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**Re: Bharucha & Partners and LMI Advisors Response to Consultation Paper on In-Flight Connectivity (IFC) dated 29th September 2017**

Bharucha & Partners (B&P) and LMI Advisors (LMI) strongly support the efforts of the Telecommunications Regulatory Authority of India (TRAI) to open the Indian market for in-flight connectivity (IFC). Abhishek Malhotra of B&P has represented telecom and technology clients in India for nearly 20 years, including IFC interests seeking to operate in India. Carlos Nalda of LMI has more than 20 years of experience in satellite regulatory issues, with extensive international experience dating from the earliest days of IFC and satellite mobility.

B&P and LMI have pooled our collective expertise in response to the IFC Consultation Paper to assist in identifying core legal and regulatory principles that may inform the development of an appropriate IFC regulatory regime in India. In addition to our response to the specific questions raised in this consultation, the attached White Paper on IFC Regulation is respectfully submitted for TRAI's consideration.

This consultation provides TRAI with a unique opportunity to leverage decades of global experience with IFC to adopt pro-competitive rules consistent with India's telecommunications policies and other important national interests. The attached White Paper suggests that India may be best served by a "light touch" regulatory regime that (i) enables IFC onboard Indian-registered aircraft through new IFC licenses issued to Indian airlines and aircraft operators; (ii) recognizes licenses for IFC operations issued by foreign countries onboard their registered aircraft, subject to compliance with domestic rules and international standards design to prevent interference; (iii) regulates IFC services onboard Indian aircraft to the extent necessary to satisfy telecommunications policy concerns; and (iv) adopts other IFC regulations to ensure that other national interests are addressed.

We look forward to working with other interested parties in this proceeding to assist TRAI in developing an appropriate IFC regulatory regime that maximizes the benefits of IFC for Indian airlines and their passengers, and formally enables IFC operations onboard foreign aircraft in India consistent with the treatment of these operations throughout the rest of the world.

Respectfully submitted,



Abhishek Malhotra  
Bharucha & Partners



Carlos Nalda  
LMI Advisors

Attachments

**WHITE PAPER ON IN-FLIGHT  
CONNECTIVITY (“IFC”) REGULATION**  
**Developing an IFC Regulatory Regime in India**  
**Bharucha & Partners and LMI Advisors**  
**(November 2017)**

India is a very important market for commercial aviation and thus for IFC services. India has a large domestic aviation market, is an important destination for airlines from all over the world, and is situated along important international flight routes to destinations in Asia, Africa, Europe, the Middle East, and Oceania. In addition, Indian airlines increasingly seek to implement IFC offerings as an added passenger amenity and to enhance the efficiency of airline operations.

TRAI is considering a range of legal and regulatory issues in developing an IFC regulatory regime that recognizes the unique nature of satellite-based IFC offerings. Ideally this regime will balance domestic telecommunications policies with international aviation principles, enhancing competition with “light touch” regulation, and data protection and privacy with security concerns. This White Paper seeks to highlight some of these issues to assist TRAI in its deliberations.

This high-level review of Indian domestic legal and regulatory issues, as well as rules applicable to international aviation and telecommunications, suggests that a regulatory regime seeking to maximize IFC implementation and mitigate regulatory burdens could include elements such as:

- enabling IFC onboard Indian-registered aircraft through new IFC licenses issued to Indian airlines and aircraft operators;
- recognizing licenses issued by foreign countries for IFC operations and services onboard their registered aircraft, subject to compliance with domestic rules and international standards designed to prevent interference;
- regulating IFC services onboard Indian aircraft only to the extent necessary to satisfy significant telecommunications policy concerns; and
- adopting other regulations applicable to IFC operations to ensure that other national interests are addressed.

Relevant legal and regulatory issues, as well as the elements noted above, are discussed more fully below and inform the separate response to the questions raised in TRAI's Consultation Paper on In Flight Connectivity (IFC) dated 29th September 2017 ("IFC Consultation Paper").

## LEGAL AND REGULATORY PRINCIPLES

**Indian Legal and Regulatory Principles.** The IFC Consultation Paper notes several statutes and associated regulatory principles that underlay TRAI's authority to develop and implement a formal regulatory regime for IFC operations in India, including TRAI adoption of IFC service rules and Department of Telecommunications ("DOT") licensing of IFC operations.

