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June 6, 2023

## LEGAL OPINION

Querist: Broadband India Forum (Querist), through TMT Law Practice

l . The Querist, through TMT Law Practice, met with me on May 20, 2023, and placed before me the following documents:

(i) A brief for Opinion dated May 09, 2023, setting out the detailed query, along with a factual background and a narrative on the existing legal position on terrestrial spectrum allocation in India and satellite spectrum allocation, globally.

(ii) A note on Satcom spectrum allocation setting out the distinction between satellite spectrum and terrestrial spectrum.

(iii) Consultation Paper No. 6/2023, dated April 6, 2023, released by the Telecom Regulatory Authority of India (TRAI) on the Assignment of Spectrum for Space — based Communication Services (Consultation Paper).

(iv) Email dated April 2, 2023, written by Querist to the Secretary, Department of Telecommunications, outlining 17 points on which the Querist based its request for consideration of its proposal for allocation of Satellite Spectrum on a non-auction basis (Email).

(v) Indian Space Policy, 2023, released on April 20, 2023 (Space Policy).

(vi) A copy of the Supreme Court decisions pertaining to the allocation of 2G spectrum by the Department of Telecommunication (DOT) in:

(a) Centre for Public Interest Litigation and Ors. v. Union of India and Ors. WP (C) No. 423 of 2010, and

(b) Re: Special Reference No. 1 of 2012.

2. The Querist has sought my opinion on the following queries:

(i) Whether the law requires that the only way to allocate satellite spectrum is auction?


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(ii) Whether allocation of satellite spectrum for space-based communication services through a non-auction, administrative route, is permissible in

3. I have gone through the material placed before me. Before I respond to the above queries, I set out a brief background of the functioning/operation of a satellite, its application, international legal obligations and global trends in the allotment of satellite spectrum.

## A. Background

l . With a view to bring about international norms on the use of Space, a Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space ("Outer Space Treaty/OST"), came into force in October 1967.

2. The Preamble to the OST sets the tone for seeking to have an agreement on the need for such international norms, namely:

Inspired by the great prospects opening up before mankind as a result of man's entry into outer space,

Recognizing the common interest ofall mankind in the progress ofthe exploration and use of outer space for peaceful purposes,

Believing that the exploration and use ofouter space should be carried on for the benefit of all peoples irrespective of the degree of their economic or scientific development,

Desiring to contribute to broad international co-operation in the scientific as well as the legal aspects of the exploration and use of outer space for peaceful purposes,

Believing that such co-operation will contribute to the development of mutual understanding and to the strengthening offriendly relations between States and peoples,

3. Article Il of the Outer Space Treaty makes it clear that Outer Space cannot be the exclusive domain of one country when it states that:

"Outer space, including the moon and other celestial bodies, is not subiect to national appropriation by claim ofsovereignty, lov means ofuse or occupation, or by any other means."

History and Functions of Satellites

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4. Satellites are relay stations in space for the transmission of communication and data. Satellite transmission aids in effective communication, bypassing terrestrial infrastructure and the associated limitations.

5. The first artificial satellite, Sputnik 1, was launched by the Soviet Union in 1957, which survived in space and transmitted signals for only 22 days. In 1958, USA introduced Project Signal Communication by Orbiting Relay Equipment which launched the first satellite to relay voice signals. In 1962, the USA launched Telstar 1, the first active communication satellite capable of two-way communication, to be launched in LEO orbit. In 1964, the first satellite was launched into GEO orbit which broadcast the Tokyo Olympics, 1964 via satellite, for the first time. USA spearheaded the development of the satellite communications industry with the enforcement of the Communications Satellite Act, 1962.

6. Thereafter, Intelsat was formed in 1964, with 11 signatory nations. In 1965, Intelsat launched Early Bird, the first operational commercial satellite providing regular telecommunications and broadcasting services between North America and Europe.

7. The potential application of satellites for development and their ability to reach remote regions (elaborated in greater detail in the subsequent segment of this opinion), led other nations to build and operate their own national satellite systems. After Soviet Union and USA, Canada launched its own communications satellite, Anik l , in 1972. This was followed by the launch of Indonesia's Palapa I satellite in 1976. Thereafter, several countries launched their own satellites into space.

8. Satellites are launched using rockets and operate in space for a lifespan of approximately 5-15 years. A satellite consists of the following elements:

   (i) A spacecraft "bus" which is the primary spacecraft structure containing power, temperature control and directional thrusters.

