major MSOs and LCOs now embodies the delivery of broadband over Cable at speeds ranging from 50Mbps to 100 Mbps. Such broadband is delivered by the use of cable TV frequencies in the band of 460-850 MHz, and is now empowering more than 50 million homes in India.

1.3 In this backdrop, the current proposal to auction and give away the 700 MHz spectrum, comprising precisely of frequencies where broadband and digital TV services are being

provided by Indian MSOs and LCOs has come as a complete shock and surprise to the Indian cable TV Industry, and we strongly and vehemently oppose the same.

1.4 Existing Use of Spectrum not Cited by TRAI

While we note that the TRAI has cited that the 700 MHz band(APT-700) has been adopted as a prime band for Long Term Evolution (LTE) technology by a number of countries in the Asia-Pacific (APAC), Middle East, Europe, America and Latin American region, it has not apparently analyzed the processes following which such a decision was taken- and this specifically relates to the Digitalization of Transmission and vacation of these frequencies for LTE use. The 700 MHz is called the upper UHF band, and as described in detail in this paper in following paras, the band in various countries has only been given after following a due process of consultation and providing alternative transmission mechanisms and safeguards for the Digital, Analog and cable TV Transmissions in these respective countries.

The VHF, UHF and upper UHF bands which span from 300 MHz to 850 MHz are extensively used for Cable TV in India which remains coaxial or hybrid coaxial. In most areas, the transmission is still analog, and even where digital, the frequencies in these bands are fully used for broadband and digital TV. With nearly 800 channels including HD channels and 50-100 Mbps of broadband delivered to homes, the use of the spectrum till 850 MHz is an absolute imperative and essential need for the cable TV industry.

1.5 Comment on Previous recommendations in the Lower Extended C-band

It will not be out of place to mention that the TRAI and the DoT had previously directed that the lower extended C-Band which comprises of downlink frequencies 3400 MHz to 3700 MHz be used exclusively for LTE and IMT services. In this connection, the WPC had issued a circular which had directed that the lower extended C-Band be vacated completely, which is reproduced as under :

**Government of India
Ministry of Communications & IT
Department of Telecommunications
Sanchar Bhawan, 20-Ashok Road, New Delhi-110 001.**

No. L-14035/02/2007-LR

Dated 16.01.2007

Subject: Shifting of existing satellite based operation in the band 3.4GHz to

3.7GHz to normal 'C' band (3.7-4.2) or Ku band.

I am directed to convey a decision taken regarding shifting of existing satellite based operation, presently working in the lower extended 'C' band (3.4-3.7 GHz) to normal 'C' band (3.7-4.2GHz) or Ku band. Hence forth, operations of any new satellite based system may not be allowed in the lower extended 'C' band.

2. All concerned users (list attached) are advised to shift their operation to other suitable bands within 6 weeks from the date of issue of this letter. Thereafter, even if any interference is observed by the operations from broadband services(including WiMax systems) in this band, such interference would have to be accepted.

