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Ministry of Transport and Communications  
Directorate of Telecommunications

## **RE: Spectrum Roadmap (2020): Facilitate the Sustainable Growth of Industry - consultation draft**

### **Introduction**

Facebook, Inc. (“Facebook”) is grateful for the opportunity to submit comments into the Posts and Telecommunications Department (PTD) of Myanmar consultation to revise Myanmar’s Spectrum Roadmap which was initially released in 2016. We commend the PTD on its progress in releasing spectrum for emerging technologies like 5G as well as in exploring how to release more licensed and unlicensed spectrum for next generation networks.

Connectivity is at the heart of Facebook’s mission is to give people the power to build community and bring the world closer together. And connecting people is a critical first step in executing this mission. Today, nearly half the world’s population is still not connected to the Internet.<sup>1</sup> Among those that have connectivity, many are under-connected. It will take a mix of technical solutions to bring connectivity to all, but access to spectrum is an essential element to connectivity across technologies.

One key factor in expanding high-speed broadband connectivity affordably is ensuring sufficient license-exempt or “class-licensed” spectrum is available. This is also essential to the growth of 5G, which depends on license-exempt spectrum for offload. To this end, we agree that ensuring internationally harmonised release of spectrum, including license-exempt spectrum, will ensure that “Myanmar consumers are able to acquire affordable smartphones and other devices”<sup>2</sup> and allow industry to make the necessary investments into Myanmar’s digital future.

As Myanmar looks to be on par with the rest of the world in terms of enabling 5G and advanced broadband networks, the ever-increasing demand for spectrum will put increasing pressure on limited spectrum resources. As such, Facebook respectfully makes the following two recommendations for the PTD’s 2021 spectrum work program. First, we

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<sup>1</sup> International Telecommunication Union, Measuring the Information Society Report 2018- Volume 1 at 2 (11 Dec. 2018) at <https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2018/MISR-2018-Vol-1-E.pdf>.

<sup>2</sup> Myanmar Consultation

respectfully recommend that PTD initiate a proceeding to make the 6 GHz band (5925-7125 MHz) available on a license-exempt basis to support next generation Wi-Fi (Wi-Fi 6E). Second, we recommend that the PTD make the 60 GHz band (57-71 GHz) available for license-exempt use to enable the WiGig technology standard to promote fixed wireless access in homes, business, and public institutions.

**1. More mid-band spectrum for license-exempt technologies like Wi-Fi is needed to complement 5G and next generation broadband as well as support innovation in new applications like Augmented Reality/Virtual Reality (AR/VR).**

As noted in the Joint Comments filed by a group of companies, including Facebook, before the PTD,<sup>3</sup> Facebook supports the release of the full 6 GHz band (5925-7125 MHz) for license-exempt use. Next generation Wi-Fi in the 6 GHz band (Wi-Fi 6E), in particular, will be an important part of the 5G ecosystem and will be critical for popular 5G use cases such as high definition (HD) video streaming, Wi-Fi calling, smart home devices, hotspot access, automation of city-wide services, augmented reality and virtual reality (AR/VR) applications, health monitoring devices, wearables, and seamless roaming. 5G and Wi-Fi 6e together will deliver dramatically better performance to consumers, remote workers, and organizations.

The 6 GHz band is uniquely suited to support future growth of Wi-Fi due to both its propagation characteristics and its proximity to existing Wi-Fi deployments in the 5 GHz band. Critically, the full 6 GHz band offers contiguous spectrum blocks to accommodate seven 160 MHz channels, which are required for high-bandwidth applications, such as high definition video streaming and lower latency applications like AR/VR.

Opening up the full 6 GHz band for license-exempt use will have tremendous benefits for the economy and connectivity in Myanmar. As Myanmar looks to harmonise its 5G spectrum release timelines with the rest of the World, it should also take note of the global progress in making the 6 GHz band license exempt and PTD should follow suit. There is global momentum to make this band available for license exempt use by Wi-Fi and 5G NRU (new radio unlicensed, unlicensed 5G applications). Chile, South Korea, the US, UK and the Electronic Communications Committee of Europe have decided to allow license-exempt use of the 6 GHz frequency range for Wi-Fi6e and 5G.<sup>4</sup> In Asia, administrations in Australia, Taiwan and Japan had released public consultations this year to assess the 6GHz and potentially making it available as license-exempt bands.<sup>5</sup>

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<sup>3</sup> See Joint Comments of Broadcom Inc., Cisco Systems, Inc., Facebook, Inc., Intel Corporation, and Qualcomm Incorporated.

