

MMWAVE SPECTRUM RIGHT (2020)

**GRANTED BY THE INFO-COMMUNICATIONS
MEDIA DEVELOPMENT AUTHORITY
UNDER REGULATION 6 OF THE TELECOMMUNICATIONS (RADIO-
COMMUNICATION) REGULATIONS
TO
TPG TELECOM PTE LTD
ON 2 NOVEMBER 2020**

ISSUED ON 2 NOVEMBER 2020

PART I: THE MMWAVE SPECTRUM RIGHT (2020)

1. Grant of mmWave Spectrum Right (2020)

- 1.1 The Info-communications Media Development Authority (hereinafter referred to as “IMDA”), in exercise of the powers conferred on it pursuant to Regulation 6 of the Telecommunications (Radio-communication) Regulations and the Telecommunications Act (Cap. 323) (hereinafter referred to as “the Act”) hereby grants to TPG Telecom Pte Ltd (hereinafter referred to as “the Grantee”), subject to the conditions herein, the right to use the radio frequency spectrum which has been allocated to the Grantee by IMDA in the 5G Spectrum Allocation Exercise dated 17 October 2019 and which is more particularly described in Schedule A (hereinafter referred to as “the Assigned Radio Frequency Spectrum”) for the purposes of operating public cellular mobile telecommunication systems (hereinafter referred to as “the Systems”) for the provision of fifth-generation (hereinafter referred to as “5G”) telecommunication services, and other telecommunication services (if approved by IMDA), as specified in the Facilities-Based Operations Licence (hereinafter referred to as the “FBO Licence”) dated 1 April 2017 and amended on 2 November 2020 granted by IMDA to the Grantee pursuant to Section 5 of the Act (hereinafter referred to as the “mmWave Spectrum Right (2020)”).
- 1.2 The Grantee acknowledges that this mmWave Spectrum Right (2020) was granted to the Grantee on the basis of allocation specified in the procedures and conditions of participation issued by the IMDA pursuant to Regulation 7 of the Telecommunications (Radio-communication) Regulations, and as amended or varied by IMDA from time to time (hereinafter referred to as the “CFP Documents”). The Grantee hereby represents and warrants that it has complied with the CFP Documents and has not been involved in any act or omission of any act, constituting a breach of the CFP Documents, and has met and satisfied all requirements as IMDA may determine pursuant to Regulation 8 of the Telecommunications (Radio-communication) Regulations.
- 1.3 The Grantee acknowledges and agrees that in the event IMDA determines that the Grantee has breached any requirement specified within the CFP Documents, or used the Assigned Radio Frequency Spectrum for any purpose other than to operate the Systems for the provision of 5G and other telecommunication services (if approved by IMDA and as specified in the Grantee’s FBO Licence referred to in Condition 1.1), IMDA shall be entitled to cancel or suspend this mmWave Spectrum Right (2020) or any part thereof,

and/or impose a financial penalty, in accordance with Condition 17 of this mmWave Spectrum Right (2020). The Grantee further acknowledges and agrees that IMDA may, in accordance with Condition 20 of this mmWave Spectrum Right (2020), resume this mmWave Spectrum Right (2020) in whole or in part.

2. Duration of mmWave Spectrum Right (2020)

2.1 This mmWave Spectrum Right (2020) shall come into force on 2 November 2020, and shall be valid until 31 December 2035 unless suspended or cancelled by IMDA in accordance with Condition 17 or terminated in accordance with Condition 16.

2.2 This mmWave Spectrum Right (2020) may be extended or further renewed for such period as IMDA thinks fit and subject to such terms and conditions as may be specified by IMDA in its absolute discretion.

3. Geographic Area

3.1 The geographic area in which the Grantee is permitted to use the Assigned Radio Frequency Spectrum for the purposes of operating the Systems is for the whole island of Singapore (including MRT underground stations/lines and road tunnels), the offshore islands and the territorial waters up to fifteen (15) km from the coastline of the island of Singaporeⁱ.

4. Payment for Grant of mmWave Spectrum Right (2020)

4.1 The Grantee shall pay to IMDA the amount(s) specified in Schedule B of this mmWave Spectrum Right (2020) by such mode or modes of payment as IMDA may determine, without set-off or counter-claim, on the date(s) specified therein, failing which IMDA shall be entitled to cancel or suspend this mmWave Spectrum Right (2020) or part thereof in accordance with Condition 17.