Section 4 of the Indian Telegraph Act of 1885 establishes the exclusive right for the DOT to license telegraphs within India, including wireless telegraphs (i.e., radio stations) on aircraft operating in Indian airspace. This statutory authority is not limited by its terms to Indian-registered aircraft so telegraphs on foreign aircraft could be subject to individual or blanket DOT licensing to the extent not licensed by rule or otherwise exempted from licensing.

The Indian Wireless Telegraphs (Foreign Aircraft) Rules, 1973, exempt telegraphs on foreign aircraft from licensing but restrict their operations to aircraft flight support. Further, the DOT issued Decision No. R11020/01/2007-PP (dated 1 September 2008) regarding Inclusion of SATCOM Equipment in Aero Mobile (Aircraft Stations) License to facilitate inclusion of certain aeronautical satellite terminals on aircraft station licenses. These and other streamlined approaches may be viable to formally authorize operation of IFC satellite terminals in India.

TRAI Act of 1997 established TRAI to regulate telecommunications services within India and make recommendations for licensee conditions consistent with the purposes of the Act. Chapter III of the Act outlines a range of functions of TRAI relating to telecommunications services in India, and Section 11(3) of the Chapter notes that "[w]hile discharging its functions...the Authority shall not act against the interest of the sovereignty and integrity of India [and]...friendly relations with foreign States...."

The jurisdiction of TRAI and DOT to license IFC equipment and services onboard Indian-registered aircraft is unquestioned, but the situation with respect to foreign-registered aircraft is more complex. A statutory basis for DOT licensing of IFC equipment onboard foreign aircraft appears clear under Section 4 of the Indian Telegraph Act of 1885. (Of course, as noted above, such equipment could be exempted from licensing, licensed by rule, or added to aircraft station licenses.) On the other hand, it is not clear that TRAI's statutory jurisdiction over services and service providers within India would extend to IFC services provided onboard foreign aircraft.

There is limited case law in India on the effectiveness of Indian national law on foreign ships and aircraft. In the closest analogous discussion, the Apex Court in *British India Steam Navigation Co. Ltd. v. Shanmughavilas Cashew Industries* (1990 (1) SCALE 462: (1990) 3 SCC 481) stated the following principles:

In general, a statute extends territorially, unless the contrary is stated, throughout the country and will extend to territorial waters, and such places as intention to that effect are shown. A statute extends to all persons within the country if the intention is shown.... Thus a foreign ship...[is] not deprived of right by our statutory enactment expressed in general terms unless it provides that a foreign ship entering an Indian port or territorial waters and thus coming within the territorial jurisdiction is to be covered.... (emphasis added).

We have found nothing in the TRAI Act that suggests that the statute's service licensing jurisdiction covers services provided within foreign aircraft or vessels. Thus, consistent with the discussion of the Apex Court, it would appear that IFC services offered onboard foreign aircraft may not be subject to separate TRAI service licensing. This conclusion does not suggest that IFC operational rules would not be applicable to foreign aircraft in Indian airspace. Rather, it suggests that IFC *service requirements* adopted by TRAI for Indian airlines and aircraft operators may not necessarily be imposed on foreign airlines.

Such a conclusion is not only consistent with Indian law, but also with widespread practice in the international aviation context. An aircraft's registering nation has legal jurisdiction over the aircraft and authorizes the services provided onboard the aircraft, including food service, in-flight entertainment, and IFC offerings. Overflowed nations do not typically "reach into" a foreign aircraft cabin to exert licensing jurisdiction over such services. It is unclear that TRAI can exert licensing jurisdiction over IFC services on foreign aircraft when not clearly expressed in statute or consistent with principles espoused by the Apex court, and when such licensing jurisdiction is generally not exercised with respect to foreign aircraft in the overflight context.

This conclusion is reasonable from a practical standpoint as well. An alternative assumption would subject services onboard foreign airlines to the licensing jurisdiction of each and every country over which it flies, which would be a practical impossibility. The government of India presumably would neither expect nor accept foreign countries seeking to exert such licensing jurisdiction on similar services offered on Indian airlines. By the same token, India presumably would not seek to exert such jurisdiction over foreign aircraft in Indian airspace.