   (ii) Communications "payload", which receives, amplifies and retransmits the signals over a designated geographic area.

   (iii) "Transponders", which constitute the multiple channels that provide bandwidth and power over designated radio frequencies. The transponder's bandwidth and power determine the amount of information that can be transmitted through it, as also the size of the ground equipment required to receive the signal.

   (iv) Lastly, the satellite's "antennas" direct the signal over a specific geographic area.

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9. Satellite communication reflect signals such as radio, internet data, and television from one side of the earth to another. It involves four steps:

   (i) An uplink earth station or other ground equipment transmits the desired signal to the satellite;

   (ii) The satellite amplifies the incoming signal and changes the frequency;

   (iii)The satellite transmits the signal back to Earth; and

   (iv) The ground equipment receives the signal.

10. To further elaborate on the process of satellite communication, I have illustratively considered television broadcasting as under:

   (i) Firstly, the signal from the television broadcast from the place of the event on the earth is beamed up to the satellite from the ground station on the earth. This process is known as uplink.

   (ii) In the second stage, transponders such as radio receivers, amplifiers, and transmitters are used to boost the incoming signal and change its frequency so that the outgoing signals are not altered. Depending on the incoming signal sources, the transponders vary.

   (iii)Finally, the data or outgoing signal is sent to the other end of the receiver on the earth which is termed downlinking.

   I am given to understand that one uplink may have multiple downlinks.

11. The Querist has also brought to my attention that satellite communication services may be classified into two categories:

   (i) <u>One — way satellite communication</u>, where the communication is either between one or multiple earth stations through the help of a satellite. In this unidirectional form, communication is between the transmitter on the first earth satellite to the receiver which is the second earth satellite. Internet service through broadcasting satellites, position location services provided by radio satellite are examples of one-way satellite communication.

   (ii) In <u>two-way satellite communication</u>, the information is exchanged between any two earth stations. The signal is transmitted from the first

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earth station to the second earth station such that there are two uplinks and two downlinks between the earth stations and the satellite.

12. Further, I am also aware that based on the orbital location, communication satellites are categorized into 4 types:

(i) Geostationary Earth orbit (GEO) -

a. These satellites are located the farthest from the Earth and revolve around the Earth at the same speed as Earth's orbit.

b. GEO satellites are the most efficient with a large coverage area and their ability to focus capacity at a place and time of need, without wasting capacity over areas that have no or little demand.

c. GEO satellites are ideal where seamless and reliable connectivity is crucial. Use of GEO satellites are predominant in maritime and aviation safety services, crew connectivity at sea, inflight Wi-fi, disaster response and industries including agriculture and transportation.

(ii) Medium Earth orbit (MEO) —

a. MEO satellites orbit between 2,000 and 35,786 kilometres above the Earth's surface with an orbital cycle of two to eight hours.

b. MEO satellites deliver low-latency, high-bandwidth connectivity to service providers, government agencies and commercial enterprises, providing new internet options to remote areas where laying terrestrial fibre is not feasible.

c. MEO satellites are often used for Global Positioning System (GPS) and other navigation applications.

(iii)Low Earth orbit (LEO) -

a. LEO satellites are smaller and orbit much closer to the Earth, ranging from around 160 to 2,000 kilometres, with an orbit time of about 90 minutes.

b. Unlike GEO orbit, where you only need three satellites for global coverage, LEO orbit requires a much larger constellation of satellites.

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c. Owing to placement in a lower orbital slot, LEO satellites benefit from a smaller field of vision and low latency to accurately relay higher levels of data, with much stronger signal strengths at greater speeds. This allows LEO satellites to be used for several applications such as: Industrial 10T (Internet of Things), maritime and tourism, emergency response and aid, telecommunications and mobile 5G broadband.

d. LEO satellites have the lowest lifespan of approximately five to seven years, thereby making them the least cost-effective.