<sup>4</sup> Republica de Chile, Ministerio de Transportes y Telecomunicaciones, Subsecretaría de Telecomunicaciones Modifica Resolución N° 1.985 Extenta, de 2017, de la Subsecretaria DE Telecomunicaciones (6 October 2020); Ministry of Science and ICT, supplies 6 GHz band as a broadband unlicensed frequency October 16, 2020

(<https://www.msit.go.kr/web/msipContents/contentsView.do?cateId=policycom2&artId=3140715>); [https://ecfsapi.fcc.gov/file/0424167164769/FCC-20-51A1\\_Rcd.pdf](https://ecfsapi.fcc.gov/file/0424167164769/FCC-20-51A1_Rcd.pdf); Ement: Improving Spectrum access for wifi—spectrum use in the 5 and 6 GHz bands (24 July 2020) available at [https://www.ofcom.org.uk/data/assets/pdf\\_file/0036/198927/6ghz-statement.pdf](https://www.ofcom.org.uk/data/assets/pdf_file/0036/198927/6ghz-statement.pdf) (“Ofcom 6 GHz Statement”); The Electronic Communication Committee approved the ECC Decision 20(01) and the CEPT Report 75 during its plenary meeting 16-20<sup>th</sup> November 2020. Available at: [https://docdb.cept.org/download/50365191-a99d/ECC%20Decision%20\(20\)01.pdf](https://docdb.cept.org/download/50365191-a99d/ECC%20Decision%20(20)01.pdf) and <https://docdb.cept.org/download/aefb853d-8780/CEPT%20Report%2075.pdf>.

<sup>5</sup> Australia Communications and Media Authority, Draft Five-year spectrum outlook 2020–24 - consultation 09/2020 at <https://www.acma.gov.au/consultations/2020-04/draft-five-year-spectrum-outlook-2020-24-consultation-092020> Ministry of Transport and Communications Taiwan, Consultation Paper on Plan to Use 5925-7125 MHz as the Harmonized Band, available at [https://www.motc.gov.tw/ch/home.jsp?id=15&parentpath=0,2&mcustomize=multimessages\\_view.jsp&dataserno=202006180001&aplistdn=ou=data,ou=bulletin,ou=chinese,ou=ap\\_root,o=motc,c=tw&toolsflag=Y&imgfolder=img%2Fstand](https://www.motc.gov.tw/ch/home.jsp?id=15&parentpath=0,2&mcustomize=multimessages_view.jsp&dataserno=202006180001&aplistdn=ou=data,ou=bulletin,ou=chinese,ou=ap_root,o=motc,c=tw&toolsflag=Y&imgfolder=img%2Fstand).

## **2. Opening the full 60 GHz band (57-71 GHz) and making it available for license-exempt use will open new opportunities for innovative services and affordable high-speed broadband in Myanmar**

### **a. 60 GHz band use cases**

The 60 GHz band creates new opportunities for innovative services because of its unique characteristics that combine wide bandwidth channels and small wavelength:

- Wide bandwidth enables communications services with high throughput, high capacity and low latency. It also enables a fine time resolution for radar applications.
- Small wavelength enables implementation on a small footprint of antenna arrays capable of creating narrow beams.

There are two main families of emerging applications that are leveraging the unique characteristics of the 60 GHz band:

- Communication applications with multi-gigabit throughput and low latency. These applications in the 60 GHz band include Radio Local Area Networks and Personal Area Networks (e.g. WiGig) and Fixed Wireless Access/Fixed Backhauling (e.g. Terragraph). Terragraph is a technology that operates on the 60 GHz band delivering fiber-like speeds for Fixed Wireless Access and Fixed Backhauling. In markets where fiber access to consumers is very expensive, difficult and slow to deploy due to factors such as permitting and trenching, Terragraph can be a better alternative to provide fiber-like connectivity at a significantly lower cost. It is also quick and relatively easy to rollout, with deployments to market occurring in a matter of weeks.
- Sensing and radar applications with fine time and spatial resolution.

60 GHz technologies are also critical to Augmented Reality (AR) and Virtual Reality (VR) applications. The best wireless, immersive user experience requires low latency and multi-gigabit speed to support massive data exchange and high-resolution content, and 60 GHz band technologies are well-suited to this purpose. VR has enormous potential to transform how we play, work, learn, communicate, and experience the world around us. It is already

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Ministry of Internal Affairs and Communications, Japan, Frequency Reorganization Plan at [https://www.soumu.go.jp/menu\\_news/s-news/01kiban09\\_02000376.html](https://www.soumu.go.jp/menu_news/s-news/01kiban09_02000376.html)

positively impacting the way companies do business and changing the face of education and professional training in healthcare and beyond. While modern-day VR headsets fully immerse people in 3D virtual environments, augmented reality takes computer-generated images and overlays them on your view of the world.

