



Telecom Regulatory Authority of India

Recommendations

On

Issues Relating to Satellite Radio Services

New Delhi

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Section 1: Background

1.1 Introduction

Satellite Radio is a radio service that provides signals directly from satellites. The basic difference between a satellite radio and regular radio is that in the case of Satellite Radio the signal is broadcast from a satellite whereas regular radio signals are broadcast from a terrestrial antenna. Regular radio is provided in either Medium Wave/ Short Wave frequency bands in the case of AM radio or VHF frequency band in the case of FM Radio. AM stations can broadcast their signals over large distances. The problem with the AM band is that the quality of the signal is not very good. In FM radio though there is improved quality of the signal and the listeners get stereo sound, the signals can be received only up to moderate distances. With satellite radio, one can get near CD quality sound and coverage of very large geographical area. A satellite radio receiver can pick up the signal the same way a TV can pick up television channels through DTH. Whereas a set top box is required along with the TV for reception of DTH channels, the satellite radio receiver is an integrated receiver and no set top box is required.

1.2 Advantages and Rationale of Satellite Radio

1.2.1 Coverage: In terms of reach, combined AM and FM broadcasts cover about 99.13% of the Indian population and about 91.37% of the geographical area, while FM broadcasts alone cover about 33% of the population and 21% of the geographical area. Satellite Radio has the potential to reach 100% of the Indian population (geographically speaking) and so could help to achieve some of the

objectives of India's development process, by reaching out to remote, inaccessible areas.

1.2.2 Channels: With a large number of high quality digital channels available on satellite radio this medium can help to increase the plurality of voices, provide more choice to consumers through nation wide niche programming and add greater diversity to the broadcasting sector.

1.2.3 Disaster Warning System: India with its large geographical size is well placed to benefit from a satellite radio system unlike smaller countries. The large size of the country makes it very difficult to provide timely advance warning to people living in remote areas for dealing with natural disasters such as cyclones and floods.

Its countrywide footprint enables the satellite radio system to provide instantaneous reach to all corners of the country including remote locations, especially the hilly areas. These remote areas may be impossible to cover through terrestrial means.

1.2.4 Language-niche Programming: With 25 Indian languages in use across the country, satellite radio, which has the potential to go up to about 100 channels, would provide the opportunity of language-niche programming which would be of great benefit to citizens that are living away from their home language area and help to further integrate communities across dispersed geographies.

1.2.5 Industrial Growth: India has well developed space and electronics industries, and both would be in an excellent position to benefit from India's increased reliance on a new medium such as satellite radio. The Indian space industry is well positioned to become involved in the construction and launching of future satellites for

satellite radio transmission. Indian electronics manufacturers are already involved in the manufacturing of WorldSpace receivers and competitively well positioned to exploit future requirements for millions of such receivers.

1.2.6 Spectrum Availability:The following frequency bands are available for providing Satellite Radio Service in the country.

‘L’ Band: 1452 – 1492 MHz

‘S’ Band: (a) 2310 – 2360 MHz

(b) 2535 – 2655 MHz

Despite the availability of these frequency bands to India, only a few Satellite Radio systems are likely to be successfully coordinated and assigned spectrum due to the following constraints.

- As per ITU Resolutions only the upper 25 MHz spectrum can be used in the bands 1452-1492 MHz and 2535-2655 MHz before planning of these bands is carried out by a future World Radiocommunication Conference (WRC) of ITU. The remaining portion of these bands can be utilized only after the planning of these bands is carried out by the competent WRC which is nowhere insight.
- In addition to the west beam of the AsiaStar satellite, which is primarily targeted to cover India, the remaining two (north and south) beams of Asia Star and one (east) beam of AfriStar satellite of WorldSpace also have spillover on some parts of India. Since each of the two carriers of every beam of World Space satellite occupies 2.5 MHz bandwidth, considerable spectrum - more than 15 MHz - has been utilized in ‘L’ band by the World space system.

- Satellite Radio receiver antenna neither provides adequate polarization discrimination nor directivity - both of which are useful in the reuse of spectrum.
- All the three bands are not allocated exclusively for satellite Radio. As per ITU Radio Regulations and as well as National Frequency Allocation Plan (NFAP) 2002, these bands are shared with certain existing and planned terrestrial telecommunication services.

1.2.7 Emerging Applications: There is a trend towards using satellite radio systems for broader applications than the mere distribution of audio programming. All of the currently operational satellite radio systems already carry data services, in addition to audio programming, and in Japan and Korea video programming has also been included. Of all the currently operational systems, Korea has the most advanced vision of the role of satellite radio, where the user terminal is a two-way device that can be used as a wireless extension of the internet. The planned European Maestro project takes this a stage further and contemplates the role that a satellite radio system can play in future 3G mobile networks.

It is necessary for India to keep pace with the emerging technologies in the world, as this could have significant commercial spin-offs in the long run.

1.3 Existing Framework

1.3.1 Presently, world over there are four satellite digital radio systems which are in operation. These are World Space, XM Radio, Sirius Radio and MBCo. WorldSpace covers the entire African zone, southern Europe, the Middle East and Asia with its existing

operational two-satellite system. XM Radio and Sirius Radio cover the United States and parts of Canada. The MBCo system covers Japan and Korea.

1.3.2 In India, M/s WorldSpace through the West beam of its AsiaStar satellite is providing about 40 radio channels. Before the launch of its AsiaStar satellite, WordSpace followed detailed ITU's coordination process as per various Resolutions, Recommendations and Articles of Radio Regulations. Detailed coordination meetings were held with Department of Telecommunication, All India Radio, Department of Space and other users of 'L' band spectrum to ensure that the system does not cause harmful interference to the existing and planned terrestrial telecommunication networks in India. The ITU published the AsiaStar frequency assignments in the Master International Frequency Register (MIFR) having received no objection from any country within the AsiaStar footprint.

1.3.3 M/s WordSpace India Pvt. Ltd, a 100% wholly owned company of M/s WorldSpace Corporation, USA has already obtained FIPB clearance to carry out software programming activities in the field of entertainment, sports, education, to import and sell World Space receivers, to set up customer care centers and to carry out various services to its parent company in realizing revenue opportunities.

In India, though satellite radio service already exists, in the form of the WorldSpace system, only a very small fraction of the population benefit from it. It is estimated that there are less than 50,000 receivers presently in the country, of which about 31,800 are subscription based and the balance consumers listen to only free to air channels. It is understood that the company is incurring heavy losses in its operations including India. If the development of

satellite radio in India could be expanded so that it reached a large proportion of the population, significant benefits to Indian society and industry could accrue.

1.4 Consultation Paper

1.4.1 In line with its consultative approach, TRAI issued a Consultation Paper on December 29, 2004 for giving its recommendations to the Government on the issues relating to Satellite Radio Services. Comments were received on the consultation paper from a number of stakeholders, which were placed on TRAI's website.