(iv)Highly elliptical orbit (HEO)

a. HEO satellite orbits the Earth on an elliptical path with an altitude varying from about 1,000 to 42,000 km above the Earth's surface. The enormous range in altitude is due to a highly elliptical orbit path that travels in an oval shape.

b. HEO satellites move much faster when they are close to the Earth than when they are farther away. This is owing to the high gravitational pull from the Earth when the satellite is in perigee (the point of orbit closest to the Earth), than when the satellite is in apogee (the point farthest from the Earth).

c. To provide seamless connectivity, it requires two satellites in HEO orbit. As a result of this, when in the apogee, over the North Pole, satellites in HEO can provide better coverage, as it is visible for a longer period.

d. HEO satellites are useful for providing mobile broadband payloads to the farthest Arctic regions, and they support industries such as aviation, maritime and government.

13. I am also made aware that communication satellites use multiple frequency bands, much like radio, to transmit information. The most common frequencies used in satellite communications are L-band, C-band, S-band, Ku-band, and Ka-band.

14. There are considerations between the size of the geographic area in which signals can be transmitted or received and the amount of power to be used to send or receive the signal. Technological advancement has brought about satellites which support a variety of beams that allows a satellite to focus its power at designated geographical locations.

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15. To complete the satellite network, all satellite communications are sent and received via satellite access stations (SAS), through either flat panels (electronic



steered arrays) or dishes (circular reflectors). This is where information is processed and delivered to the receiver destination.

16. Ground stations are generally fixed points on the earth. However technological innovations for Earth stations have optimised signal strengths and the capacity for data transfer. This enables transmission of signals while moving, such as inflight Wi-Fi, 5G networks, satellite news gathering and other mobility applications.

B. Spectrum Application and Global Trends

17. Satellites serve a wide range of public, utilitarian uses including television broadcast, broadband connectivity, global positioning and navigation for maps, satellite imagery and information about climate, disaster prediction and management, and global communication services even in remote, rural locations. To better understand the scope of satellite use and applications, Querist has brought to my attention, the following operations of satellites:

(i) Voice and Data Services: Satellite phones or handheld devices can be used to provide these services, which transmit signals directly to orbiting satellites. Satellite voice services are commonly used in remote areas where terrestrial infrastructure is limited, as well as in emergency situations where infrastructure has been damaged. The satellites then relay the signal back to Earth, where it is routed through the service provider's ground station and traditional networks to reach the recipient of the call.

(ii) Machine to Machine Services: Satellite technology is used to connect remote devices, sensors and machines to the internet, allowing them to communicate, transmit data and receive commands from a centralized system (the basis for the growth of "Internet of Things"). This enables businesses and organizations to remotely monitor and control their assets in real-time. These services are useful in industries where assets are scattered in remote locations. These can also be used for disaster management, environmental monitoring and other applications requiring real-time data transmission from remote locations.

(iii) Satellite Mobile Backhaul: Signals are transmitted from mobile cell towers to one or more orbiting satellites, which then relay the signals back to Earth. The signals are then routed through the service provider's network to connect the mobile network to the core network. Satellite mobile backhaul is an important element of terrestrial mobile network and

it can also be used as a backup for traditional terrestrial backhaul infrastructure, providing a reliable alternative in the event of a network outage or equipment failure.



(iv) Rural and Remote Location Broadband Facility: Satellite technology can provide high-speed Internet access to remote, rural areas, within an aircraft and at maritime locations where terrestrial broadband infrastructure is limited or absent. Signals are transmitted between a ground station and one or more orbiting satellites.

(v) Direct-to-Cellphone: Direct-to-cellphone service connects a low-Earth orbit (LEO) satellite constellation to an unmodified mobile phone using existing terrestrial spectrum and equipment. This is used for emergency SMS. However, the same can be used even to offer broadband services once new LEO constellations are fully developed. From a user perspective, it will allow connecting smartphones directly to satellites, in otherwise impossible locations, ensuring accessibility across all remote locations.

(vi) Agriculture: Space-based technology adds immense value to farmers, agronomists, food manufacturers and agricultural policymakers by aiding the production and profitability of crop produce. Remote sensing satellites provide key data for monitoring soil, snow cover, drought and crop development. Satellites help in assessing rainfall which is useful for farmers to plan the timing and amount of irrigation required for their crops. Accurate information and analysis using satellites is helpful in predicting agricultural output in advance and is critical in anticipating and mitigating the effects of food shortages and famines.

(vii) Telemedicine: Satellite communications have aided telemedicine facilities by through instant access to broadband services, particularly in remote areas where telecommunications are poor or non-existent, and swift response in disaster situations where speed is vital. Satellites also provide a powerful and relatively inexpensive tool, for telemedicine consultation.