**(M.K. Rao)
Asstt. Wireless Adviser
to the Govt. of India
Tel: 2303 6603**

For Web only

Frequency assignment for 3.4-3.7GHz

Frequency (MHz)	USERDEPT	EMISSION	POWER	SATWORK	
3411.34	DISHNET DSL LTD.	8M00GID	-	ST-1 88E	
3415.0	DOS	20M0F3F	-	INSAT 1	
3416.26	DISHNET DSL LTD.	1M00GID	9.24	ST-1 88E	
3416.26	DISHNET DSL LTD.	8M00G1D	-	ST-1A 88E	
3433.55	DISHNET DSL LTD.	7M10G1D	-	PALAPA PAC C 146E(Indonesia)	
3442.25	EsselShyam	4M50G7W		APR1(83)(INTELSAT	Sangeet
3446.75	EsselShyam	4M50G7W		APR1(83)	TotalTV
3451	TECHNOLOGY MEDIA GROUP PVT LTD	6M00G7W	-	THAICOM-3 78.5E	
3454.25	EsselShyam	4M50G7W		APR1(83)	StarAnando
3455.5	EsselShyam	4M50G7W		APR1(83)	Shalom
3456.0	SINGAPORE TELECOM	410KG2D	10W	ST-1,88E,	
3463.55	COMSAT MAX	200KG2D +	15W	INSAT-3B,83E	
3491.1	M/S COMSAT MAX LTD	-	-	-	
3494.4	M/S COMSAT MAX LTD	-	-	-	
3515.0	M/S JAIN STUDIO LTD	16M0G1D	-	THAICOM-3 78.5E	
3515	EsselShyam	4M50G7W		THAICOM-3 78.5E	Sudarshan
3536.0	JAIN STUDIOS LTD	18M0F9W	72DBWEIRP	THAICOM-3(78.5E)	
3549.25	AssociateBroadcast,Teleport			APR1(83)	
3568.5	TVToday	4M50G7W		APR1(83)	MumbaiaajTak
3591.15	SATYAM INFOWAY LTD.	4M00G1D	-	ST-1A 88E	
3595.21	SATYAM INFOWAY LTD.	4M00G1D	-	ST-1A 88E	
3597	MAVIS SATCOM PVT LTD (JAYA TV)	18M0F3F	19DBW	APR-1,83E,	
3624.64	DISHNET DSL LTD.	1M00GID	-	ST-1 88E	
3624.64	DISHNET DSL LTD.	7M10G1D	-	PALAPA PAC C 146E	

However, when this order was issued, the broadcasters protested extensively as these bands had been designed and built on satellites which have a life span of 15 years. Moreover many of these were on long lease and could not easily be given up without penalties. The Indian broadcasters were finally forced to migrate to the normal C-Band which is 3700-4200 MHz. Even in these bands, the use of high power transmissions from WiMax in 3400 MHz bands caused very high interference.

However the World Radio communications Council of the ITU has in November 2015 has clearly outlined that the lower extended C-band which the broadcasters in India were asked to vacate was to be reserved for satellite communications:

World Radio communication Conference 2015 Decides Satellite Spectrum Is Central To Future Vision For Global Connectivity

Long-term Delivery of Innovative Satellite Services Are Assured a Pivotal Role Alongside Wireless and Other Complementary Technologies

27 November 2015

GENEVA, Switzerland – The world’s governments resoundingly affirmed a clear vision for the importance of many vital and irreplaceable services provided today over satellite. They also agreed on a clear framework for future access to satellite spectrum for innovative satellite communications. This was accomplished by agreeing to preserve and create new additional valuable spectrum for fixed and mobile solutions used to support a multitude of video, television and data services, to expand Internet access, and to bridge the “Digital Divide” for billions of people around the world.

The inter-governmental decisions in support of satellite spectrum were made during the conclusion of the International Telecommunication Union’s (ITU’s) World Radiocommunication Conference (WRC), where the agreements reached by national administrations reflected a comprehensive strategy in which the unique value proposition of satellite-based connectivity is an integral part of a portfolio of synergistic technologies.

“WRC-15 has been a turning point in the global recognition of the value of satellite services for the future. We commend the national administrations – and the WRC Chairman, Mr. Festus Daudu – for their commitment to connectivity for all,” said a joint statement of a coalition of associations representing the satellite industry. “These decisions provide the stability necessary for the entire satellite industry to fully leverage its strengths in support of the vision expressed by the WRC delegates.”

Among the key decisions made during WRC are the following:

L-band: WRC-15 avoided identification of the L-band spectrum, which is used by mobile satellite service operators around the world, for IMT. The Conference identified the band 1427-1518 MHz for IMT, requesting the ITU-R to determine the technical measures to ensure compatibility with the mobile-satellite service operations in the adjacent band (1518-1559 MHz).

C-band: WRC-15 reconfirmed the need to protect critical fixed-satellite service (FSS) services throughout the world in this unique band. The lower 200 MHz of the C-band downlink frequencies (3400-3600 MHz) were identified for IMT in ITU Regions 1 and 2; Region 3 identified this 200 MHz only for a handful of countries by means of footnotes to the Table of Frequency Allocations. A position of “No Change” was adopted in the band 3600-4200 MHz, and only in Region 2 was a footnote agreed which identified IMT for a few countries in the 3600-3700 MHz band. A “No Change” decision means that administrations have recognised the vital and widespread use of those frequency bands by satellite services. Anywhere that IMT is deployed, it will be subject to adherence to strict protection requirements with neighbouring countries. In addition, the Conference declined to consider a proposal for IMT systems in the C-band uplink frequencies (5925-6425 MHz).