In view of the foregoing, TRAI should be cognizant of potential differences between licensing jurisdiction over IFC equipment operations, as distinct from the provision of IFC services within the aircraft cabin, in developing an IFC regulatory regime for India. DOT licensing jurisdiction over the former appears clear for both Indian and foreign aircraft (although IFC satellite terminals could be subject to streamlined licensing and low-power, in-cabin equipment is typically unlicensed). Formal TRAI licensing of IFC services, however, may be limited to Indian-registered aircraft only.

## **INTERNATIONAL LEGAL AND REGULATORY PRINCIPLES.**

The Constitution and Convention of the International Telecommunication Union (ITU) and the ITU Radio Regulations establish the primacy of an aircraft's registering nation over radio equipment onboard the aircraft. Article 18.1 of the ITU Radio Regulations states that radio transmitting stations are to be licensed by "the country to which the station in question is subject." Subsequent articles in the ITU Radio Regulations clearly identify that country to be the country of registration of the aircraft (reference to articles 18.8 and 18.11).

The Convention on International Civil Aviation (also known as the "Chicago Convention") suggests a consistent approach to radio operations onboard aircraft. Article 30 of the Chicago Convention provides that "(a) Aircraft of each contracting State may, in or over the territory of other contracting States, carry radio transmitting apparatus only if a license to install and operate such apparatus has been issued by the appropriate authorities of the State in which the aircraft is registered. The use of radio transmitting apparatus in the territory of the contracting State whose territory is flown over shall be in accordance with the regulations prescribed by that State."

Article 30 of the Chicago Convention recognizes the potential for concurrent jurisdiction over an aircraft by both the registering nation and the overflown nation (on the basis of territorial jurisdiction). The notion of concurrent jurisdiction is consistent with the discussion above regarding DOT licensing authority over IFC equipment on foreign aircraft. However, Article 18 of the ITU Radio Regulations establishes the primacy of the registering nation's licensing authority over radio equipment, and overflown nations tend to recognize this through exemptions or streamlined licensing procedures.

Of additional note, the Convention on Offences and Certain Other Acts Committed On Board Aircraft (also known as the "Tokyo Convention") may be implicated. This treaty document is focused on criminal acts but, consistent with the Chicago Convention, it supports exclusive legal jurisdiction of an aircraft's registering nation over activities within the aircraft. This conclusion is consistent with the discussion above regarding potential limitations on licensing jurisdiction over IFC services provided onboard foreign aircraft.

The foregoing international legal and regulatory principles are consistent with Indian national law and regulation as applied in the IFC context. In this connection, it should be recognized that IFC operations and in-cabin services are very different from traditional telecommunications services typically regulated by TRAI. IFC is supported by global, satellite-based networks and provided to aircraft from various nations on long-haul international routes. Thus, in contrast to telecommunications services provided within the Indian national market, the international aviation and telecommunications principles discussed above must be considered in the context of developing a comprehensive IFC regulatory regime.

## **TREATMENT OF INDIAN VERSUS FOREIGN-REGISTERED AIRCRAFT**

Domestic and international legal principles should be read together when addressing IFC operations and services provided onboard aircraft. The primacy of an aircraft's registering nation with respect to the operation of radio equipment onboard an aircraft and the provision of service within the aircraft cabin is a key principle. On the basis of territorial jurisdiction, radio equipment generally must operate in accordance with regulations of an overflowed state. However, this principle is most often applied to radio equipment that transmits outside the aircraft (e.g., to link with the Internet via a satellite), rather than to low-power equipment within the aircraft cabin (which typically operates on an unlicensed basis).

TRAI should follow these principles and focus licensing efforts and IFC rules on equipment that uses spectrum outside the aircraft's cabin (i.e., the aeronautical satellite terminal). Although the use of spectrum outside the aircraft has the potential to cause interference (which is one reason for such equipment to be licensed), international standards facilitate spectrum compatibility and prevent interference from IFC terminal operations. TRAI can establish rules and streamlined licensing for IFC terminals in accordance with these standards.

There appears to be little basis for reaching into a foreign-registered aircraft cabin to regulate services provided therein. Licensing of low-power, in-cabin equipment can be left to the aircraft's registering nation because there is no material impact of their operations outside the aircraft cabin. Such an approach will also reduce regulatory burdens and conserve scarce administrative resources in the context of IFC regulation.

