

Q No	Question			Comments
23	<p>What quantum of spectrum in E-band (71-76 / 81-86 GHz) and V- band (57-64 GHz) is required to meet the demand of TSPs with Access Service License/ Authorization? Whether spectrum in E-band and V- band is also required by the TSPs other than Access Service License/ Authorizations, and other entities (non-TSP, for non-commercial/ captive/ isolated use)? Information on present demand and likely demand after five years may kindly be provided as per the proforma given below:</p>			<p>we are supportive in making the 57-64 GHz and if possible the 64-71 GHz frequency range available under a licence-exempt regulatory regime without the application of light-licensing.</p> <p>We do not support band fragmentation through different licensing mechanisms of the Mobile service, therefore for 57-71 GHz, we believe that a licence-exempt approach is appropriate. New services and applications require larger bandwidths to support the consumer demand for data-intensive applications. In addition, the splitting of frequency bands increases the costs and thus causes delay in manufacturing and bringing new devices to market because of regulatory uncertainty.</p> <p>While we note that the WRC-19 amended the Radio Regulations to include an IMT identification in the 66-71 GHz frequency range, it is clearly stated that "This identification does not preclude the use of this frequency band by any application of the services to which it is allocated and does not establish priority in the Radio Regulations". It is important to avoid fragmenting 57-71 GHz. This would effectively create a hard-border splitting the 57-71 GHz with IEEE technologies in 57-66 GHz and 3GPP technologies in 66-71 GHz. The footnote in the Radio Regulations for 66-71 GHz addresses this point nicely.</p> <p>That said, we support licence-exempt use in the 57-64 GHz since it provides greater market certainty, because it avoids the IMT identified bands in 66-71 GHz and provides a valuable guard band.</p>
(i) Present demand				
		Quantum of spectrum required (per entity per LSA)		
	Band	TSPs with Access Service License/ Authorization	Other entities ((non-TSP, for non-commercial/ captive/ isolated use)	
	E-band (71-76/81-86 GHz)			
	V-band (57-64 GHz)			The full 7 GHz (57-64 GHz) range should be designated for technology neutral, licence-exempt shared use. Present applications in other countries include high data rate short range communications and high-resolution field disturbance sensors. Other typical uses include telemetry, telecommand, alarms, data transmissions in general and other applications.
(ii) Likely demand after five years				
		Quantum of spectrum required (per entity per LSA)		
	Band	TSPs with Access Service License/ Authorization	Other entities ((non-TSP, for non-commercial/ captive/ isolated use)	
	E-band (71-76/81-86 GHz)			
	V-band (57-64 GHz)			We believe that demand will increase and further expansion of communications and sensing applications are projected in this entire band of 7 GHz (57 - 64 GHz) under a licence-exempt regulatory regime.
24	Whether spectrum in E-band and V-band should be assigned			
	Band	TSPs with Access Service License/ Authorization	Other entities ((non-TSP, for non-commercial/ captive/ isolated use)	
	E-band (71-76/81-86 GHz)			
	V-band (57-64 GHz)			We are supportive in making the 57-64 GHz and if possible the 64-71 GHz frequency range available under a licence-exempt regulatory regime without the application of light-licensing.
25	Do you agree that the issues relating to the assignment of E-band and V-band for space-based communication services and			Utilization of the V-band under a license-exempt regime with the applications and power levels authorized in other countries do not present an interference or coexistence risk to space-based services.
26	Whether it will be appropriate to continue with the Frequency			
27	Whether Frequency Division Duplexing (FDD) or Time Division Duplexing (TDD) based configuration should be adopted for V-band carriers? In case you are of the opinion that FDD based			We would recommend in not imposing restrictions to choose between FDD or TDD for the V band as it will restrict applications. We would recommend that for licence-exempt use in the V-band; a technology neutral approach may be adopted with FDD or TDD operations dictated by the specific applications.

28	What should be the carrier size for assignment of spectrum in E-band (71-76/81-86 GHz) and V-band (57-64 GHz)? Whether there is a need to prescribe a different carrier size based on	(iii) We would recommend that carrier sizes in the V-band should be dictated by the applications utilized under a license-exempt regime on a technology neutral basis and do not need to be mandated in regulation. The entire V-band should be available for all user categories.								