Ku-band: In order to address a spectrum imbalance in Ku-band spectrum, WRC-15 identified additional spectrum for FSS systems between 10-17 GHz. A downlink allocation in the 13.4-13.65 GHz band in Region 1 (EMEA) was approved by the Conference. In addition, an allocation in the 14.5-14.8 GHz was approved in several countries around the world.

Future bands for 5G: The Conference decided that no globally harmonised bands for the fixed satellite service, mobile-satellite service and broadcast-satellite service in C, Ku or Ka band would be included in the scope of a new WRC-19 agenda item, which aims to identify new frequency bands for future IMT/ 5G use. Throughout the deliberations, multiple administrations in every world region expressed strong opposition to studying the Ka band for IMT/5G, again confirming the Conference’s confidence in satellite being a key player in the future digital eco-system.

ESIMs: The Conference adopted new regulations to facilitate the operation of “Earth Stations in Motion” (ESIMs) in part of the Ka-band satellite spectrum (19.7-20.2 GHz and 29.5-30 GHz). ESIMs operating in this band provide satellite broadband connectivity to mobile terminals, such as on ships and aircraft. The new regulations adopted by WRC-15 will facilitate the global roaming of such terminals, while protecting other services and applications from interference.

Other: WRC-15 adopted several agenda items for future conferences that will spur growth in the satellite industry. Studies were approved for WRC-19 for additional FSS spectrum in 51.4-52.4 GHz. In addition, the conference adopted a future agenda item for WRC-23 for additional satellite spectrum in the 37.5-39.5 GHz. Also, in a hotly contested debate, the Conference adopted a Resolution which sets the path towards allowing the use of FSS links for Unmanned Aerial Systems (UAS).

Editor's Note:

This press release has been prepared by the Asia Pacific Satellite Communications Council (APSCC), Cable and Satellite Broadcasting Association of Asia (CASBAA), EMEA Satellite Operators' Association (ESOA), Global VSAT Forum (GVF), Interference Reduction Group (IRG), Satellite Industry Association (SIA), Society of Satellite Professionals International (SSPI), World Teleport Association (WTA), and other international associations of the satellite industry.

It is thus clear that while the ITU recognizes the importance of the lower extended C-bands for use in Television/ Cable TV, the TRAI and WPC have caused irreparable harm by their recommendations and orders wherein the broadcasters were asked to vacate the lower extended C-band, which now as it turns out as per WRC-15 is to be reserved for Satellite Television.

1.5 We are finding a similar lack of concern in the TRAI and DoT in proposing to give away the 700 MHz band (and in future the 460 -700 MHz bands as per the consultation paper from TRAI issued earlier) for the use of LTE when in their report and recommendations as late as April 2015, they have recognized the role of MSOs and cable operators in delivering broadband, without dwelling on the issue on how such broadband can be delivered when the spectrum band that they are using will be used at high power radiation levels by LTE and IMT services. Thus here is a complete contradiction in the present approach adopted by TRAI.

1.6 It is noteworthy that in countries where such spectrum use has been allowed in the 700 MHz band, it has been done with extensive consultations with the MSOs and Terrestrial Broadcasters and where conflicting, alternative arrangements were put in place.