(viii) Education: Satellite communications technologies, have helped bridge gap with access to education in remote and rural areas. Web, videoconferencing, and voice-over Internet protocol using satellites, allow educators and students to create virtual classrooms, irrespective of the remote geographical locations. Tele-education is being used by

institutions, worldwide, to offer distance education across all education sectors and programs.

Ox) Transportation: Global navigation satellite systems use satellites, networks of ground control stations, and receivers to calculate positions by triangulation. Global Navigation Satellite Systems, such as the American Global Positioning System and the Russian GLONASS, provide accurate positioning and navigation information, which is relied upon in aviation, maritime, rail and road transit.

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(x) Besides the above, satellite services are also used for satellite television, navigation and global positioning systems, weather monitoring, disaster management, and more. Satellite communications technology is often used during natural disasters and emergencies when land-based communication services fail due to natural calamities. Mobile satellite equipment can be deployed to disaster areas to provide emergency communication services.

18. One of the most important and distinctive aspects of satellite spectrum is that it is an international shared resource with no national territorial limits. The International Telecommunication Union (ITU) regulates the allocation of satellite spectrum. ITU is a United Nations institution having 194 signatory nations, including India. The member states act as global spectrum coordinators overseeing the allocation and utilization of satellite spectrum.

19. In India, satellite use, allocation, and placement are currently regulated and overseen by the Indian Space Research Organisation (ISRO), a constituent of the Department of Space, the Government of India. With the publication of the Indian Space Policy 2023, an entity by the name of Indian National Space Promotion and Authorization Centre (IN-SPACe) has been given the responsibility and authority to address these aspects of the developing ecosystem.

20. The Indian National Satellite (INSAT) system, is one of the largest domestic communication systems of ISRO, which are placed in the geo-stational orbit. INSAT system has over 200 transponders which are used for varied purposes including telecommunications, weather forecasting, television broadcasting, disaster management and rescue operations, and satellite news reception.

21. I have been made aware that globally, satellite spectrum is authorized for "right to use" by all administrations and is allocated only by administrative process, at charges that essentially cover the cost of administration. No State has auctioned

spectrum for satellites, thus far, given the nature of satellite spectrum with wider coverage and increase in its efficiency upon sharing.

22. Before proceeding further, for clarity, it is important to record the distinction between allocation of "Orbital Slots" and allocation of "Satellite Spectrum". I have been informed that Orbital slots are allocated by the ITU for a country. Thus, upon request sent by the Department of Telecom (through its wing, the Wireless Planning and Coordination, which is the National Radio Regulatory Authority responsible for Frequency Spectrum Management), to the ITU, the latter, after considering the existing and pending applications for allocations to different nations, allocates a particular orbital slot to India. Once allocated, India is permitted to either place a satellite itself (via ISRO), or to authorize a company, as per India's policy/regulatory/legal framework, to place a satellite in such orbital slot. The orbital slots are usually granted in contiguous ranges of 0.5 degrees. E.g., India could be allocated 70 degree North and France could get 69.5 degree North and Australia could be allocated 70.5 degree North.

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23. Once such orbital slot is allocated to India, the Indian Government can decide whether to place an ISRO satellite within such slot, or to permit a private entity to do so. The satellite, once placed in orbit, will need to use a particular spectrum to transmit data and communications. Such spectrum is then allocated by India. However, given that the beam of the satellite (after amplification) placed in an orbit is most effective when it is wide, there is every likelihood that potentially, the satellites placed by France and Australia, in the aforesaid example could be "using" the shared spectrum being used by the Indian satellite. Thus, the spectrum for satellites cannot be sliced as its efficiency and efficacy gets limited, thereby defeating the purpose of using the space for delivery of communications and data.

24. I have also been informed that whereas no State except Saudi Arabia has followed the process of auctions for spectrum allocation, however, some examples of States that have adopted auction in some instances and their experiences are summarized below:

(i) USA: Auction was adopted for orbital slot allotment. However, the same was discontinued. Later, USA enacted the Orbit Act, 2000 to statutorily prohibit auction of satellite spectrum for the provisions of international or global satellite communication services.

(ii) Brazil: Discontinued the auction of orbital slots and enacted statute in 2019 to administratively assign spectrum in (Art. 172 of Law No. 13789 of October 3, 2019).

(iii) Mexico: Auction of orbital slots failed and were discontinued from 2014.