1.4.2 The objective of the Consultation Paper was to examine the various issues such as level playing field between Satellite Radio service and Private FM Radio, regulation of broadcast content, license fee, receiver interoperability requirement in case of a new Satellite Radio service provider etc. and to obtain structured response from various stakeholders on these issues.

1.5 Open House

TRAI also held an Open House Discussion with various stakeholders on 11th February, 2005 in Delhi.

1.6 Approach of the Authority

1.6.1 The approach of the Authority in framing the recommendations on Satellite Radio Service is to enable the growth of the service, which in the opinion of the Authority is the most cost effective solution to cover a geographically large country like ours. With a capacity to provide about hundred near CD quality radio channels along with multi-media capability, satellite radio alone can satisfy the

genuine aspirations of the regional language speaking population living away from their home state.

1.6.2 Satellite Radio service is different from terrestrial FM Radio in many aspects. FM Radio broadly covers limited geographical area, addresses local issues, promotes local culture and carries local advertisements. The FM frequency assignment is also mainly a national affair and does not require any significant regional or international coordination. The FM Radio listening has a mass base since it is in free- to-air broadcasting mode and inexpensive receivers are freely available. The cost of putting up of FM Radio infrastructure is also low. The source of revenue for the broadcasters in the case of FM Radio is advertisements. The quality of Service in FM Radio is inferior due to analogue mode. On the other hand, Satellite Radio provides national or sub-continental service. Instead of carrying one program channel per transmitter as is the case with FM Radio, a satellite radio transponder provides large number of program channels of different genres including niche language programming. The frequency assignment in the case of satellite radio requires intensive international coordination with the telecom networks of affected countries. The revenue model being followed in the case of satellite radio is subscription based. The listenership base in the case of satellite radio is very low as compared to that of FM Radio due to the high cost of receivers and subscription fee. Finally the capital cost of setting up a satellite radio service is large and this explains the limited number of players world wide.

1.6.3 Satellite Radio also has the capability of providing multi media services including video channels. However, at present the technology can offer only limited number of low resolution video

channels suitable for small screens which can not be equated with DTH Television. Thus it cannot also be regarded as a significant competitor to DTH Television. It has, at the present state of technology, to be regarded as a unique mode of communication with some limited overlap in the market for both DTH Television and FM Radio.

1.6.4 In view of the above, the approach of the Authority has been to view satellite radio service not as a perfect competitor to the FM Radio service but as a complementary one in a limited way. Since the Satellite Radio service is at a nascent stage and only four systems are presently operational in the world, it is prudent to provide only light touch regulations. As the only operator started business in India much before the examination of issues by the TRAI, it would be prudent that the existing business practices should be disturbed as little as possible and changes should only be made, as far as possible, when they are linked to certain events or changes in the present regulatory framework.

Section 2: Regulation and Monitoring

2.1 The Issues

2.1.1 Although satellite radio is in operation today in India, at least in a relatively small way, India does not have a licensing policy for Satellite Radio service providers. The existing operator namely WorldSpace is operating its services after obtaining FIPB approval for setting up of a 100% wholly owned subsidiary for carrying out software programming activities in India, to import digital satellite receivers and accessories and to carry out revenue collection services in India on behalf of its parent/ associate companies. Apart from the FIPB approval for its activities, WorldSpace has also done frequency coordination through ITU in respect of its AsiaStar Satellite with the existing and planned terrestrial, radio astronomy and space systems of India.

2.1.2 Absence of a licensing policy causes several problems, including (a) absence of a “level playing field” with respect to FM Radio operators but in a limited way , (b) regulatory uncertainty on the part of the existing and potential future satellite radio operators, and (c) haphazard development of this important industry. Therefore, there is a need for India to establish clear regulations for growth of satellite radio in a fair competitive environment.

2.1.3 The issues that require consideration include the separation of content regulation and carriage regulation, distinguishing subscription type services from broadcasting, Regulation of satellite Radio on the lines of Private FM radio broadcasters, applicability of AIR Programme and Advertisement Codes, relevance of existing ban on broadcast of news and current affairs,

permitting uplinking of Satellite Radio Programmes from India and also the need for a common uplink policy.

2.2 Comments of the stakeholders

2.2.1 The general opinion of the stakeholders is that content and carriage are to be regulated differently. Since there is little or no commonality among these spheres of activities, the regulatory framework must address the licensing of the two separately. ENIL (Entertainment Network India Limited) is of the view that satellite radio platform must be accountable for the content being carried and as such the content regulation should not be separated from carriage regulation. World Space has argued that a single license should cover both content and carriage. However, if carriage regulation comes under the jurisdiction of the TRAI, then there should be a separate content license for a service provider on satellite radio. Reliance Infocomm is of the view that content should adhere to the programme code and should not be regulated.

2.2.2 There is no consensus on the issue of distinguishing subscription type services from broadcasting. While some stakeholders are in favour of distinguishing subscription type services from broadcasting others are of the view that it should not be distinguished from broadcasting in case of Satellite Radio. Deptt. Of Space has suggested that the choice of adoption of free to air or subscription model should be left to the judgment of service providers based on their business model. World Space have stated that subscription radio services should be treated differently from existing analogue radio services since such programming is not transmitted to the general public. ENIL have proposed that

subscription service should not be distinguished from broadcasting in the case of satellite radio.

2.2.3 On the issue of regulating Satellite Radio on the lines of Private FM radio broadcasters, the general view of the stakeholders is that Satellite Radio should be regulated on the same lines. Reliance Infocomm is of the view that since Satellite radio has the ability to offer multiple channels as compared to FM radio, the regulations for Satellite radio must be different. WorldSpace is of the opinion that parity in regulation should be limited to satellite radio services that provide broadcast services i.e., original content on a free to air basis.

2.2.4 Except for a few, majority of the stakeholders are of the view that AIR Programme and Advertisement Codes should be applicable to all channels receivable in the country. However, one stakeholder has suggested that the AIR Code need not be applicable to all the channels receivable in India. Reliance Infocomm have suggested mandating self-regulation of content. WorldSpace has suggested that given the continent -wide footprints of satellite systems “common code of ethics”, promulgated by the Asia-Pacific Broadcasting Union (ABU) would be a more appropriate standard to apply to regional providers. Deptt. Of Space is of the view that considering that the media and its reach to a very large population and looking at the similarities among satellite radio, Satellite Multimedia Broadcast and Satellite TV the regulations should be based on guidelines adopted for DTH and the regulatory framework must account for strict compliance by these services. This will provide an enabling provision for the Government to take suitable

action in case of violation to the Programme Code and guidelines on News and Current Affairs.