29	Whether there is a need to assign spectrum in E-band and V-band in such a way that if a TSP acquires more than one carrier, all the assigned carriers to a TSP are contiguous? Kindly justify your response.	We are supportive in making the 57-64 GHz and if possible the 64-71 GHz frequency range available under a licence-exempt regulatory regime without the application of light-licensing.								
30	Since E-band carriers will be reassigned as per the assignment									
31	Whether there is a need to prescribe the maximum number of carriers that can be held by a TSP in E-band and V-band? Kindly justify your response.	We are supportive in making the 57-64 GHz and if possible the 64-71 GHz frequency range available under a licence-exempt regulatory regime without the application of light-licensing.								
32	In case it is decided to prescribe a ceiling on the number of									
a	Whether different ceilings based on the service area category									
b	Considering a carrier of 250 MHz (paired) spectrum for E-band, and 50 MHz (unpaired) spectrum for V-band, what TSPs with access service License/ authorization holding IMT TSPs with access service License/ authorization not TSPs with other than Access Service License/ Authorization?	We are supportive in making the 57-64 GHz and if possible the 64-71 GHz frequency range available under a licence-exempt regulatory regime without the application of light-licensing.								
c	Any other relevant suggestion may be made with justification.									
33	Which methodology should be used for assignment of									
	<table border="1"> <thead> <tr> <th>User category</th> <th>Justification</th> </tr> </thead> <tbody> <tr> <td>(i) TSPs Service with Access License/</td> <td></td> </tr> <tr> <td>(ii) TSPs with other than Service with Access</td> <td></td> </tr> <tr> <td>(iii) Other entities (non- TSP, for non-commercial/ captive/ isolated use)</td> <td>For V-band please see our answer to Q23 where we state our preference for a licence-exempt approach to this band.</td> </tr> </tbody> </table>	User category	Justification	(i) TSPs Service with Access License/		(ii) TSPs with other than Service with Access		(iii) Other entities (non- TSP, for non-commercial/ captive/ isolated use)	For V-band please see our answer to Q23 where we state our preference for a licence-exempt approach to this band.	
User category	Justification									
(i) TSPs Service with Access License/										
(ii) TSPs with other than Service with Access										
(iii) Other entities (non- TSP, for non-commercial/ captive/ isolated use)	For V-band please see our answer to Q23 where we state our preference for a licence-exempt approach to this band.									
34	In case you are of the opinion that certain user categories should be assigned spectrum in E-band and V-band for P2P	For V-band please see our answer to Q23 where we state our preference for a licence-exempt approach to this band.								
35	In case it is decided to assign spectrum in E & V bands to the TSPs with Access Service License/ Authorization through	For V-band please see our answer to Q23 where we state our preference for a licence-exempt approach to this band.								
36	In case it is decided to assign spectrum in E & V bands to all the TSPs through auction, should such TSPs be permitted to	For V-band please see our answer to Q23 where we state our preference for a licence-exempt approach to this band.								
37	In case it is decided to assign spectrum in E-band(71-76/81-86GHz) and V-band (57-64 GHz) on an exclusive basis, should	The full V-band on a licence-exempt basis should be made available for all users and geographic areas.								
38	What should be the scope of services/usages for spectrum in E-band (71-76/ 81-86 GHz) and V-band (57-64 GHz) assigned through auction or any other assignment methodology? Kindly justify your response.	For V-band please see our answer to Q23 where we state our preference for a licence-exempt approach to this band. We also believe that under a license-exempt regulatory framework; the scope of services/usages should be left to the discretion of the operator / user. The full V-band on a license- exempt basis should be available for all users.								
41	In case it is decided to assign spectrum in E-band and V-band through any methodology other than auction, what should be the validity period, process for augmentation/ surrender of carriers, and other terms and conditions? Suggestions may be	For V-band please see our answer to Q23 where we state our preference for a licence-exempt approach to this band. We also believe that under a license-exempt regulatory framework, the duration of spectrum access needs to be sufficient to ensure market certainty. This should be at the minimum be 10 years .								
42	What should be the eligibility conditions and associated conditions for assignment of spectrum in E-band (71-76/81-86 GHz) and V-band (57-64 GHz)? Response may be given for	For V-band please see our response to Q23 where we state our preference for a licence-exempt approach to this band. All users-OEMs, Start-ups should have access to the de-licensed band to bring innovative technologies and solutions to the market.								