With respect to Indian-registered aircraft, TRAI has clear authority to regulate all aspects of IFC services offered onboard an Indian-registered aircraft (which includes both equipment and service licensing requirements). However, TRAI should avoid adopting requirements that could place Indian airlines at a competitive disadvantage vis-à-vis other airlines that offer IFC services.

## **COMMON APPROACHES TO IFC REGULATION**

The international legal and regulatory principles discussed above have resulted in common approaches (with some national variation) to IFC regulation. First, overflowed nations generally do not seek to regulate the services provided onboard foreign aircraft to avoid "reaching into" a foreign aircraft that is subject to the jurisdiction of another sovereign nation, to deter other nations from "reaching into" their registered aircraft to exert jurisdiction, and to recognize that foreign aircraft flying over their territory are not connected to or a part of their national market.

Second, to the extent possible, countries have recognized IFC licenses issued to foreign aircraft rather than "relicensing" the onboard equipment. Nations have exclusive jurisdiction to license radios onboard their aircraft and overflowed nations typically adopt rules to enable operation of foreign-licensed equipment in their airspace (e.g., free circulation of IFC terminals in Europe; no-objection for overflight throughout much of Africa, Asia, and South America; etc.). In this connection, nations tend to focus on the off-board link between the satellite and the aircraft rather than the in-cabin equipment because the latter operates at extremely low power

levels and on a non-interfering basis. Although the off-board link is also designed to share spectrum and avoid interference, it admittedly involves the use of spectrum outside the aircraft cabin that could affect other spectrum users and thus may be the subject of national regulations designed to promote spectrum compatibility.

Third, nations typically issue licenses for IFC radio equipment installed on their registered aircraft either through their telecommunications regulatory authority (often for the Ku-band satellite terminal) or through their civil aviation authority (often for the in-cabin IFC equipment). The goal of such licensing is to ensure that the equipment complies with international standards, including Ku-band satellite terminals, Wi-Fi access points, and other IFC equipment.

However, the need for service licensing onboard national aircraft is more mixed. With respect to in-flight Internet, some countries require IFC provider registration such as an ISP or an electronic communications provider, others authorize the airline itself to provide such services and still others forego such requirements entirely given the unique nature of in-flight Internet provided to a closed user group of aircraft passengers on flights that take place both within and outside national airspace using a global, satellite-based network.

With respect to mobile communications onboard aircraft (MCA), a few nations believe a separate IFC provider authorization is necessary, others recognize the telecom authorizations already held by MCA providers, and still others forego licensing MCA entirely and rely instead on the licenses granted to passengers' mobile operators and their roaming agreements with MCA providers to enable operation of passenger handsets and the provision of service.

Of course, TRAI must consider these approaches in the unique context of its governing statutes, regulations, and policies, with the ultimate objective of maximizing the benefits of IFC within India for Indian airlines and consumers. This includes those benefits that result from IFC operations onboard foreign aircraft located in Indian airspace and from IFC operations on Indian aircraft traveling in Indian and international airspace.

## **ADDITIONAL CONSIDERATIONS**

TRAI has clear authority to regulate all aspects of IFC services offered onboard an Indian-registered aircraft (which includes both equipment and service licensing requirements). It is important to note, however, that IFC requirements should not be so complex or burdensome as to make IFC operations in India economically non-viable and should not place Indian airlines at a competitive disadvantage vis-à-vis foreign airlines that offer IFC services.

As noted above, IFC offerings are a niche part of the satellite communications market and cannot economically support satellite and earth station infrastructure on their own. Offered on a regional basis and combined with other satellite services, however, IFC can be a powerful competitive advantage in the national and international air transportation marketplace. TRAI should recognize that these principles apply equally in India as they do in other parts of the



world, and ensure that IFC regulations facilitate the introduction of the service in India rather than discourage or effectively preclude such service.

Similarly, TRAI should look beyond India to evaluate the IFC requirements adopted in other countries. To the extent that foreign countries have adopted less costly and complex approaches, their airlines can provide less expensive IFC services to their passengers. Furthermore, to the extent TRAI follows the international trend of a “light touch” regulatory approach for foreign airlines already licensed by their registering nations, Indian airlines should not be subject to more costly and complex requirements to provide the same services to their passengers. Indeed, because IFC is offered to a closed user group of passengers onboard aircraft in flight, TRAI need not impose the same level of regulation applied to mass-market communications services provided generally to the Indian national consumer marketplace.