(iv) Saudi Arabia: It appears to be the only country which has gone for spectrum auction. However, given that the auction is for terrestrial spectrum in the 2100 Mhz band, this is incomparable with satellite spectrum allocation.

25. From the aforesaid, it is evident that satellite bands, globally, have been allocated through a non-auction-based administrative procedure. Certain states in the USA opted for the auction of satellite orbital slots, though not for spectrum. However, given the problems intrinsically associated with the auction of the orbital resources along with the right to use spectrum, countries including USA, Mexico, and Brazil discontinued the auction of the orbital slots and later adopted mechanisms to administratively assign spectrum.

C. Terrestrial and Satellite spectrum

26. Satellite spectrum differs greatly from the terrestrial spectrum. Certain key distinguishing features brought to my attention include the following:


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(i) Coverage area of a satellite-based system is greater than that of a terrestrial-based wireless communication system. A Geo satellite with a single antenna can cover about 1/4$^{th}$ territorial coverage of the earth, unlike the terrestrial spectrum.

(ii) Satellite broadband increases accessibility and can be deployed to connect far-flung remote locations, which is incapable in case of terrestrial spectrum. Terrestrial spectrum is dependent on microwave frequency, which gets diminished due to buildings, trees, geographical locations, and hence, it offers only a limited connectivity in terms of ground distance on earth. In order to extend the range of terrestrial communication system, multi section relays or repeaters are used. On the contrary, satellite spectrum permits unhinged communication by using transponders. Satellite is the most versatile and reliable medium for connecting border areas where terrestrial technologies would find it difficult to reach.

(iii)Terrestrial spectrum enjoys certain unique rights such as the right to interconnection, the right to interference-free spectrum, the right to unique numbering resources and the right of way. These set of rights are not available to satellite spectrum.

(iv)ln a satellite link delay from earth to satellite to earth is about 240 milliseconds while in a terrestrial link, it is far lesser. However, unlike terrestrial link, transmission cost in a satellite system is independent of the distance within the area of coverage of the satellite antenna, while in a terrestrial system it varies based on the distance.

(v) The distinction between satellite and terrestrial spectrums can also be seen from the operators engaged in the respective spectrum segments. The current annual revenue of Indian mobile operators is about INR 2.5 lakh crores i.e. Rs.300000/-, whereas that of the Indian satellite V SAT operators is only around Rs. 500/- crores. Satellite services form a miniscule share as 1/500th or a mere 0.2% of the mobile operators' revenue. Furthermore, satellite spectrum space in India has several low-budget Indian start-ups and companies that deploy research & development tools/resources to increase efficient and cost-effective manufacturing of satellites in India. Indisputably, the terrestrial mobile industry has a far higher bidding/paying capacity — probably 500 times higher, for spectrum.

(vi)Satellite services are almost the only method available for reaching broadband connectivity to rural and remote regions as also as regions affected by disasters.

27. Given the wide-ranging difference between the satellite spectrum and the terrestrial spectrum, in my considered view, both cannot be equated as equals. In

India, so far, allotment of the terrestrial spectrum has been opened for private players, whereas satellite spectrum, to date, is largely regulated by ISRO, which has been allocating satellite spectrum to private players only through administrative allocation, based on applications received.

28. Any attempt to equate satellite spectrum with terrestrial mobile spectrum in the matter of spectrum allocation appears to be flawed and incorrect. Given the fact that both are different, in consonance with Article 14 of the Constitution of India, the allotment of satellite spectrum should be guided by its unique set of facts and applications. Satellite spectrum cannot be solely guided by the method recommended or adopted for terrestrial spectrum, while the latter can only be indicative.

D. Legal Position and Opinion

29. Having set out a brief historical background, along with global trends, usage of satellite spectrum, and its distinction from terrestrial spectrum, I shall now proceed to set out the legal position and my response to the queries as under:

30. Legality of the method of spectrum allocation has been the subject matter of judicial interventions, where constitutional courts have interpreted the scope of the government' s responsibility during allocation of natural resources for commercial or non-commercial purposes.