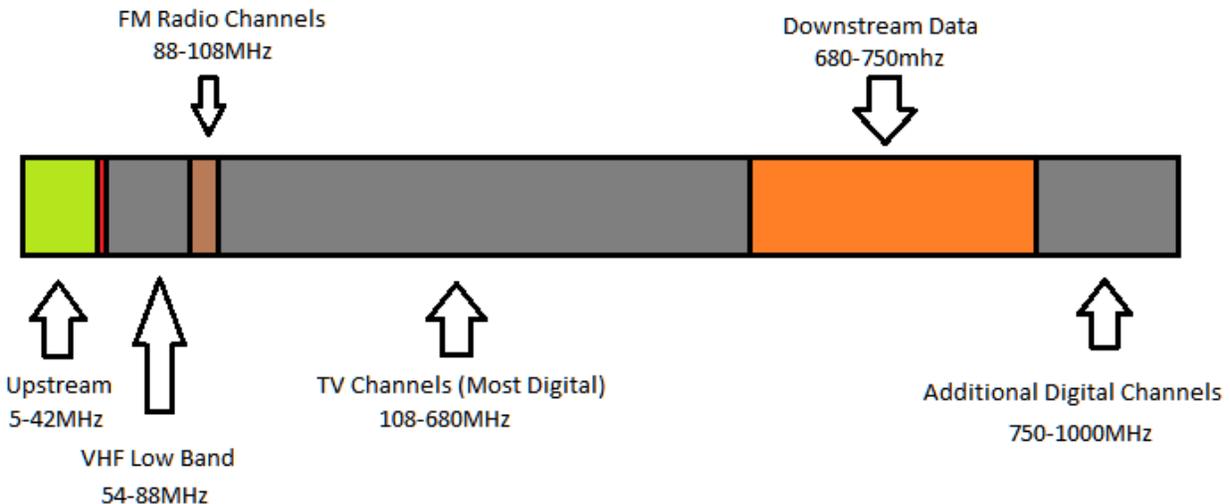
We would like to demonstrate the same in this response to the consultation paper and aver that the now proposed auction of 700 MHz in India without proper consultation with MSOs and Cable operators is entirely without precedent. This will disrupt the entire cable and TV services provided in India, including the process of Digitization in Phases I,II II and IV and also all broadband services being provided and proposed to be provided via Cable.

2. 700 MHz Band – Impact of using for LTE

In this section we would like to provide the potential impact of using the 700 MHz band for LTE. The consultation paper proposes giving away the band (698-806 MHz) with FDD based 2x45 MHz frequency arrangement. This implies that the frequencies between 688 MHz and 816 MHz (+10 MHz from allotted bands for spillover) will be allowed to be used with high power transmission using a network of towers. Moreover the basic reasoning for the use of lower spectrum bands such as 700 MHz as compared to 2100 or 3400 MHz is that the reach of the 700 MHz band is about 10 times of the higher bands, and these transmissions can reach even within buildings.

With such high power transmission, the Cable networks, which are mostly Coaxial and over ground, will face severe interference.

The typical usage of the frequency allocation in a cable network is divided between Analog channels, Digital channels and broadband carriers for Upstream and downstream use.

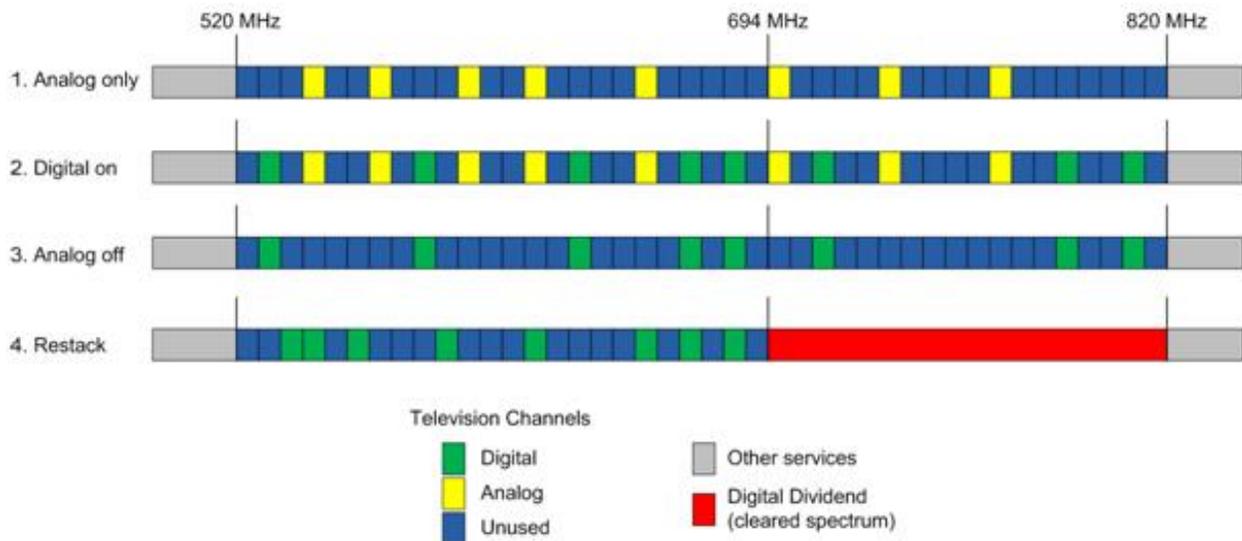


It may be seen that the proposed allocation in 688-806 MHz directly interferes with the data carried on Cable, and in addition also interferes with Digital and Analog TV channels.