2.2.5 With regard to the ban on broadcast of news and current affairs programmes the general opinion is that there should not be any ban. Reliance Infocomm has suggested that self regulatory codes should be specified. Department of Space is of the opinion that News and Current Affairs programmes constitute an important segment of overall programming and banning this will reduce the advantage of satellite radio broadcasting. It has also been suggested that both FM and Satellite radio broadcasters should be allowed news and current affairs. A couple of broadcasters including Entertainment Network India Ltd.,(ENIL) have suggested that news and current affairs should not be allowed in the case of Satellite Radio. ENIL stated that it should not be allowed till such time the same is allowed for terrestrial radio. To enforce the ban it has been suggested to make uplink from India mandatory and also to make FIPB clearance conditional.

2.2.6 On the issue of permitting uplinking of Satellite Radio programmes from India there is a consensus among service providers. WorldSpace has suggested that regulations permitting uplinking of satellite radio programmes from India should be encouraged but such uplinking should not be mandated. Department of Space is of the opinion that like DTH service, uplink for satellite radio and S-DMB services should be allowed only from India making use of the single policy framework. This can be encouraged by giving appropriate priorities in providing frequency, site and other regulatory clearances.

2.2.7 Majority of the stakeholders are of the view that there should be a common uplink policy for uplink of Satellite Radio channels and

TV channels. WorldSpace has suggested that a distinction be made between India based companies that uplink to their own satellites and those that uplink to satellites owned by third parties.

2.3 International Practices

2.3.1 “carriage” versus “content”

In the USA, Japan and Korea, there has been no such separation of carriage from content in the licenses awarded to the satellite radio operators. Each operator in these countries is responsible for the programming and the distribution of the signals to the audience. However, in China, ChinaSat is licensed for the use of the North East beam of AsiaStar to distribute the satellite radio signals, and it is understood that separate programming licenses will be granted to the programme providers, where appropriate.

2.3.2 Subscription services versus true broadcasting

In USA, there is a differentiation between the offering of subscription-type services and broadcasting in terms of the strict definition. FCC licenses granted to Sirius and XM are non-broadcast licenses which makes them exempt from some of the statutory requirements on US licensed broadcasters

2.4 Recommendations by the Authority

2.4.1 Carriage and content licensing, Broadcast versus subscription services.

In the case of Satellite Radio, the operator collects content from a variety of sources and puts them together on the satellite. Some of the content providers may be from within the country and many would be from outside the country. Apart from this, it would be

difficult for the Government to get into the issue of providing licence to each of the content providers. In line with general international practice, therefore, it is suggested that there should be no such separation by carriage from content in the licences awarded to the Satellite Radio operators. It must be recognised that although the licensee would be one agency, the regulatory agency could be different, since a separate agency for regulating content is being considered. Further, the basic reasons for licensing is to make best use of spectrum, ensure that content conforms to certain minimum standards and that the licensee pays some revenues to recover regulating expenses. From these considerations it does not appear necessary to provide for a separate licensing framework for subscription type services as against simple broadcasting which does not envisage any collection of subscription from the listeners. **Thus it is recommended that:**

- i) there should be only one license for carriage and the licensee would be responsible to the licensor for content regulation.**
- ii) there should be common rules for subscription as well as broadcast type services.**

2.4.2 Program and advertisement Codes

Given the above, it does appear necessary to provide for regulation of Satellite Radio although the nature of the regulation would be different as compared to Private FM Radio. In the case of Satellite Radio the service provider is providing a platform for several channels and content providers as compared to FM radio where for each license there is only one channel. Differences also arise because of the wider footprint of Satellite Radio, the higher start up costs, the lower level of listenership today and the historical

background in which M/s World Space has come to India. However, despite these differences, it is necessary for some regulation on the content of Satellite Radio. The suggestion that the Asia -Pacific Broadcast Union Code be applied is not acceptable. There is already an AIR programme code and an advertisement code and there is no reason why these codes should not be applied to Satellite Radio. Since, there is addressability in the case of Satellite Radio, if there is a problem with any particular channel, the Government must have the means to direct the Satellite Radio operator to switch off the offending channel. In this context, it must be noted that although several Private FM Radio broadcasters have been in operation there has not been any occasion for the Government to invoke the provisions of the licence agreement relating to adherence to the AIR programme and advertisement code. **Thus it is recommended that the AIR Programme and advertisement codes should be made applicable to Satellite Radio also.**

2.4.3 News and Current Affairs

With such a programme code in place it should not be difficult to allow the broadcast of news and current affairs programmes on Satellite Radio. In this context the following factors are important:

- The expected clientele of satellite radio is limited compared to FM radio:
 - The current subscriber base of Satellite Radio is a little over 30,000. The listener base of FM Radio is much wider – no definitive numbers are available (depending on the definition of listener base these could as high as

30 million) but these are quite clearly several times the base of Satellite Radio.

- In the case of Satellite Radio the subscribers are of upper income homes who have access to private news and current affairs in both print and television media.
- Satellite Radio has addressability and therefore an offending channel can be switched off.

In view of the above it does not appear necessary to impose any ban on news and current affairs programme. In this context, it also needs to be noted that Satellite Radio has been beaming news and current affairs for several years in India without any adverse impact. It must, however, be reiterated that news and current affairs should be allowed on Private FM Radio after addressing the security concerns as already recommended to the Government.

It is thus recommended that there should be no Ban on News and Current Affairs for satellite radio.

2.4.4 Uplinking

At present uplinking in the case of DTH is necessarily to be done from within India. In the case of Satellite Radio there was no such stipulation at the time of entry of the existing operator and they have already established uplinking facilities from Singapore. In this context, it may be noted that many television channels are also being uplinked from outside the country for the purpose of distribution to the cable television network.

2.4.5 There is a substantial difference between the DTH and Satellite Radio industry. In the case of DTH the revenue model is based on both advertisement as well as subscription unlike Satellite Radio where revenue is mostly derived from subscription. In the case of DTH, most of the Television channels which are uplinked are already available in the country for distribution by cable television networks. Thus uplinking of TV channels for DTH service from India is not an additional technical problem. All the foreign and Indian TV channels can be easily downlinked and again uplinked from the DTH earth station situated on the Indian soil. Most of the TV channels or their subsidiaries have offices in the country to carry out various commercial operations including distribution of IRDs and collection of revenues from the Cable TV MSOs and LCOs. Many of these Television channels have big stakes as they earn huge revenues through advertisement and subscription. DTH technology is well established and there is an easy availability of KU band transponders at competitive prices. Similarly, there is a world wide transmission standard (DVB-S) followed in DTH leading to low cost Satellite Receivers.