31. In Centre for Public Interest Litigation and Ors. v. Union of India and Ors. (Supra), the Hon'ble Supreme Court (Court) considered a batch of matters challenging the allocation of 2G spectrum by the DOT in 2010 (2G Case). The 2G Case was filed in the backdrop of allegations of arbitrary procedures implemented by DOT for the allocation of spectrum resources. Findings of the Court in the 2G Case, which are relevant for the present opinion are as under:

(i) State, as the legal owner of the natural resources and a trustee of the people, is empowered to distribute the state largesse of natural resources, including spectrum which is a scarce, finite, renewable natural resource, susceptible to degradation in case of inefficient utilization. Although spectrum does not belong to a particular nation, the right of use has been granted to States as per international norms.

(ii) The Court categorically held that the distribution process must be guided by the constitutional principles of justice, fairness, equality and the larger public good. While auctions or tenders are resilient methods for the fair disposal of public goods, they cannot be disposed of, without adherence to principles of fairness, transparency, accountability under Article 14 of

the Constitution. In support of this, Querist has also brought to my attention the following operable portions of the 2G Case:

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> "77 . As natural resources are public goods, the doctrine of equality, which emerges from the concepts ofjustice andfairness, must guide the State in determining the actual mechanism for distribution of natural resources. In this regard, the doctrine of equality has two aspects: first, it regulates the rights and obligations of the State vis-à-vis its people and demands that the people be granted equitable access to natural resources and/or its products and that they are adequately compensatedfor the transfer of the resource to the private domain; and second, it regulates the rights and obligations ofthe State vis-à-vis private parties seeking to acquire/use the resource and demands that the procedure adoptedfor distribution is just, non-arbitrary and transparent and that it does not discriminate between similarly placed private parties.

(iii) It is a settled legal position that the State and its agencies must always adopt a rational method for disposal of public property. In case of alienation of scarce natural resources like spectrum, State is duty bound to ensure that a non-discriminatory method is adopted for distribution and alienation which protects public interest. (2G Case (Supra), para. 76)

(iv) Given the arbitrary executive action in 2G spectrum allocation through first come first supply basis (FCFS), the Court held that a duly publicized auction conducted fairly and impartially would, 'perhaps', have been the best method for the distribution of 2G spectrum with maximized economic returns for India. The FCFS policy was fundamentally flawed, with inherent dangerous implications in its application. Therefore, the Court opined that auctioning the 2G spectrum was the most viable, reasonable, and transparent method for resource allocation. In support of this, I place reliance on the following extract of the 2G Case judgment:

> *"80 . ..* In our view, a duly publicised auction conductedfairly and impartially is perhaps the best method for discharging this burden and the methods likefirst-come-first-served when usedfor alienation of natural resources/ public property are likely to be misused by unscrupulous people who are only interested in garnering maximum financial benefit and have no respectfor the constitutional ethos and values.

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> In other words, while transferring or alienating the natural resources, the State is duty bound to adopt the method ofauction by giving wide publicity so that all eligible persons can participate in the process.,,

32. I have also perused the decision in the Presidential reference under Article 143(1) of the Constitution, where the Court was made to opine on the 2G Case to address

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certain questions of law of grave public importance (Reference). One of the key issues in the Reference was 'whether conducting an auction was the only permissible methodfor disposal of all natural resources across all sectors. ' The Court was also invited to opine on the applicability of the 2G Case pronouncement for disposal/ distribution of all natural resources, in addition to mobile terrestrial spectrum. In essence, the Court was asked to opine on whether auctions represent a constitutional mandate for distribution of natural resources in India, considering the precedent set by the judgment in the 2G Case.

33. In the Reference, the Court while commenting on the judgment in 2G Case, and constitutional precedents pertaining to resource allocation by the State, relied upon the usage of the term 'perhaps' in the 2G Case, to suggest that the recommendation of auction was never intended to be an absolute or blanket statement applicable across all natural resources. The preference for auction as a method of resource allocation in the 2G Case was merely a conclusion made at first blush over the attractiveness of a method like auction in the disposal of natural resources i.e., spectrum from September 2007 to March 2008. In this regard, I place reliance on the following extract from the Reference:

> "81 ... We are conscious that a judgment is not to be read as a statute, but at the same time, when it is argued with vehemence that the judgment lays down auction as a constitutional principle, the word "perhaps " gains significance. This suggests that the recommendation of auction for alienation of natural resources was never intended to be taken as an absolute or blanket statement applicable across all natural resources, but simply a conclusion made atfirst blush over the attractiveness of a method like auction in disposal of natural resources. The choice of the word 'perhaps ' suggests that the Court considered situations requiring a method other than auction as conceivable and desirable. Further, the final conclusions summarized in paragraph 102 of the iudgment (SCC) make no mention about auction being the only permissible and intra vires method for disposal ofnatural resources; the findings are limited to the case ofspectrum.,,