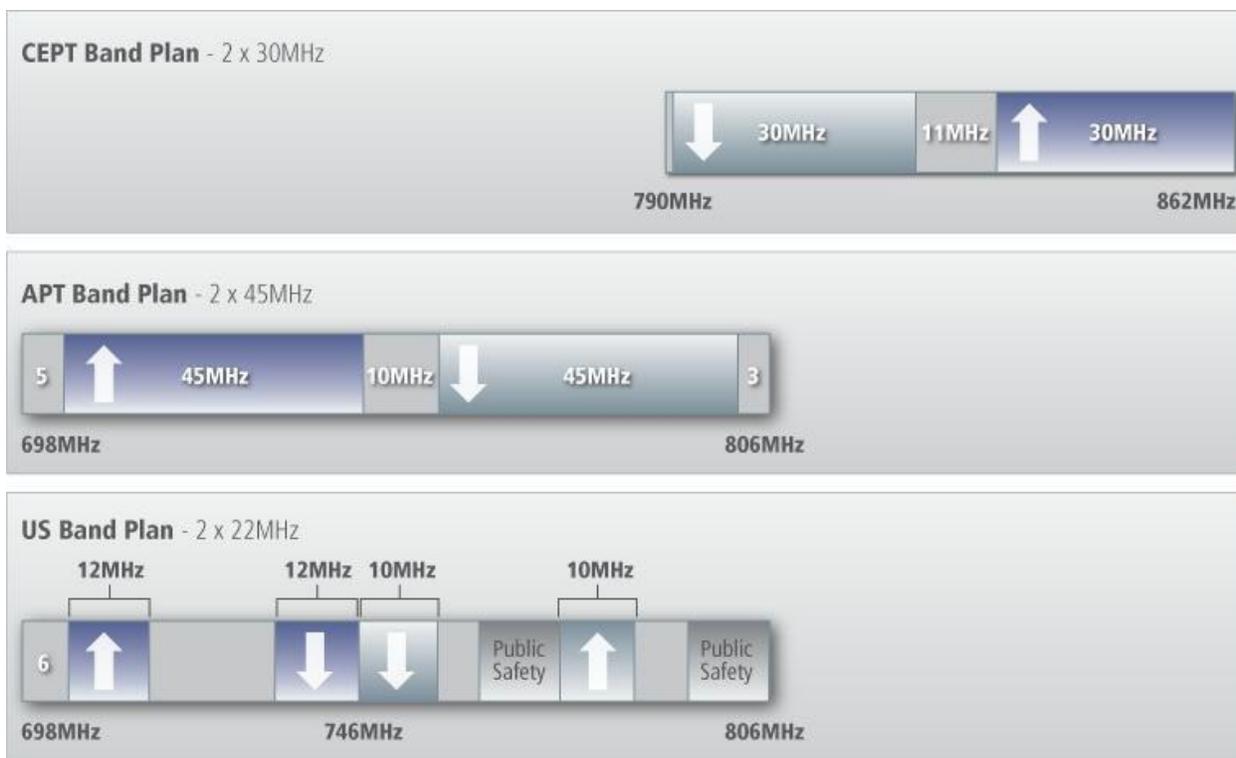
2.1 Processes followed in other countries for vacating the 700 MHz band

It is also important to understand the processes followed in other countries, where the use of 700 MHz was earmarked for LTE and IMT.

As is well known, the vacation of the 700 MHz band came about as a result of the Digitization of Terrestrial transmission, and by Terrestrial TV analog services being fully allocated in lower bands on Digital carriers.



The band vacated in 700 MHz by Analog Terrestrial TV being shifted was envisaged to be used in different regions as per frequency allocations indicated broadly as below:



It may be seen that the US Plan comprised of 2x22 MHz bands, while reserving some capacity for Public Services. Once these bands were known, it was obvious that the cable operators using these would find interference in the 2x22 MHz frequencies earmarked for LTE.