On the other hand, in the case of Satellite Radio, generally the foreign Radio channels do not have footprints over India. In such cases, making mandatory uplinking from India will increase the cost of the Satellite Radio operations as these foreign radio channels would have to be especially uplinked from their origin for the purpose of downlinking in India at the Satellite Radio uplink site. Moreover since several countries are covered by one satellite radio service provider it may not be possible for every country to insist upon domestic uplinking. This would depend on the market size and the business perceptions of the service provider. As compared to Television channels, signals of Radio channels have

hardly any presence in the country and moreover radio channels earning from their presence in the Satellite Radio service may be comparatively little. In Satellite Radio, transponders are not freely available and consequently satellites are normally custom built at a very high cost. Transmission Standards in the case of Satellite Radio are proprietary and still evolving. Therefore all the existing systems have low receiver production volumes resulting in high cost of receivers initially.

2.4.6 Presently in the absence of any uplinking policy for Satellite Radio in the country, all Indian radio channels are forced to transport their programme contents from India to Singapore where the existing operator has an uplinking facility. If uplinking for Satellite Radio is allowed from Indian soil, it will not only save unnecessary expenditure on transporting of programme content but will also enable Government to have effective control on these channels in case of any violation. **It is, therefore, recommended that Government should encourage uplinking of Satellite Radio channels from the country. The precise policy framework should be common for both television and radio broadcasting. It is thus recommended that a common uplinking and downlinking policy should be evolved for both television and radio taking into account all aspects including security.**

Section 3: Licensing

3.1 The issues

3.1.1 As on date there is no policy framework for licensing of Satellite Radio Service providers in the country. In practice, it could be many years before a satellite radio system, separate from World Space, is available to provide service to India. Nevertheless, any regulations introduced to control satellite radio in India should be viable in a time frame when several competing satellite radio systems might simultaneously be operational. Thus, the main issue for decision is whether a licensing framework for Satellite Radio Service providers should be laid down now or later.

3.1.2 Once it has been decided to lay down the licensing framework for Satellite Radio, an important issue of licensing is regarding the foreign ownership of satellite systems. In view of the fact that heavy capital investment is involved in setting up a Satellite Radio Service, it is unlikely that a wholly owned Indian Satellite Radio Service may come into existence in the near future. Further, the footprint of a Satellite Broadcast may cover many countries. It may therefore not be practically feasible to subject a satellite based service provider to similar ownership restrictions that are placed on other media sectors.

3.1.3 Detailed eligibility criteria are laid down for licensing of DTH service, private FM Radio stations, Community Radio stations and setting up of uplink hub/ teleports. However, it is important to remember that there are many seekers/ applicants for licenses of these activities, which is not the case with Satellite Radio. Therefore, the issue for consideration is whether some eligibility

criteria should be laid down for grant of license to Satellite Radio Service providers.

3.1.4 The period of license for Satellite Radio is another issue to be decided. In case of a license for Satellite Radio service, the license period should take into account the expected life of a Satellite System, which is usually between 10 and 15 years from the date of launch.

3.1.5 Currently, the only Satellite Radio Service provider in the country is not subject to any license fee. Presently Satellite Radio service is being availed by a very small number of listeners but as Satellite Radio is likely to become important with growth in the number of listeners of Satellite Radio in the country it may have an impact on the listener-ship of Private FM Radio which in turn will give rise to the issue of level playing field. As such, the issue for consideration is whether any license fee should be imposed on the Satellite Radio Service Providers and if so, whether it should be similar to that of FM broadcasters in order to have a level playing field.

3.2 Comments of the stakeholders

3.2.1 The consensus opinion of all the stakeholders from whom comments have been received is that the licensing framework should be laid down now itself.

3.2.2 With regard to restriction on foreign ownership for grant of license there is a difference of opinion among stakeholders. Some are of the view that only Indian ownership must be allowed whereas others are of the view that there is no need to restrict foreign ownership. Department of Space is of the opinion that foreign entities that own satellite systems over India or uplink their

services from outside India and provide satellite Radio or Satellite Digital Multimedia Broadcasting end-user services in India should be subject to ownership restrictions. The foreign ownership should be restricted to 49%. ENIL has suggested that to ensure a level playing field with terrestrial radio, satellite radio can be allowed only up to 20% FII investment.

3.2.3 The majority of stakeholders are of the opinion that there should be some eligibility criteria laid down for grant of license to satellite Radio Service providers whereas some are of the view that no useful purpose will be served by laying down eligibility criteria. World Space has suggested that potential eligibility criteria should include a level of technical qualification as well as compliance with technical coordination rules as set forth by national and international bodies. Additionally, a set of deadlines or milestones could be considered, on a case-by-case basis, to ensure that licenses/frequency rights are actually used. ENIL is of the view that one of the main eligibility criteria for grant of a satellite radio license is that there should be at least 2 players to start with. Further, the investments required for Satellite Radio are extremely large. It is, therefore, important to vet the credentials and financial strength of the operator who proposes to launch a Satellite Radio service. Department of Space has suggested following eligibility criteria:

- Eligibility criteria similar to DTH services
- Reputable personal backgrounds of the founders and senior executives
- Proper registration and operations of the corporate entities in India

- Financially sound and reputable business backgrounds of the investors and/or backers
- State-of-the-art core technologies and products that will benefit India
- Professional management skills to effectively execute their business in India.

3.2.4 On the issue of term of license for Satellite Radio Service providers the opinion of the stakeholders varies between 10 to 15 years. The general view is that the license terms for satellite radio licensees should be equivalent to the lifetime of the respective satellite systems. According to Department of Space, as per the current technology available the lifetime of the satellite is expected to be 12 years and, therefore, the license should be at least for 12 years with a provision for extension for another 5 years. Worldspce is also of the opinion that license term for satellite radio should be equivalent to the lifetime of the respective satellite systems. Therefore license terms between 8 to 15 years would be appropriate. ENIL is of the opinion that the license period for Satellite Radio operator should be the same as that of private FM radio.

3.2.5 The general opinion is that there should be a license fee on the Satellite Radio Service Providers. WorldSpace has suggested that since there is no issue of spectrum scarcity in the L band, an entry fee is not necessary. The Annual license fee should be nominal in nature since the frequencies to which the fee would attach are used internationally, and not only in India. Department of Space is of the opinion that License Fee is required to be paid by the service providers who provide Satellite Radio and Satellite Digital

Multimedia Broadcasting Services. However, different strategies for these two services for the license fee should be adopted.

3.2.6 There is a varied opinion among stakeholders on the issue of similar license fee for Satellite radio and FM radio. Some Stakeholders are of the view that since the Service Providers will be from big leagues, their license fees should be higher whereas others have suggested that since satellite radio cost high, the license fees should be less than that of FM Radio. Department of Space is of the opinion that in order to ensure a level playing field, Satellite Radio services should be subject to similar license fee as FM Radio Services. ENIL has suggested that there should be a one time entry fee for satellite radio based on the entry fees paid by FM broadcasters. According to WorldSpace the license fee for a 'satellite only' service should be nominal in nature since the frequencies to which the fee would attach are used internationally and not only in India. Further, since there is no scarcity of spectrum in the 'L' band, an entry fee is not necessary. It is suggested that in case of nation wide hybrid service no license fee be applied during the first few years of the license term.