**b. The license-exempt status of the 60 GHz band (57-71 GHz) is attracting investment in a range of WiGig-based technologies.**

The license-exempt status of the 60 GHz band in many countries has attracted considerable investment leading to innovation, development, and deployment of advanced services and applications ranging from outdoor wireless links that extend the reach of fiber networks to personal networking technologies based on the WiGig standards IEEE 802.11ad and 802.11ay that deliver multi-gigabit speeds between devices. The 60 GHz band is already widely available globally.<sup>6</sup> In Asia, administrations in Australia, Japan, Malaysia, and New Zealand have adopted license exempt 60 GHz band frameworks allowing outdoor license-exempt use of the band for multi gigabit wireless systems.<sup>7</sup> IEEE 802.11ad enables data rates up to 8Gbps on 2.16 GHz channels. IEEE 802.11ay extends the 11ad capabilities to 200 Gbps on channels up to 8.64 GHz. The Wi-Fi Alliance has an ongoing WiGig certification programme and is working on the certification of 60 GHz Fixed Wireless products. 3GPP with broad industry participation are also moving forward with development for 5G NR for 60 GHz unlicensed.<sup>8</sup>

For example, since 2016 when Facebook announced its Terragraph solution, a low-cost high-throughput (multi-gigabit) multi-node mesh wireless network that operates in the 57-71 GHz band, deployments of this technology have been announced in several locations globally.<sup>9</sup> Terragraph is designed to meet the growing demand for reliable, high-speed internet access in urban and suburban environments.<sup>10</sup>

The mobile backhaul use case of 60 GHz solutions is also of great interest to mobile network operators who are keen to leverage these solutions for capacity augmentation and cell densification.

**c. Although the upper part of the 60 GHz band has been identified for IMT, this designation does not preclude license-exempt WiGig use cases.**

Although at WRC-19, the upper part of the 60 GHz band (66-71 GHz) was designated for IMT-2020, Footnote 5.559AA makes clear that the IMT designation does not preclude making the band license-exempt for WiGig use cases. It states, “This identification does not preclude the use of this frequency band by any application of the services to which this

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<sup>6</sup>[http://www.etsi.org/images/files/ETSIWhitePapers/etsi\\_wp9\\_e\\_band\\_and\\_v\\_band\\_survey\\_database.zip](http://www.etsi.org/images/files/ETSIWhitePapers/etsi_wp9_e_band_and_v_band_survey_database.zip)

<sup>7</sup> The Key to Affordable Broadband in India, Broadband India Forum (2018) at <https://www.broadbandindiaforum.com/files/reports-and-publications/WHITE%20PAPER%20ON%20V%20BAND%20-%20FINAL.pdf> A

<sup>8</sup> See, Qualcomm Technologies, Inc., What can we do with 5G NR Spectrum Sharing that isn't possible today? (Dec. 13 2017) at <https://www.qualcomm.com/media/documents/files/new-3gpp-effort-on-nr-in-unlicensed-spectrum-expands-5g-to-new-areas.pdf>.

<sup>9</sup> <https://www.ignitenet.com/news/general/>

<sup>10</sup> Terragraph: Solving the Urban Bandwidth Challenge (2018) at <https://terragraph.com/#terragraph>.

frequency band is allocated and does not establish priority in the Radio Regulations. Resolution 241 (WRC-19) applies.”<sup>11</sup> Therefore, the PTD may pursue opening the band for license-exempt use.

#### **d. Coexistence studies and the proposed regulatory framework**

Facebook suggests that the PTD align its technical parameters for the extended band with the parameters of the United States Federal Communications Commission Part 15 rules.<sup>12[1]</sup> Under the U.S. framework, there are general power level limits, as well as higher power level limits for fixed point-to-point outdoor use. The U.S. rules do not mandate a specific coexistence mechanism.

Alternatively, the PTD could align with the framework established in the European Union. The European Conference of Postal and Telecommunications Administrations (CEPT) studied the coexistence between the Fixed service, Fixed Wireless Access and Short Range Devices in ECC Report 288. CEPT issued a recommendation to allow fixed wireless access (FWA) (outdoor usage) in the 60 GHz band and further recommended that this framework be applied across the whole 57 – 71 GHz band.<sup>13</sup> CEPT’s recommendation was adopted by the European Commission in August 2019 as a mandatory measure for EU member states.<sup>14</sup>

##### One regulatory framework, several product categories.

The ECC Report 288 did also underline that different mitigation techniques are more or less effective for the different use cases (RLAN, FWA, Fixed Service). As a result, the updated Short Range Device regulatory framework for the 57-71 GHz band<sup>15</sup> covers three different categories of devices with associated interference mitigation mechanisms. Though the three categories correspond to different use cases, they can all coexist with each other - and with other services in the band - even though they are all assumed to be deployed on a licence-exempt basis.