To compensate the Cable operators for the same, and in order to motivate them to migrate to other frequencies, Verizon offered to buy these frequency slots from cable operators, even though the Cable operators were merely the users of this band and had not acquired the same in any auction. This was a recognition of their defacto use.

In Dec 2011, Verizon, one of the potential licensees for the LTE slot of 22 MHz paid out \$3.6 Billion to a consortium of Cable Operators (cable consortium SpectrumCo--which consists of Comcast, Time Warner, and Bright House Networks). Following this payout, Verizon acquired the right to use the spectrum band for which it compensated cable operators.

Once Analog TV Transmission was shifted away from the 700 MHz band (694 to 820 MHz) the question of allocating this band arose. However the same was not done without consultation and accommodating the MSOs and Cable operators in any country as outlined by us below.

2.2 USA

At the outset, it was recognized even by the LTE association that interference will result if Cable TV continues to operate in the same band as the LTE transmissions. This was recognized by

them in a paper entitled “**Recognizing and Resolving LTE/CATV Interference Issues**” By: Paul Denisowski.

As indicated in this paper (citation):

“LTE differs from previous cellular technologies in a number of ways, primarily in terms of frequency allocations, bandwidths, and modulation types. This has important ramifications for operators of cable networks with regards to the possibility of both ingress and egress interference. Reports of both types of interference have already been received from both cellular carriers as well as cable operators”.

Citation (Continued):

“Unlike much of the previous cellular allocations in the United States, the frequencies used for initial deployment of LTE in the United States are in the so-called 700 MHz band (698-806 MHz). This is important because these frequencies overlap almost completely with all 750 MHz and greater cable systems. Propagation and attenuation characteristics of 700 MHz signals are also very different from cellular signals at higher frequencies: lower frequency signals tend to travel further and be less strongly attenuated by structures, etc., than higher frequency signals.

The use of OFDM in the downlink means that LTE signals also have a higher potential power spectral density than other cellular technologies. This happens when fewer resource blocks are allocated and the total signal power is divided among fewer subcarriers. This in turn can lead to a higher probability of ingress interference as the energy is concentrated in a smaller portion of the allocated bandwidth. Especially in the case of the LTE uplink, it is highly unlikely that all resource blocks will be allocated at the same time”.

While LTE deployments are currently limited to the 700 MHz bands in the United States, plans have been proposed for vacating broadcasters from OTA channels 31-51 (572-698 MHz) and auctioning of this spectrum to make room for new cellular services. Although it is impossible to predict who the winners of these auctions would be, it is reasonable to assume that a significant part of this spectrum might be purchased by cellular service providers, who would likely deploy LTE in these additional bands, that is, at frequencies even lower than the current 700 MHz deployments.

Interference in Data on Cable

Citation (Continued):

Most of the ingress interference studies published to date have been carried out by European organizations. Although the frequencies currently used for LTE in Europe and the United States are different (800 MHz vs. 700 MHz), the results of these studies are still relevant. Despite that

*fact that interference to STBs has received the most attention, **at least one study [Cable Europe Labs] has shown cable modems to be highly susceptible to even very low LTE emission levels.***

Interference in STBs and Digital Cable

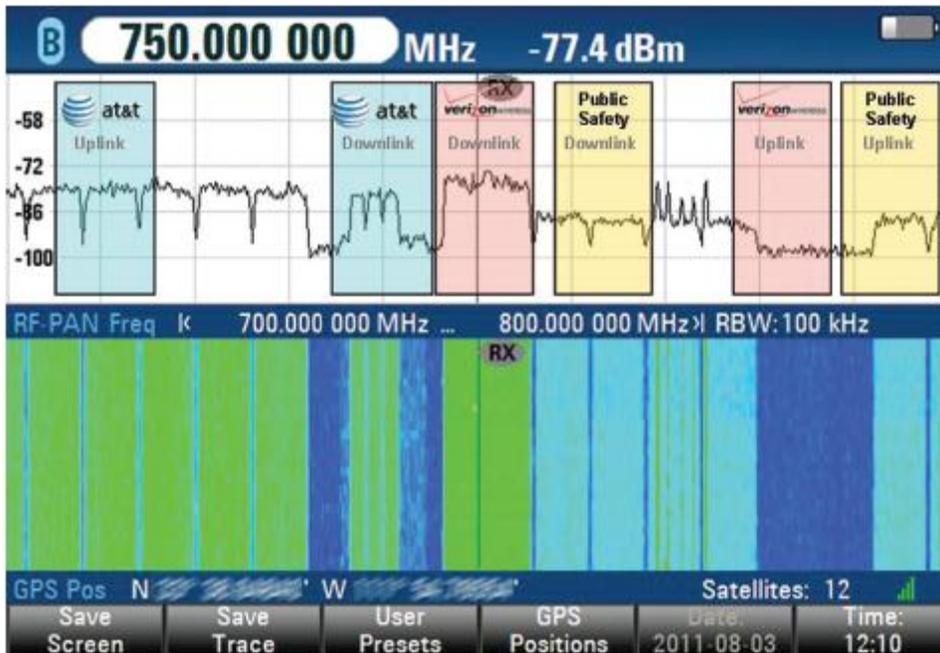
Citation (Continued):