On the question of revenue share system the majority of stakeholders are in agreement. Reliance Infocomm has suggested that Revenue share, if any, should be kept at a minimal level to cover administrative expenses. World Space is of the opinion that after the first few years, a revenue sharing model may be applied and any revenue sharing fee should be calculated on the basis of net income. There should also be a ceiling or cap on any potential revenue share scheme for satellite radio licensees. Department of Space have also recommended a suitable revenue share model considering the high capital costs that Satellite Radio Service

providers incur in launching the system and also the risk involved. ENIL has suggested that the annual license fee can be the same revenue share percentage as in case of terrestrial radio.

3.3 International Practices

3.3.1 Ownership

USA: Section 310(b) of the US Communications Act, as updated in 1996, places certain foreign ownership restrictions on broadcast and common carrier licensees. However, because the FCC decided in its satellite DARS rules not to mandate any particular regulatory classification for this new service the foreign ownership restrictions in the Communications Act do not apply to the existing US satellite DARS licensee (XM Radio and Sirius Radio)

The issue of foreign licensed satellite systems is obviously not addressed in the FCC's rules relating to the US licensing of satellite DARS systems.

Canada: Since 1995, Canada has had a satellite-use policy in effect that requires use of only Canadian satellite facilities to receive and/or distribute to its citizens all Canadian programming services. In view of the receipt of the first application to establish subscription satellite radio service using a US satellite network, the Canadian Radio-television and Telecommunications Commission (CRTC) sent a request to Industry Canada (IC) seeking clarification of this 1995 satellite-use policy. The Departments of Industry and Canadian Heritage have stated that they are of the preliminary view that potential digital satellite radio broadcasting services raise an exceptional circumstance. The Departments further acknowledged the need to clarify the satellite use policy and proposed the addition of the following provision:

“ in exceptional circumstances, where no Canadian satellite facilities are available, or likely to be available in a reasonable time frame, to accommodate specialized satellite delivery of a broadcasting service to the public e.g. satellite radio services including vehicular reception, the use of foreign satellite facilities is permitted to distribute Canadian programming services;”

However, no decision has yet been issued regarding the Proposed Clarification to the Satellite Use Policy.

The Canadian Radio-television and Telecommunications Commission (CRTC) had initiated a consultation process following receipt of licence applications for satellite radio services. The consultation process has now been completed and the CRTC has approved on 16th June 2005 the licence applications of SIRIUS Canada Inc. (SIRIUS Canada) and Canadian Satellite Radio Inc. (CSR) for subscription radio services to be delivered by satellite and terrestrial transmitters.

Japan & Korea: From around 1999 there were two industrial consortia in Japan hoping to develop Japanese satellite radio systems. The industrial consortia led by Toshiba became the MBCo operating company. In July 2003 a “preliminary license” was granted to MBCo. The MBSAT satellite was launched in April 2004 and in May 2004 MBCo was granted a full satellite broadcasting license. Less than five months later, in October 2004, MBCo commenced full commercial service.

Korea allowed one of its major telecommunications operators, namely SK Telecom, to enter into a venture with MBCo of Japan, so that the MBCo satellite system could be used jointly and cooperatively by both Japan and Korea. In effect the capacity of

the MBCo spacecraft was divided equally between Japan and Korea, and SK Telecom established a subsidiary local operating company now known as TU Media Corporation, to act as the service provider in Korea. SK Telecom in turn was able to secure licenses from the Korean Ministry of Information and Communications (MIC) for use of the frequencies needed for the satellite transmission, and TU Media Corporation obtained the licenses for the terrestrial augmentation, and also permission from the Korean Broadcasting Commission to deliver broadcasting content.

China: China wanted to retain control over the content of all signals that could be received over Chinese territory. To achieve this, China authorized its own satellite operator, ChinaSat, to enter into a commercial agreement with WorldSpace, whereby ChinaSat would control the uplinking of all signals on the North East beam of AsiaStar. In addition, the distribution of WorldSpace receivers within China would be regulated to ensure that those receivers could only receive the North East beam signals. In return, ChinaSat has a commercial agreement with WorldSpace regarding the sharing of revenue that ChinaSat derives from the broadcast of audio and multimedia content. Revenue is derived by subscription fees for the encrypted programme content and also fees directly from broadcasters who want their signals to be carried on the satellite. In the latter case, Chinese state broadcasters are actively involved.

The information regarding licensing processes in Japan, Korea and China is not available in public domain; hence the information regarding these countries is indicative only and based on available information.

3.3.2 License Fee

The Satellite Radio operators in the USA pay the following regulatory fees to the FCC:

- Auction fees at time of licensing:
 - Sirius: \$83.4 million
 - XM: \$89.9 million
- FCC Application fees (one-off):
 - Sirius: ~\$100,000 (current fee, per GSO satellite)
 - XM: ~\$300,000 (fee charged to Sirius, includes all 3 satellites)
- Annual Regulatory fees (every year):
 - Sirius: \$131,400 (as of July 2004, non-GSO)
 - XM: \$114.675 (as of July 2004, GSO)

The auction fee (i.e., winning bid) depends on the dynamics of the auction mechanism, and the perceived value of the spectrum in the eyes of the bidders. The FCC application fees and ongoing regulatory fees are standard fees imposed on satellite licensees of all types, and are not specifically related to satellite DARS.

3.4 Recommendations by the Authority

3.4.1 The existing operator has been working after duly following the ITU Resolutions, Radio Regulations, spectrum coordination process with Department of Telecommunications as well as the Foreign Investments Promotion Board's approval. However, no formal licence has been given clearly specifying the terms and conditions of operation. **It would be desirable to provide such a licensing framework now itself so that there is no uncertainty in the**

future either for the existing operator or for operators who may come in the future.

3.4.2 Satellite Radio is a highly capital intensive process. According to estimates provided by M/s Worldspace the capital expenses so far incurred on the AsiaStar West Beam (which covers India apart from 24 other countries) is about US \$ 250 million. The system can cover many countries and therefore it would be difficult to impose any restriction on foreign ownership for such providers. Given the high capital intensity of this medium and the limited number of players in the world, restricting foreign ownership could only imply restricting likely options and competition in the future. **Thus 100% foreign ownership should be permitted for this purpose.**

3.4.3 In case licensing of Satellite Radio is opened up, there are unlikely to be a large number of applicants, if any. Therefore the licensing would have to be done on a case by case basis primarily aimed at establishing whether the applicant has the necessary financial and technical capacity to execute the project. **It would not therefore be appropriate to lay down any specific requirements for new operators at present. As and when a new application is received, it should be scrutinized from the point of technical/financial capability to execute the project.**

3.4.4 In the case of FM Radio the licence is provided for 10 years and it has been recommended that this should be automatically extended for another 5 years unless there are technical developments, which require a complete reorganization of the industry, in which case no extension should be given to any licensee. **On a similar basis, in the case of Satellite Radio the licence may be given for 10**

years with a provision for an automatic extension for five years unless there are technical developments, which require no such extension. In the case of the existing operator since operations have begun since 2000, it would be sufficient if the licence is given for a period of 10 years less the period of actual operations with an automatic extension of 5 years, subject to the condition indicated above.