> "83. ... We find thathe 2G Case does not even considera lethora o laws and judgments
> that prescribe methods, other than auction, for dispensation ofnatural resources: something that it would have done, in case, it intended to make an assertion as wide as applying auction to all natural resources. Therefore, the observations in Paras 94 to 96 could not apply beyond the specific case ofspectrum, which according to the law declared in the 2G Case, is to be alienated only by auction and no other method.,,

34. I have summarized the legal principles from the Reference, which are relevant to the present opinion, as under:

(i) State actions, whether it relates to the distribution of natural resources or grant of contracts, must be tested against the touchstone of Article 14 of the Constitution, and may not be struck down for being arbitrary without consideration to the actual constitutional infirmities associated with such action.

(ii) Auction cannot be considered invariably a "constitutional mandate", as it would stand in complete contravention to the scheme of Article 14.

(iii) Allocation of natural resources to the highest bidder may not necessarily be the only way to subserve the common good and, at times, may run counter to the public good. "Distribution", as envisaged under Article 39(b) has broad contours, and cannot be limited to meaning only a singular method of resource disposal i.e., auction. The overarching and underlying principle governing distribution is the 'furtherance of common good.' As the allocation of resources is primarily intended towards serving public interest and the "common good", it cannot ipso facto be interpreted that auction represents the best method for allocation. (para. 119, Reference (Supra) For example, supply and distribution of cooking gas and other essential needs of the citizenry cannot be done by auction as some of these items are subsidized. In such cases, auction cannot be resorted to, given the objective of providing essential commodities to the poor.

(iv) Lastly, the potential for abuse in other resource allocation methods could not be the basis for considering auctions as a legal/ constitutional mandate, as there was an equal potential for abuse in an auction.

(v) Normally speaking, auction should be the commonly used method even for satellite spectrum akin to terrestrial spectrum, but the obstacle in the instant case is that satellite spectrum does not exclusively belong to the Government of India. It belongs, say, along with India, to the UK, Bangladesh, USA, China, etc. There is no room for exclusivity to any sovereign state for that matter. In such a situation, the normal option of sale of spectrum via auction is not possible or feasible. This has been recognized by the body of nations over the last so many years and it is, therefore, administratively assigned/allocated by Governments. It is because of this peculiar situation that auction is not the preferred option for allocation of satellite spectrum.

35. I am cognizant of the fact that the 2G Case, was solely examining the issue of allocation in respect of mobile/terrestrial spectrum without deliberating on the allocation of satellite spectrum. The Querist has brought to my attention that telecom / mobile license holders have access to 'back haul' networks, which were

not disturbed/cancelled. This is indicative of the fact that the sole consideration in the 2G matter was the method and the manner of the grant of licenses for the

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operation of mobile/cellular networks, which is distinct from the satellite spectrum.

36. In light of the above decisions, the issue of satellite spectrum allocation, in my considered opinion, be guided by the overarching principles of: (a) maximizing the greater good/ furtherance of the common good; and (b) adopting a fair, reasonable and transparent method of allocation which is in consonance with principles of Article 14 of the Constitution.

37. I am also cognizant of the social scenario and importance of spectrum as was during the earlier 2G Case and today current where the Court, in Anuradha Bhasin v Union of India, has ruled that expression through the internet and carrying on trade via the internet are an intrinsic part of the fundamental right of free speech under Article 19(1)(a) and freedom of trade and business under Article 19(1)(g). Any consideration of the greater common good has to necessarily, therefore, consider this exposition of the law.

38. Querist has brought to my notice the peculiarities of satellite spectrum, both from a technical and commercial standpoint. I have also set out some of the key distinguishing features between terrestrial spectrum and satellite spectrum in preceding paragraphs of this opinion.