*Several studies [Cobham, Agentschap] have demonstrated the ability of **LTE user equipment (UE) to create significant interference to STBs in the form of both picture and data failure,** usually with a UE/STB separation of ~1 meter. One study [ANGA] even showed **massive STB interference with a separation of 3 meters and a 15 cm steel-reinforced concrete wall between STB and UE. This implies that LTE uplink signals can cause interference even in neighboring apartments or buildings.** Ingress interference can result from imperfections in the cable plant and connectors, but STB and television equipment design was found to be the largest differentiating factor in determining susceptibility of STBs to LTE ingress interference.*

End of Citation

It may be seen that various studies across USA and Europe have shown that LTE in 700 MHz band and the CATV operations in the same band cannot co-exist. It is impractical to shield cables within the house and even STBs. Moreover such interference affects the entire cable subscriber universe as all QAM carriers go in common to all homes. Hence it is sufficient for just one leak to affect thousands of subscribers.

The LTE whitepaper also presents the spectrum plot showing interference when LTE transmissions were present:



While in USA, many of the CATV operators had shifted to Fiber, thus reducing some areas of interference, in Dec 2013, Time Warner cable with much of its plant on coaxial reported heavy interference from Verizon Wireless.

In USA, the EIA have defined the bands in which the LTE and the TV channels QAM can operate. In the relevant region where LTE interference was reported, Verizon was operating in band C (UHF channel 54) which impacted the QAM carrier of Time Warner cable.

In Aug 2015, NCTA USA complained to the FCC on the unregulated spectrum use of LTE and the interference issues resulting therefrom.

2.3 UK

In UK, according to an analysis funded by OFCOM in 2011, it was confirmed that LTE deployments would interfere with Cable TV. The tests were carried out by Cobham Technical Services, who found huge variation between the models of set-top box and cable modem tested, complaining that "[a]ll of the STBs were found to have significant rectangular holes (apertures) in the metalwork that can allow unwanted frequencies to pass through"

The extracts from the Cobham report are as follows(Citation):

"SET TOP Box Results

The results show that 7 out of 9 STBs tested could suffer interference from a LTE UE handset operating at Maximum permissible power of +25dbM at 1M separation distance.

Picture Failure was generally found to occur at similar interference levels regardless of whether the interference source was radiating at 1m from the front, back or side of the STB under test.

Cable Modem results

The results show that all 12 of the CMs tested could suffer interference from a LTE UE handset operating at the maximum operating power level at 1 M distance.

End of Citation.

Subsequently In UK, The OFCOM had issued a consultation paper on the use of the 700 MHz band for use in LTE. (Consultation on future use of the 700 MHz band Cost-benefit analysis of changing its use to mobile services dated 28 May 2014). The consultation paper and related comments received are on the OFCOM website.

The Ofcom in its preamble cited the objectives as “our proposals to make spectrum in the 700 MHz band available for **mobile broadband from 2022 or possibly up to two years earlier**. It presents our assessment of the costs and benefits of such a change and invites comments on our proposals as part of a public consultation”. The primary objective was to assess the impact on DTT and other services, and how LTE could be compatible with these services.