3.4.5 The licence fee for two competing service providers should ideally be the same. However, there are significant differences between FM Radio and Satellite Radio. These are as follows:-

- In the case of Satellite Radio no licence fee was imposed at the time of start of operations while in the case of FM Radio the levels of licence fee were established through a process of competitive bidding.
- In the case of Satellite Radio the investments for the AsiaStar West Beam is about US\$ 250 million and the listener base in India is about 30,000 which at current subscription rate would yield an annual revenue of Rs.3.6 crores. In the case of FM Radio the total investments are of the order of Rs.100 crores and yield an annual revenue of about Rs.115 crores (2003-04).
- Satellite Radio till now has not competed with the FM Radio for advertisement revenue and given its subscription based approach the subscriber base is unlikely to grow very rapidly.

For these reasons, it is considered that there should not be any entry fee for Satellite Radio either for the existing operator or for any new operator, unless the numbers of

applicants are such that there is excess demand for the available spectrum space in which case tenders may be invited on the lines recommended for FM Radio. This would be in line with the recommendations made in the case of FM Radio that where there is adequate supply of spectrum, there should be no entry fee.

3.4.6 So far as the annual licence fee is concerned the position is different. A licensee should contribute towards meeting regulatory costs. In the case of the existing operator it has been argued that since their losses are large and their operations are limited there should be no licensing fee at all. While this argument can be accepted for the present, it should be provided that such licence fee should be imposed once the operations reach a particular level of significance. It is noted that the existing operator has plans to install terrestrial repeaters and expand the subscriber base significantly. No approval has been sought or obtained so far for such terrestrial repeaters. It would therefore be appropriate that once permission for such repeaters are given the license fee regime as applicable to FM operators are also made applicable to the satellite radio operators.

3.4.7 It is thus recommended that there should be no annual license fees as long as terrestrial repeaters are not permitted. Once these repeaters are permitted a revenue share of 4% of the gross revenue generated in India should be imposed as has already been recommended for FM radio. As recommended by TRAI in the case of FM Radio a limit of 15 per cent could be imposed on agency commission for advertisements or collection of subscription.

Section 4: Technical Considerations

4.1 The Issues.

Selection of proper transmission standards is of prime importance for the successful implementation of a satellite radio service from technical, regulatory and commercial perspectives. An optimized transmission standard requires a minimum amount of radio frequency spectrum, which is a scarce resource. The choice of standard whether it is open or proprietary has a direct bearing on the cost of satellite receiver to be used by the listeners apart from the possibility of local manufacturing.

4.1.1 Generally global standards play a vital role in helping to achieve economies of scale required for a viable broadcasting service. Proponents of satellite radio have been very active in ITU-R in promoting the idea of a single world standard and if this was not feasible at least a small set of standards. ITU-R Recommendation BO.1130-3 provides details of the transmission standards adopted by the various satellite radio systems. The issue is whether one of the existing transmission standards should be adopted or should the choice be left to the service providers of the satellite radio. In case the second option is adopted, the issue is whether it would be prudent to mandate multi standard receiver, which can be used with several different transmission standards.

4.1.2 Due to the convergence of technologies, satellite radio can also be used to deliver video, multi media, and web-based services. The issue is whether the regulations should promote a transmission scheme capable of being used for a variety of applications and

mandate a flexible signal structure that can also accommodate all kinds of video and data services.

4.1.3 Although a satellite radio system is designed to provide direct reception from satellite to receiver, complementary terrestrial repeaters are essential to provide reliable service in urban areas where often satellite line-of-sight is obstructed due to the high rise buildings. The question is whether a single license or separate licenses are given for satellite radio service and complementary terrestrial service. Secondly, whether foreign ownership restrictions that apply to FM radio licenses should also be applicable to terrestrial repeater licenses. Thirdly, what are the contents and technical restrictions that must be placed while licensing terrestrial repeaters?

4.2 Comments of the stakeholders

4.2.1 *Transmission Standards*

Some stakeholders were of the view that the technical standards should be mandated and that a common international standard must be adopted. Others were of the view that in view of the continuously evolving technology, mandating a particular standard such as the WorldSpace standard would be detrimental to technology growth. WorldSpace was of the view that future applicants should be free to develop the most appropriate technologies. Department of Space suggested that establishing mandatory transmission standards is neither an appropriate nor an efficient regulatory approach. Consequently the mandating of multi-standard receivers which are compatible with particular incumbent transmission protocols should not be attempted.

4.2.2 With regard to multi-standard receivers, many stakeholders were of the view that it should be mandated. However, Department of Space was of the opinion that making the receivers multi-standard will only increase the cost of the receiver. Reliance Infocomm suggested that commercial interoperability is a better option.

4.2.3 *Multi-media capability / Scope of license*

On the question of allowing Satellite radio service providers to deliver services like video, multi-media and Internet applications etc., different views have been expressed by stakeholders. While some have agreed for the evolution of new services, others are of the view that it must be restricted only to audio broadcasting. ENIL has expressed that in case multimedia services are permitted, then the Satellite Radio operator should apply for a Unified License and pay the required entry fees and license fees. WorldSpace is in favour of a regulatory regime that encourages a wide variety of applications and multimedia services. Department of Space is of the opinion that the licensing regime should clearly delineate Satellite Radio, Satellite Television, and Satellite Multimedia as specific sub-sectors within the broad arena of Satellite Media services. Furthermore, licenses that are granted in any of these sub-sectors should only apply to that specific application. If a service provider wishes to provide services in multiple sub-sectors, they can choose to apply for the required licenses in each sub-sector.

4.2.4 *Terrestrial Repeaters*

On the issues of restriction on foreign ownership of terrestrial repeaters the majority of stakeholders were of the view that the restrictions should be applied. Reliance Infocomm is of the view

that there should not be any foreign ownership. WorldSpace has suggested that if a repeater network is considered an integral part of a satellite radio service, then the foreign ownership restrictions should not apply to hybrid satellite licensees. Department of Space is of the opinion that the issues of ownership should not be at variance between the satellite and terrestrial components of the system since the complete network consists of space segment and necessary terrestrial repeaters and the user terminals. The license for terrestrial repeaters should be jointly awarded with the license for primary service from the satellite enabling the service provider to plan and operate the network in a seamless fashion to ensure quality of service. ENIL has expressed that since repeaters are not allowed in the case of FM radio services, the same should not be allowed for satellite radio also.