ⁱ Except where limitations in service coverage are due to technical requirements imposed by IMDA, such as to limit interference with neighbouring countries.

PART II: MMWAVE SPECTRUM RIGHT (2020) REQUIREMENTS

5. Additional licences required

5.1 The Grantee shall not use the Assigned Radio Frequency Spectrum for the purposes of operating the Systems for the provision of 5G and other telecommunication services (if approved by IMDA) unless the Grantee holds:-

- (a) a valid and current licence issued pursuant to Section 5 of the Act for the establishment, installation, operation and maintenance of telecommunication systems and the provision of the telecommunication services thereunder; and
- (b) a valid and current licence issued pursuant to Regulation 23 and/or Regulation 28 of the Telecommunications (Radio-communication) Regulations, as the case may be, for the establishment, installation and operation of radio-communication stations and/or networks comprising the Systems.

PART III: OBLIGATIONS OF THE GRANTEE

6. Statutory Compliance

- 6.1 The Grantee shall observe and comply with the Act, the Info-communications Media Development Authority Act 2016 (No. 22 of 2016) (the “IMDA Act”), the Telecommunications (Radio-communication) Regulations, the International Telecommunications Convention and any other relevant treaty or convention to which Singapore is a party.
- 6.2 Nothing in this mmWave Spectrum Right (2020) shall be taken as discharging the Grantee from its obligation to obtain any other rights, licences, permits or approvals that may be required under any written law in force in Singapore.

7. International Obligations

- 7.1 The Grantee shall exercise its rights and powers and perform its duties and obligations under this mmWave Spectrum Right (2020) in a manner, which is not inconsistent with or derogates from the Government of Singapore's obligations under any relevant convention, agreement, arrangement or treaty to which Singapore is a party.
- 7.2 IMDA may notify the Grantee from time to time of any such convention, agreement, arrangement or treaty to which Condition 7.1 applies for its compliance.

8. Codes of Practice and Directions issued by IMDA

- 8.1 The Grantee shall comply with all relevant Codes of Practice issued by IMDA as well as any additional or supplemental guidelines, which IMDA may issue from time to time as may be applicable to the Grantee.
- 8.2 The Grantee shall strictly and without any undue delay comply with any and all directions, which IMDA may from time to time issue in exercise of its powers, functions or duties under the Act, the IMDA Act, the Telecommunications (Radio-communication) Regulations or this mmWave Spectrum Right (2020).
- 8.3 IMDA may, by notice in writing to the Grantee, amend, vary or revoke wholly or in part any directions issued by it pursuant to Condition 8.2.

8.4 Unless otherwise expressly specified, the Grantee shall safeguard the secrecy of all directions issued by IMDA. The Grantee shall neither during the currency nor after the expiry, termination, suspension or cancellation of this mmWave Spectrum Right (2020) disclose, or aid or permit the disclosure of any of the said directions to any person not authorised to receive the same without the prior written consent of the Chief Executive Officer of IMDA (or such other similar title or position in IMDA's successor, heir or assign, as may be relevant and applicable). The Grantee shall further take all reasonable precautions in dealing with the said directions so as to prevent any unauthorised person from having access to the same.

9. Provision of Information to IMDA

9.1 The Grantee shall provide IMDA with any and all documents and/or information within its knowledge, custody or control that IMDA may by notice or direction require for the exercise of its powers, functions and duties under the Act, the IMDA Act, the Telecommunications (Radio-communication) Regulations, or in this mmWave Spectrum Right (2020).

9.2 In order to monitor the Grantee's compliance with the conditions of this mmWave Spectrum Right (2020), IMDA may also direct the Grantee to arrange at its own cost for a separate and independent audit of its activities. The Grantee shall, at IMDA's request, submit the audited accounts and reports prepared under this Condition 9 to IMDA for its inspection.

9.3 The Grantee shall, when expressly notified, keep in strict confidence any documents or information so required by IMDA pursuant to Condition 9.1 as well as the fact that IMDA has requested for such documents or information.