##### Detailed EU SRD regulatory framework update.

The EU SRD regulatory framework update includes adding two new usage opportunities for wideband data transmission devices in 57-71 GHz with maximum 40 dBm EIRP for unrestricted outdoor usage and 55 dBm EIRP for fixed outdoor applications. See Table 1 below, which shows the technical parameters in the EU decision.

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<sup>11</sup>World Radiocommunications Conference 2019 (WRC-19) Final Acts at [https://www.itu.int/dms\\_pub/itu-r/opb/act/R-ACT-WRC.14-2019-PDF-E.pdf](https://www.itu.int/dms_pub/itu-r/opb/act/R-ACT-WRC.14-2019-PDF-E.pdf)

<sup>12</sup> See 47 C.F.R. § 15.255.

<sup>13</sup> See ERC Recommendation 70-03, Annex 3 <https://www.ecodocdb.dk/download/25c41779-cd6e/Rec7003e.pdf>

<sup>14</sup> See Commission Implementing Decision (EU) 2019/1345 of 2 August 2019 amending Decision 2006/771/EC updating harmonised technical conditions in the area of radio spectrum use for short-range devices (notified under document C(2019) 5660) (Text with EEA relevance.) C/2019/5660 adopted on 2 August 2019 <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1567676305871&uri=CELEX:32019D1345>

<sup>15</sup> Commission Implementing Decision (EU) 2019/1345 <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1567676305871&uri=CELEX:32019D1345>

*Table 1 Commission Implementing Decision (EU) 2019/1345*

Band no	Frequency band	Category of short-range devices	Transmit power limit/field strength limit/power density limit	Additional parameters (channelling and/or channel access and occupation rules)	Other usage restrictions	Implementation deadline
75	57-71 GHz	Wideband data transmission devices	40 dBm e.i.r.p. and 23 dBm/MHz e.i.r.p. density	Requirements on techniques to access spectrum and mitigate interference apply [7].	Fixed outdoor installations are excluded.	1 January 2020
75a	57-71 GHz	Wideband data transmission devices	40 dBm e.i.r.p., 23 dBm/MHz e.i.r.p. density and maximum transmit power of 27 dBm at the antenna port or ports	Requirements on techniques to access spectrum and mitigate interference apply [7].		1 January 2020
75b	57-71 GHz	Wideband data transmission devices	55 dBm e.i.r.p., 38 dBm/MHz e.i.r.p. density and a transmit antenna gain $\geq$ 30 dBi	Requirements on techniques to access spectrum and mitigate interference apply [7].	This set of usage conditions is only available to fixed outdoor installations.	1 January 2020

The three SRD categories for 57-71 GHz can be understood as follows:

- Category 75 enables RLAN and PAN applications such as AR/VR,
- Category 75a enables FWA and Fixed Backhauling with panel antennas,
- Category 75b enables FWA and Fixed Backhauling with directional antennas with gain  $>30$  dBi.

All 3 categories can operate under a licence exempt regime without interference to each other or to Fixed Service applications operating in the band (See ECC Report 288).

#### Harmonised standards

ETSI is revising and drafting harmonised standards to guarantee product compliance with the EU regulatory framework. In particular:

- ETSI EN 302 567 defines requirements for Multiple-Gigabit/s radio equipment operating in the 60GHz band (i.e. RLAN and PAN products, Category 75),
- Draft ETSI EN 303 722 defines requirements for Wideband Data Transmission Systems (WDTS) (i.e. fixed networks, categories 75 a and 75b),
- Draft EN 303 753 defines requirements for Wideband Data Transmission Systems (WDTS) for Mobile and Fixed radio equipment (i.e. FWA products, Category 75a).

#### **e. Recommendation**

For Myanmar to address “continuing challenges in the deployment of fixed network infrastructure” and to help the government expediently achieve its digital economy goals through improved connectivity, we encourage PTD to include the delicensing of the 60GHz band into its 2021 work program avoiding any mandates on channelization. Facebook encourages the PTD to align its framework with those in Australia, US or the EU.

### **3. Conclusion**

In sum, Facebook appreciates this opportunity to comment on the PTD's Spectrum Roadmap. We respectfully recommend that PTD initiate a proceeding to make the 6 GHz band and the 60 GHz band available for license-exempt use to expand and enhance affordable connectivity in Myanmar.

Respectfully submitted:

BY:

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