4.2.5 On the issue of content/technical restrictions to be placed while licensing terrestrial repeaters the World Space is of the opinion that technical restrictions should be limited to customary requirements, such as SACFA clearances and frequency coordination with existing users in adjacent frequency bands. In addition, restrictions with respect to local content insertion could be considered. However, there should be no need for separate content authorizations for the satellite and terrestrial components of a system, since they each provide a single service. It is also suggested that till permanent rules are established, a temporary licensing regime be considered, in order to allow the existing satellite radio service provider to innovative hybrid services under clearly defined terms and conditions. Being a gap filler terrestrial network, they can operate in the same frequency band that is being used by the licensed satellite service provider. BITCOM India

has suggested that Content restrictions that apply to satellite radio should apply for terrestrial repeaters transmission also.

4.3 International Practices

4.3.1 Transmission Standards

In the USA, the FCC decided not to mandate a uniform transmission standard for the two satellite radio service providers (XM Radio and Sirius Radio). However, the FCC did require the two service providers to develop a receiver that is capable of being used to receive the signals of both service providers. However, both the service providers have so far failed to comply with this requirement.

4.3.2 Japan and Korea have agreed to equally share the capacity of the MBCo satellite system. Presently MBCo is the only satellite system licensed in Japan and Korea to deliver audio, video and multi-media content. The promoters of MBCo have worked closely with the Regulators in the standardization of transmission standards suitable to these countries.

4.3.3 Multi-media capability / Scope of license:

In USA, the Satellite Radio operators are viewed as providing primarily an audio broadcasting service, with some ancillary data services.

In Canada, the approval granted by the Canadian Radio-television and Telecommunications Commission (CRTC) to the licence applications of SIRIUS Canada Inc. (SIRIUS Canada) and Canadian Satellite Radio Inc. (CSR) for subscription radio services to be delivered by satellite and terrestrial transmitters is to carry on a

satellite radio undertaking for the distribution of audio channels. Any activity by satellite radio undertakings involving the distribution of video would require separate prior approval by CRTC.

4.3.4 The MBCo system of Japan and Korea offered about 55 audio channels in addition to 18 video channels and many data channels. The data channels consist of push and store multi-media content. Low cost terminal with small screen video capability are ideally matched to the low data rate, multi-media services offered by MBCo. In Japan, MBCo offers 7 video channels, 30 audio channels and 60 data services. Current MBCo receiver in Japan uses a 4" display screen. In Korea, MBCo satellite system offers 11 video channels and 25 audio channels and 3 data channels.

4.3.5 The WorldSpace system is also able to deliver multimedia services directly to personal computers equipped with WorldSpace PCMCIA cards, USB-enabled Digital Data Adapters (Which connect receivers to PCs), or dedicated data receivers.

4.3.6 The planned ASBC system of Japan aims to combine elements of a mobile telecommunications service, telematics and DMB (Digital Multi-media Broadcasting) to mobile users.

4.3.7 The planned European MAESTRO project is aimed at deployment of 3G multimedia services over mobile networks.

4.3.8 *Terrestrial Repeaters*

In USA, the FCC recognized that terrestrial repeaters (also referred to as "gap-fillers") would be required in any satellite Radio system

in order to maintain the required service quality, particularly in urban areas where the satellite signal is subject to blockage. Although initially the FCC expected these to operate co-frequency with the satellite transmitted signals, in practice both licensees have implemented terrestrial repeaters in portions of their licensed band that are separate from that used for the satellite downlinks.

4.3.9 MCo system of Japan has heavy reliance on terrestrial repeaters. The combination of a single geo-stationary satellite serving higher latitude countries and the heavy urbanization of both Japan and Korea, result in low availability of direct satellite reception. Therefore, the resort to “gap fillers” is an absolute necessity to achieve the required signal availability to small portable and vehicular mobile receivers.

4.3.10 In Korea, MCo/TU Media planned to install 4,600 terrestrial repeaters by the end of 2004, with eventually 7,000 such repeaters being installed.

4.3.11 In order to maintain continuous reception of the satellite services in areas where there is no line-of-sight to the satellite, WorldSpace intends to make use of terrestrial gap fillers that receive signals from the satellite and transmit them terrestrially to ensure uninterrupted reception.

4.4 Recommendations of the Authority

4.4.1 *Transmission Standards*

There are several competing transmission standards available in the field of satellite radio broadcasting service. Some of the earlier satellite radio systems employ less efficient compression, coding

and modulation schemes as compared to the latter ones like XM radio and Sirius radio. The latest system like MBCo not only employ spectrum efficient technologies but also provide audio, video and other multi-media services. MAESTRO Satellite Radio project which is under development within the framework of European Union also aims to cost effectively deploy 3G multi-media services over mobile network. It is, therefore, clear that due to the fast technological developments and convergence of broadcasting and telecommunication technologies, the transmission standard in the field of satellite radio has not stabilized and is still evolving and this is the reason for several standards which exist today. Another reason for several transmission standards apart from the fast technical developments is that every country or service provider select the transmission standard which suits the local needs and the particular business plans. For example, though the multi-carrier is not an optimum modulation scheme for satellite broadcasting due to requirement of higher satellite power, Japan / MBCo have adopted it for the sake of integration with CDMA based terrestrial mobile networks in Japan.

4.4.2 All the existing and planned satellite radio systems in the world employ proprietary transmission standards. This has led to the result that their satellite radio receivers are also proprietary and are therefore not interoperable. It is expected that in future multi standard receivers which can be used with different transmission standards used by satellite radio operators need not be expensive.

4.4.3 It is also recognized that there is a potential advantage in selecting an existing transmission standard, which is in widespread use due to the low cost of receivers right from the beginning. However,

since there are several competing transmission standards, it will be extremely complex and time consuming for the licensor to select the standard which is best suited to the country.

4.4.4 If WorldSpace has to continue to provide radio service to the thousands of its listeners in India, the continued use of the WorldSpace transmission standard would be required.

4.4.5 In view of the above, it is recommended that the licensor need not mandate a particular transmission standard for any potential satellite radio service provider who should be free to decide their own preferred transmission standard subject to the approval by the licensor. While licensing, it should be made mandatory for satellite radio operators to provide addressability to every subscriber, which is capable of blocking an unwanted channel or group of channels. Initially, multi standard receivers which can be used with different transmission standards need not be mandated for potential satellite radio operators since it will only serve to increase the cost of the receiver and consequent adverse impact on the popularity of a new service.