39. Based on my reading of the legal exposition as set out above and the distinctive features of satellite spectrum, I am of the considered opinion that auctioning satellite spectrum may not be the most appropriate and efficient method of resource allocation. In light of the Court's decision of auction not being a mandatory process for resource allocation and that the principle underlying the distribution of natural resources should be in furtherance of the common good, administrative allocation of satellite spectrum is a more efficient form of allotment of spectrum. My view in support of administrative allocation of satellite spectrum is based on the following:

    (i) Querist has brought to my attention that satellite spectrum is a shared resource. Therefore, it cannot be auctioned which requires exclusive allocation to one bidder, unlike the terrestrial spectrum. The basic prerequisite of a resource that is to be auctioned, is that it should be available for sale as discrete, unique products. Satellite spectrum does not satisfy this elementary criterion.

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(ii) Querist has informed me that satellite spectrum has no national territorial limits. It is coordinated and managed by ITU. Consequently, satellite spectrum management is subject to the radio regulation of the ITU, and the various filing requirements which are necessary for orbital slots and satellite deployment. Unlike terrestrial spectrum, satellite spectrum is never exclusively assigned to the operator but coordinated internationally

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and shared among multiple operators for different orbital slots and all types of satellites. Thus, the terrestrial concept of exclusivity does not apply in the case of satellite spectrum.

(iii)While determining the most feasible method of spectrum allocation due consideration ought to be given to global practices. I have perused the TRAI Consultation Paper (Supra), as per which it appears that internationally, satellite spectrums have only been allocated through administrative routes. No nation allocates satellite spectrum through auction. In view of this overwhelming international precedent which supports the allocation of spectrum through a non-auction, administrative route, I am of the view that an administrative mechanism should be chosen for allocating satellite spectrum as opposed to auctioning it.

(iv)The Querist has also brought to my attention that in the conventional auction of terrestrial spectrum, to enable assignment by auctions, the capacity is sliced into various block sizes and each block is assigned individually to winners for exclusive use. However, auctioning satellite spectrum by dividing it into smaller block sizes would result in inefficient spectrum usage. Auction of satellite spectrum by slicing into blocks would result in a highly inefficient frequency reuse capability, which would restrict the use of the spectrum only to a few operators and significantly reduces its value. Moreover, the sharing of frequencies between operators is what results in large capacities being available over a given geography. If spectrum were to be auctioned by dividing it into portions, the fragmentation would adversely affect the efficiency of the spectrum. Furthermore, carving out a chunk of the spectrum, which ought to be shared for optimum utilisation, would require a complicated set of rules for the coordinated operation of different satellites using the same spectrum band, thereby further causing issues in efficient spectrum management.

(v) The Querist has also apprised me that satellite services are almost the only method available for reaching broadband connectivity to the rural and remote regions as also to regions affected by disaster. Satellite services are truly akin to social welfare services and need to be nurtured, protected and fostered in the public interest. Auctioning satellite spectrum would escalate spectrum prices, and thereby increase the cost of service. This will be against the public interest and severely impact socio-economic welfare. Further, if spectrum bands for the satellite to deliver satellite broadband were to be auctioned to service providers, who may use it for either terrestrial purposes or any other application, the State's objective 'digital India' by connecting rural areas, far flung islands and border areas of the country through satellite broadband for inclusive development would be

jeopardized.

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- 91-1 1-43546834 (vi)Furthermore, satellite spectrum auctions could create gatekeepers with deep pockets who could effectively use the allocated satellite spectrum to block new entrants and fair competition. Such gatekeepers could block the entry, both of additional terrestrial or satellite operators, and create a serious anti-competitive effect, going against the spirit of fair market competition, stifling start-ups and development. This would adversely impact the Government's vision of developing a robust space economy in India as it would only benefit the bigger market players who can participate in the auction bidding process. Several start-ups, incubating organisations, and smaller organisations working on satellite innovation will not have the economic and financial capacities to participate in the auction process where bid prices may be extremely high, thereby creating barriers to market entry.

(vii) Querist has also brought to my attention the multiple users of the satellite spectrum i.e., DTI-I, broadcasters, V SAT, broadcasters and teleport. Besides satellite communication, DTI-I and broadcasting are powerful tools to cater to the public good. However, penetration of DTI-I and broadcasting services may be adversely affected in the case of a satellite spectrum auction.

40. In view of the above, in conclusion, I summarise my response to the queries in paragraph 2 of the present opinion as under:

(i) Whether the law requires that the only way to allocate satellite spectrum is auction? No

(ii) Whether allocation of satellite spectrum for space-based communication services through a non-auction, administrative route, be permissible in law? Yes

Any other comments? N

I have nothing further to add.

(IVKul Rohatgi)

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