43	Whether there is a need to prescribe any roll out obligations for spectrum in E-band and V-band? Should the roll out	For V-band please see our response to Q23 where we state our preference for a licence-exempt approach to this band. In a licence-exempt, the case of rollout obligations do not arise.								
44	In case it is decided to prescribe roll out conditions, what should be the roll-out obligations associated with the	For V-band please see our response to Q23 where we state our preference for a licence-exempt approach to this band. In a licence-exempt, the case of rollout obligations do not arise.								

45	Whether it is feasible to allow low powered indoor consumer device- to-consumer device usages on license-exempt basis in V-band (57-64 GHz), in parallel to use of the auction acquired spectrum by telecom service providers for establishment of terrestrial and/ or satellite- based telecom networks? If yes, whether it should be permitted? Kindly justify your response.	<p>We are supportive in making the 57-64 GHz and if possible the 64-71 GHz frequency range available under a licence-exempt regulatory regime without the application of light-licensing. We do not believe that other licensed services should have access to 57-64 GHz but if there is a desire to licence then this should be in the 64-71 GHz band.</p> <p>V-band is already allowed on license-exempt basis world wide except for a few countries. If V-band continues to be restricted and licensed, innovative new technologies and products would be unable to see the light of the day and consumers in the Indian market would be deprived of the latest and innovative solutions. Additionally, the de-licensed band would make possible to replace wired cables with new technologies. Some examples are cited:</p> <p>a) Contactless ports: USB3, Ethernet, DisplayPort https://www.molex.com/en-us/products/contactless-connectivity</p> <p>b) Radar/motion sensing: Google Soli, and in-vehicle children sensors, c) home security d) health care https://blog.research.google/2020/03/soli-radar-based-perception-and.html https://www.fcc.gov/document/fcc-permits-hot-car-sensors-save-children https://www.federalregister.gov/documents/2023/07/24/2023-15367/fcc-empowers-short-range-radars-in-the-60-ghz-band""</p>
46	In case it is decided to allow low powered indoor consumer	
	(a) Whether it should be permitted in entire band or part of the band? Kindly provide detailed response including the frequency carriers, which should be considered for license exemption with justification.	<p>We are supportive in making the 57-64 GHz and if possible the 64-71 GHz frequency range available under a licence-exempt regulatory regime without the application of light-licensing. Full 7 GHz band is required to support contactless ports, device to device data transfer, and motion sensing.</p> <p><i>Contactless ports</i> The full band is required to support the very high data rates of USB3 and USB4.</p> <p><i>Device to device data transfer</i> The full band is required to achieve very high data rates to transfer large volumes of data quickly</p> <p><i>Motion sensing</i> Range resolution is proportional to the spectrum bandwidth, the full band is required to achieve precise sensing.</p>
	(b) Whether there is a need to define such indoor use? If yes, what should be the definition for such indoor use?	<p>We believe that there is no need to define "indoor-use" for licence-exempt deployments in the V-band. Indoor use restriction would greatly limit the types of innovative devices allowed on the market and restrict growth.</p>
	(c) What technical parameters should be prescribed including EIRP limits? Suggestions may kindly be made with supporting justification and international scenario.	<p>57-64GHz - ECC Recommendation 70-03, Annex 1: n1. ETSI EN 305 550 , 20 dBm avg EIRP and 13 dBm/MHz EIRP PSD and 57-71GHz - ECC Recommendation 70-03 Annex 3: c1</p>
47	Any other suggestions relevant to assignment of spectrum in E-band (71-76/81-86 GHz) and V-band (57-64 GHz) may kindly be made with detailed justification.	<p>DoT has through its reference letter to TRAI L-14035/10/2022-BWA has acknowledged that the device/chip ecosystem for supporting various technologies for data transfer between consumer devices in the V band has developed and license exempt basis would serve greater public interest and realizing significant socio-economic gains.</p>
48	In case it is decided for assignment of spectrum on	
	a) TSPs with Access Service License/ Authorization	
	b) TSPs with other than Access Service License/ Authorization	
	c) Other entities (non-TSP, for non-commercial/ captive/ isolated use	<p>For V-band please see our response to Q23 where we state our preference for a licence-exempt approach to this band.</p>