In this connection, an approach that recognizes the unique nature of IFC operations and maximizes flexibility for Indian airlines may be warranted. Specifically, because airlines control the type of IFC services available onboard their aircraft through selection of an IFC vendor, issuing an IFC license to Indian airlines may be a workable approach to facilitate IFC in India. An IFC regulatory regime that defines basic requirements and includes a license held by Indian airlines will allow them to work with IFC vendors to develop an IFC implementation that best meets their needs. At the same time, requiring compliance with IFC operational rules will ensure that Indian telecommunications policies are satisfied and other national interests are adequately addressed.

**Response to Consultation Questions  
Bharucha & Partners and LMI Advisors**

**Q.1 Which of the following IFC services be permitted in India?**

- a. Internet services**
- b. Mobile Communication services (MCA service)**
- c. Both, Internet and MCA**

Both Internet and MCA services should be permitted in India. In-flight Internet services and MCA services are variations of the same service, and can be complementary offerings.

**Q.2 Should the global standards of AES/ESIM, shown in Table 2.1, be mandated for the provision of AMSS in Indian airspace?**

The Table 2.1 standards should provide guidance, but should not be mandated because they are not an exclusive list. TRAI can establish IFC rules based on these standards.

**Q.3 If MCA services are permitted in Indian airspace, what measures should be adopted to prevent an airborne mobile phone from interfering with terrestrial cellular mobile network? Should it be made technology and frequency neutral or restricted to GSM services in the 1800 MHz frequency band, UMTS in the 2100 MHz band and LTE in the 1800 MHz band in line with EU regulations?**

EU regulatory decisions and standards provide the most comprehensive set of requirements to avoid potential interference from MCA operations. Compliance with these standards, or a clear demonstration of non-interference in other bands, should be sufficient to support MCA operations.

**Q.4 Do you foresee any challenges, if the internet services be made available ‘gate to gate’ i.e. from the boarding gate of the departure airport until the disembarking gate at the arrival airport?**

No, we do not foresee any challenges associated with gate-to-gate IFC services. Wi-Fi is low-power and non-interfering, and satellite links used for connectivity to an aircraft operate in spectrum that is generally unshared with terrestrial services. MCA operations are disabled before the aircraft reaches the ground so they are not relevant to the examination of gate-to-gate operations.

**Q.5 Whether the Unified Licensee having authorization for Access Service/Internet Service (Cat-A) be permitted to provide IFC services in Indian airspace in airlines registered in India?**

It is not necessary to extend the Unified License approach to include IFC because a separate IFC license issued to Indian airlines is better suited to IFC implementation in India.

**Q.6 Whether a separate category of IFC Service Provider be created to permit IFC services in Indian airspace in airlines registered in India?**

Yes, for airlines and aircraft registered and operating in India. An IFC license held by Indian airlines, along with clear IFC operating rules, would provide flexibility for Indian airlines and maximize the benefits of IFC for the Indian public.

Because airlines control the type of IFC services available onboard their aircraft through selection of an IFC vendor, issuing an IFC license to Indian airlines may be a workable approach to facilitate IFC in India. An IFC regulatory regime that defines basic requirements and includes a license held by Indian airlines will allow them to work with IFC vendors to develop an IFC implementation that best meets their needs. At the same time, requiring compliance with IFC operational rules will ensure that Indian telecommunications policies are satisfied and other national interests are adequately addressed.

**Q.7 Whether an IFC service provider be permitted to provide IFC services, after entering into an agreement with Unified Licensee having appropriate authorization, in Indian airspace in airlines registered in India?**

It is not necessary to extend the Unified License approach to include IFC because a separate IFC license issued to Indian airlines is better suited to IFC implementation in India.

**Q.8 If response to Q.7 is YES, is there any need for separate permission to be taken by IFC service providers from DoT to offer IFC service in Indian airspace in Indian registered airlines? Should they be required to register with DoT? In such a scenario, what should be the broad requirements for the fulfillment of registration process?**

N/A

**Q.9 If an IFC service provider be permitted to provide IFC services in agreement with Unified Licensee having appropriate authorization in airlines registered in India, which authorization holder can be permitted to tie up with an IFC service provider to offer IFC service in Indian airspace?**

It is not necessary to extend the Unified License approach to include IFC because a separate IFC license issued to Indian airlines is better suited to IFC implementation in India.