OFCOM further stated in Para 1.5 of the consultation paper:

“The DTT platform has an important role in providing low cost near-universal access to the public service TV channels and in sustaining viewer choice. Over 75% of households use it through Freeview and YouView, with 40% of households using it on their main TV set. As we explain in our discussion document, Future of free to view TV, we believe DTT is likely to retain a central role over the next decade, with a full switch to alternative technologies such as IPTV not appearing feasible until at least 2030”.

OFCOM rather than just handing over the 700 MHz frequency band to cable operators planned out a migration of services to lower digital bands. It also committed to work closely with Broadcasters and cable Operators to ensure no disruption.

As per Paras 1.7 and 1.8 of the consultation paper:

Our analysis suggests that through more efficient frequency planning it would be possible to reconfigure the DTT network in the spectrum between 470–694 MHz without materially

affecting the coverage or channel mix that viewers currently enjoy. If we proceed with the proposed changes, we will work closely with Government, broadcasters, and new mobile operators to ensure that viewers receive appropriate information and support.

It may thus be seen that OFCOM took a very diligent approach and reviewed the potential impacts on the Terrestrial TV and cable TV sector. It has opened up only 800 MHz spectrum at present. Regarding 700 MHz any such handing over of 700 MHz to LTE in UK will happen well in future but after due process of ensuring that the broadcasters and others do not suffer. OFCOM is aware as a result of the studies, that granting LTE in 700 MHz will interfere with cable TV in an unacceptable manner. Hence it is not going ahead with the same, without relocating services or other measures.

3. Concluding Comments

TRAI in its recommendations on “Delivering Broadband Quickly” in April 2015 has well recognized the role of MSOs and cable operators in the delivery of high quality broadband via cable networks. It has also given recommendations on License free frequency use, to encourage and enable cable networks to also provide WiFi over much larger areas.

However, the present consultation paper, which encompasses the proposal to auction 700 MHz spectrum would spell a doom for cable TV which is already providing broadband and TV using such frequencies for the last over 25 years.

There is no parallel for such action proposed by the TRAI. In UK, after a study of the likely interference by 700 MHz band, only 800 MHz band has been allocated. In USA, the cable operator consortium was compensated for use by LTE operators of just 22 MHz of spectrum at \$3.9 Billion. Subsequently also, many channels continue to suffer where networks are coaxial.

In India, the reasons why 700 MHz spectrum should not be granted away for LTE are as follows:

(i) Cable TV, Broadband and other services on Cable will be severely disrupted.

(ii) The DAS implementation initiative of the Govt. of India with Phases III and IV which banks on the use of 700 Mhz bands will be severely impacted and may have to be abandoned.

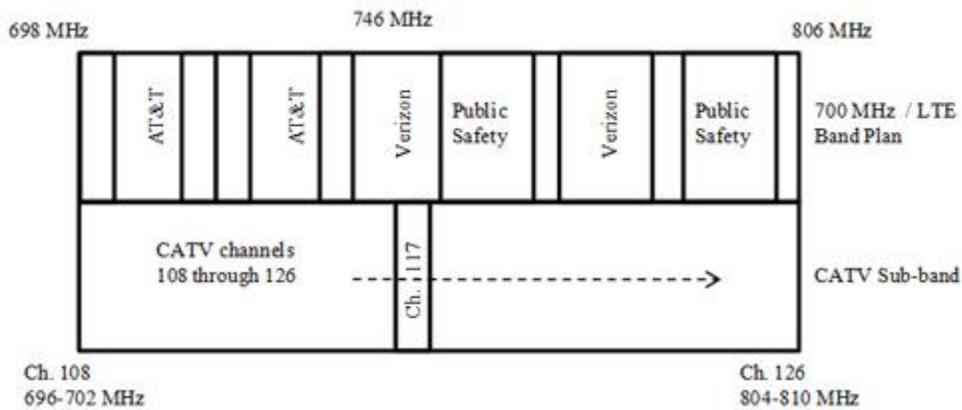
(iii) Interference will occur both from LTE to cable and from cable to LTE networks.

(iv) Future services such as e-governance via the use of cable networks will need to be abandoned.

We accordingly urge TRAI to safeguard the interest of Cable TV and broadcasting sector by not recommending the auction of 700 Mhz spectrum for LTE/other telecom services.

Annexures

US LTE 700 Usage Vis-à-vis cable TV frequencies



QAM Signals affected by LTE Broadband