9.4 Subject to Condition 9.5, IMDA may use and disclose the documents and information required by IMDA pursuant to Condition 9.1 to such persons as IMDA deems fit.

9.5 Where IMDA proposes to disclose the documents and information obtained pursuant to Condition 9.1 and IMDA considers that the disclosure would result in the release of information concerning the business or commercial or financial affairs of the Grantee, which disclosure would or could reasonably be expected to adversely affect the Grantee's lawful business or commercial or financial affairs, IMDA will give the Grantee a reasonable opportunity to make representations on the proposed disclosure before IMDA makes a final decision whether to disclose the information.

10. Ownership, Shareholding and Management Arrangements

- 10.1 The Grantee shall obtain IMDA's approval for the appointment of its Chairman, Board of Directors and Chief Executive Officer and shall provide IMDA with details of its ownership, shareholding and management arrangements.
- 10.2 Any change in the ownership, shareholding and management arrangements of the Grantee as provided pursuant to Condition 10.1 above (including but not limited to changes in the Chairman, Board of Directors or Chief Executive Officer) shall be submitted to IMDA for approval at least one (1) calendar month before such change is intended to be implemented.
- 10.3 IMDA may, after considering all relevant facts and circumstances, including but not limited to considerations in the public interest, IMDA's regulatory objectives and other relevant circumstances pertaining to the allocation of the Assigned Radio Frequency Spectrum to the Grantee, impose conditions for approving such change in the ownership, shareholding and management arrangements of the Grantee, which may include, without limitation, the Grantee's return of the whole or any part of the spectrum in the Assigned Radio Frequency Spectrum to IMDA.

11. Use of Radio Frequencies

- 11.1 The Grantee shall take all necessary steps to ensure that the use of the Assigned Radio Frequency Spectrum for the purposes of operating the Systems for the provision of 5G and other telecommunication services (if approved by IMDA) is safe and does not cause interference to the other existing radio-communication stations, networks and systems operating in the same area or radio frequency band or in other areas or radio frequency bands. The Grantee shall also take all appropriate measures to ensure that its Systems and the radio-communication stations and equipment comprised therein are adequately protected from interference that may be caused by radio-communication stations and networks operating in the same area or radio frequency band or in other areas or radio frequency bands.
- 11.2 The Grantee shall co-operate fully with and provide all necessary assistance to (including providing such information as may be requested by) IMDA for the purposes of co-ordinating and managing the use of radio frequencies in relation to neighbouring countries and within Singapore, including but not

limited to the reduction of emission levels of any radio-communication stations comprised in the Systems.

- 11.3 Subject to the Act, the IMDA Act, the Telecommunications (Radio-communication) Regulations and this Condition 11, the use of any part of the Assigned Radio Frequency Spectrum for the purposes of managing interference (including the provisioning for a guard band(s)) shall be at the discretion of the Grantee.
- 11.4 The Grantee must use all or part of the Assigned Radio Frequency Spectrum in accordance with the following:-
- (a) Provide publicly available 5G services by 1 November 2021; and
 - (b) Provide publicly available 5G services based on the standalone network architecture, by no later than twenty-four (24) months from when the standalone ecosystem is readyⁱⁱ.
- 11.5 The Grantee acknowledges that IMDA may, from time to time, identify sites that shall be protected from interference. The Grantee shall not operate the Systems and the radio-communication stations and equipment comprised therein using the Assigned Radio Frequency Spectrum within these sites except with prior written approval from IMDA, and subject to such conditions that IMDA may at its discretion impose.
- 11.6 The Grantee shall achieve coordination on the Time Division Duplex configuration, which includes the frame structure, alignment and uplink/downlink ratio, for the Assigned Radio Frequency Spectrum, failing which IMDA shall mandate the synchronisation parameters deemed fit to enable the most efficient use of the band.
- 12. Operation of the Systems, Radio-communication Stations and Equipment**
- 12.1 The Grantee shall ensure that the Systems and the radio-communication stations and equipment comprised therein that are operated within the Assigned Radio Frequency Spectrum shall at all times comply with all applicable emission standards and technical specifications or requirements specified by IMDA, from time to time, in relation thereto.

ⁱⁱ This refers to the availability of commercial devices and equipment by the Grantee's chosen vendor(s). IMDA reserves the right to specify when the twenty-four (24) – month period will commence for the Grantee.