4.4.6 Multi-media capability / Scope of license

ITUs' World Administrative Radio Conference (WARC) held in 1992 while allocating spectrum for satellite radio service made it mandatory to use digital techniques. Thus, inherently due to the deployment of digital techniques, satellite radio services could be capable of carrying audio, video and multi-media services. ITU-R Recommendations BO.789 also recommends that the satellite radio system should be capable of providing value added services

such as low bit rate, audio/video multi-plex, graphics, still picture, paging, business, traffic message data etc. The latest satellite radio system (MBCo) which has become operational in October, 2004 has been licensed to broadcast audio, video and other multi-media services to mobile phone users. In Korea, MBCo satellite system is seen as a digital multi-media broadcasting and form part of a complimentary mobile service infrastructure that includes 3G. DOS/ISRO is also planning to offer Satellite Digital Multi-media Broadcasting (S-DMB) service through a dedicated satellite using S-band spectrum allocation which will provide atleast 50 audio and 50 video channels apart from interactive and information services such as e-mail, messaging, telematics, traffic, weather etc. through the return link component of the system. The service is designed for fixed, mobile and portable receivers including mobile phones.

4.4.7 In view of the above, it is recommended that the licenses to be granted to potential satellite radio service providers should allow for the evolution of services from the initial simple, audio/data broadcasting to include video, internet applications and other advanced services. Such a licensing regime will encourage free growth of new applications and services which could be exploited due to the technological developments in the field of broadcasting and telecommunication. This licensing approach will also lead to flexible and efficient utilization of resources including scarce radio frequency spectrum. The bundling of various services on a single system would help customers to get various services at reasonable price. Recommendation of such liberal regime which is in line with the TRAI's recommendations on unified licensing sent to the Government in February 2005 would facilitate satellite radio

service providers to find new ways to reach customers, create market for the future and new revenue streams.

4.4.8 Terrestrial Repeaters

It is mentioned that all the existing satellite radio systems operational today are either using or plan to use terrestrial repeaters in urban areas where satellite signal is obstructed due to high rise buildings. Recognising the problem, ITUs' WARC-92 while assigning the spectrum for satellite radio service had already made the provision for complementary terrestrial sound broadcasting service in the same spectrum. Thus the terrestrial repeaters have been considered essential for providing quality service in urban areas and are therefore key to the successful implementation of any satellite radio service. Terrestrial repeaters should therefore be considered as an integral part of the satellite radio licensing regime. However, these repeaters should only be allowed to re-broadcast satellite signals and not other programmes which are locally produced and inserted. This is essential since the regulatory regime for satellite radio is different and it should not be used for unfair competition with FM radio.

4.4.9 In FM broadcasting, it is not a common practice to license additional frequencies for low power terrestrial repeaters to cover areas of unsatisfactory reception of high power licensed frequency behind the hills. This is primarily due to the fact that additional frequencies required for terrestrial repeaters put significant demand on already scarce FM radio spectrum which can otherwise be used for regular FM radio licensing. Due to the intrinsic property of radio waves in VHF band used for FM radio, even a low power terrestrial repeater station will render the use of co-channel and adjacent channel frequencies at reasonable distances. On the

other hand, frequencies assigned to satellite radio service travel only up to line of site distances and therefore have the ability for reuse at comparatively short distances. Thus, it is not appropriate to compare satellite radio with FM radio so far as provision of terrestrial repeaters is concerned.

4.4.10 In view of the above considerations, it is recommended that a single license may be issued to provide satellite radio service and complementary terrestrial service to the potential service providers to efficiently plan the network in a seamless fashion to deliver quality of service to customers. This license should be issued to the Indian subsidiary only to ensure no legal complications in enforcing regulation and collection of license fees. The foreign ownership requirement for the terrestrial repeaters should follow the same regulatory approach as the satellite service. Another condition to be imposed on the terrestrial repeaters is that they should be permitted only for the re-broadcast of their signal from the satellite and should not be allowed to broadcast locally inserted programmes.

Section 5 : Summary of Recommendations

5.1 Regulation and Monitoring

5.1.1 There should be only one license for carriage and the licensee would be responsible to the licensor for content regulation.

5.1.2 There should be common rules for subscription as well as broadcast type services.

5.1.3 AIR Programme and Advertisement codes should be made applicable to Satellite Radio also.

5.1.4 There should be no ban on News and Current Affairs for satellite radio.

5.1.5 Government should encourage uplinking of Satellite Radio channels from the country. The precise policy framework should be common for both television and radio broadcasting. It is thus recommended that a common uplinking and downlinking policy should be evolved for both television and radio taking into account all aspects including security.

5.2 Licensing

5.2.1 It would be desirable to provide a licensing framework now itself so that there is no uncertainty in the future either for the existing operator or for operators who may come in the future.

5.2.2 100% foreign ownership should be permitted.

- 5.2.3** It would not be appropriate to lay down any specific requirements for new operators at present, as and when a new application comes it should be scrutinized from the point of the technical/financial capability to execute the project.
- 5.2.4** In the case of Satellite Radio the licence may be given for 10 years with a provision for an automatic extension for five years unless there are technical developments which require no such extension. In the case of the existing operator since operations have begun from 2000, it would be sufficient if the licence is given for a period of 10 years less the period of actual operations with an automatic extension of 5 years, subject to the condition indicated above.
- 5.2.5** There should not be any entry fee for Satellite Radio either for the existing operator or for any new operator, unless the numbers of applicants are such that there is excess demand for the available spectrum space in which case tenders may be invited on the lines recommended for FM Radio. This would be in line with the recommendations made in the case of FM Radio that where there is adequate supply of spectrum, there should be no entry fee.
- 5.2.6** There should be no annual license fees as long as terrestrial repeaters are not permitted. Once these repeaters are permitted a revenue share of 4% of gross revenue generated in India should be imposed as has already been recommended for FM radio. As recommended by TRAI in the case of FM Radio a limit of 15 per cent could be imposed on agency commission for advertisements or collection of subscription.

5.3 Technical Considerations

5.3.1 The licensor need not mandate a particular transmission standard for any potential satellite radio service providers who should be free to decide their own preferred transmission standard subject to the approval by the licensor.

5.3.2 While licensing, it should be made mandatory for satellite radio operators to provide addressability to every subscriber, which is capable of blocking unwanted channel or group of channels.

5.3.3 Initially, multi standard receivers which can be used with different transmission standards need not be mandated for potential satellite radio operators since it will only serve to increase the cost of the receiver and consequent adverse impact on the popularity of a new service.

5.3.4 The licenses to be granted to potential satellite radio service providers should allow for the evolution of services from the initial simple, audio/data broadcasting to include video, internet applications and other advanced services.

5.3.5 A single license may be issued to provide satellite radio service and complementary terrestrial service to the potential service providers to efficiently plan the network in a seamless fashion to deliver quality of service to customers. This license should be issued to the Indian subsidiary only to ensure no legal complications in enforcing regulation and collection of license fees. The foreign ownership requirement for the terrestrial repeaters should follow the same regulatory approach as the satellite service. Another condition to be imposed on the terrestrial repeaters is that

they should be permitted only for the re-broadcast of their signal from the satellite and should not be allowed to broadcast locally inserted programmes.