**Q.10 What other restrictions/regulations should be in place for the provision of IFC in the airlines registered in India.**

TRAI should adopt a “light touch” regulation approach within the context of international aviation. The focus should be on consumer protection and implementing security mandates, but not on system and service implementation requirements.

**Q.11 What restrictions/regulations should be in place for the provision of IFC in the foreign airlines? Should the regulatory requirements be any different for an IFC service provider to offer IFC services in Indian airspace in airlines registered outside India vis-à-vis those if IFC services are provided in Indian registered airlines?**

Foreign airlines should be subject to the same IFC operational rules (to prevent interference, etc.) as Indian airlines. To the extent licensing of IFC equipment onboard foreign aircraft is necessary, it should be limited to streamlined licensing of the aeronautical satellite terminal.

With respect to service offered onboard the aircraft, however, it is unclear whether TRAI has jurisdiction to regulate IFC service offered onboard foreign aircraft or, to the extent such jurisdiction may exist, whether it is advisable to exercise such jurisdiction given the potential international implications for Indian airlines.

**Q.12 Do you agree that the permission for the provision of IFC services can be given by making rules under Section 4 of Indian Telegraph Act, 1885?**

Yes, for foreign aircraft, but it is desirable to establish an IFC license for Indian airlines. In addition, there is a need to distinguish between IFC equipment operations and IFC services provided on foreign aircraft. IFC operations can be licensed by rule and IFC service rules for Indian airlines can provide guidance for the provision of services.

**Q.13 Which of the options discussed in Para 3.19 to 3.22 should be mandated to ensure control over the usage on IFC when the aircraft is in Indian airspace?**

There are numerous IFC providers with varying network architectures and security solution proposals, and these solutions should be considered in the context of approving IFC licenses for Indian airlines. There are new technologies and capabilities that allow for solutions that do not rely on in-country gateway facilities and devices. It may be advisable to examine such issues on a case-by-case basis because each implementation may be airline and/or IFC provider specific.

With respect to foreign airlines, because the registering nation has jurisdiction over and is responsible for the safety of the aircraft and its passengers, it is reasonable to rely on foreign judgments with respect to security issues to address such concerns. However, it is reasonable to expect some capability with respect to foreign aircraft present in Indian airspace. Again, it may be advisable to examine such issues on a case-by-case basis because each implementation may be airline and/or IFC provider specific.

**Q.14 Should the IFC operations in the domestic flights be permitted only through INSAT system (including foreign satellite system leased through DOS)?**

IFC providers should be permitted to optimize their offerings since India coverage is part of a global satellite-based network. Requiring India-specific satellite capacity would add cost and complexity for domestic IFC services that could make it non-viable and could impact the provision of IFC services. Both INSAT and foreign satellites should be permitted but not required.

**Q.15 Should the IFC operations in international flights (both Indian registered as well as foreign airlines) flying over multiple jurisdictions be permitted to use either INSAT System or foreign satellite system in Indian airspace?**

Yes, either should be permitted. As described in the responses to Q14 above, the nature of global aeronautical communications services demands flexibility, redundancy, and seamless operations.

**Q.16 Please suggest how the IFC service providers be charged in the following cases?**

- (a) Foreign registered airlines.**
- (b) Indian registered airlines.**

IFC service on foreign airlines should not be charged because it is not clear whether there is jurisdiction to regulate, much less tax, such service. In addition, such a requirement may invite other countries to impose charges on IFC onboard Indian airlines flying through their airspace. With respect to Indian airlines, no special charging regime should be applied. Rather, applying standard tax policies will provide revenue from IFC turnover on Indian airlines.

**Q.17 Should satellite frequency spectrum bands be specified for the provisioning of the IFC services or spectrum neutral approach be adopted?**

IFC applicants should be permitted to demonstrate that proposed systems are compatible with other operations in India in recognized IFC bands. In addition, they should be permitted to deploy equipment that operates in new bands subject to demonstrating there is no material potential for interference from the proposed operations.

**Q.18 If stakeholders are of the view that IFC services be permitted only in specified satellite frequency bands, which frequency spectrum bands should be specified for this purpose?**

N/A.