12.2 The Grantee shall ensure that the Systems and the radio-communication stations and equipment comprised therein that are operated within the Assigned Radio Frequency Spectrum are not used for unlawful purposes or misused in any way.

PART IV: SPECTRUM TRADING AND SHARING

13. Spectrum Trading

13.1 The Grantee shall not assign, transfer, trade, deal with or otherwise dispose of the whole or any part of the rights, privileges, duties and/or obligations under this mmWave Spectrum Right (2020) to any person or persons:-

- (a) except with the prior written approval of IMDA;
- (b) except in accordance with the Act, the IMDA Act, the Telecommunications (Radio-communication) Regulations, any codes of practice relating to competition in the provision of telecommunication services, and the rules and procedures relating to spectrum trading published by IMDA from time to time; and
- (c) unless the Grantee has put the Assigned Radio Frequency Spectrum to use in accordance with Condition 11.4.

13.2 Any such written approval may be given subject to such conditions that IMDA may in its discretion impose.

13.3 No assignment, transfer, trading, dealing with or disposal of the whole or any part of the rights, privileges, duties and/or obligations under this mmWave Spectrum Right (2020) shall take effect until the conditions in Condition 13.1 are satisfied.

13.4 The Grantee shall, and shall procure that the other party to the assignment, transfer, trade, deal or disposal, give to IMDA such information about the assignment, transfer, trade, deal or disposal under Condition 13.1 as IMDA requires for the purpose of giving its approval (if any) under Condition 13.1(a).

14. Spectrum Sharing

14.1 The Grantee may, with IMDA's prior written approval and subject to such conditions as IMDA may in its discretion impose, enter into a commercial agreement with another person for the use of the Assigned Radio Frequency Spectrum, in accordance with the conditions of this mmWave Spectrum Right (2020), for the purpose of operating a station and/or network subject to that person obtaining a station (spectrum) licence or a network (spectrum) licence, as the case may be (hereinafter referred to as "Spectrum Sharing Agreement").

- 14.2 Without prejudice to Condition 14.1, the Grantee shall, where directed by IMDA, negotiate in good faith and in a commercially reasonable manner with such person as IMDA may direct for the purpose of entering into a Spectrum Sharing Agreement.
- 14.3 The Grantee shall, where required by IMDA, allow the shared use of the Assigned Radio Frequency Spectrum (or part thereof) with another operator for short term stipulated durations, such as during the conduct of 5G trials, national events or where such use is in the public interest, including the suspension and/or cessation of its operations during such events to enable such shared use.
- 14.4 The Grantee shall not authorise any person or persons (the “Authorised Person”) to operate a radio-communication station and/or network within the Assigned Radio Frequency Spectrum except in accordance with the Act, the IMDA Act, the Telecommunications (Radio-communication) Regulations, and the rules and procedures relating to spectrum sharing published by IMDA from time to time.
- 14.5 The Grantee shall at all times remain liable for the acts, omissions, defaults and neglects of the Authorised Person as if they were the acts, omissions, defaults and neglects of the Grantee.

15. Conditions of Approval

- 15.1 Pursuant to Condition 13.2 and Condition 14.1 of this mmWave Spectrum Right (2020) IMDA may, after considering all relevant facts and circumstances, including but not limited to considerations in the public interest, IMDA’s regulatory objectives and other relevant circumstances pertaining to the allocation of the Assigned Radio Frequency Spectrum to the Grantee, impose such conditions, which may include, without limitation, the Grantee’s return of the whole or any part of the spectrum in the Assigned Radio Frequency Spectrum to IMDA.

PART V: TERMINATION, SUSPENSION, CANCELLATION, VARIATION AND RESUMPTION

16. Termination of mmWave Spectrum Right (2020)

16.1 In the event that the Grantee desires to terminate this mmWave Spectrum Right (2020), the Grantee must obtain IMDA's approval in writing at least six (6) months in advance.

16.2 No termination of this mmWave Spectrum Right (2020) shall take effect until IMDA's approval in writing is obtained under Condition 16.1.

17. Suspension and Cancellation of mmWave Spectrum Right (2020)

17.1 IMDA may suspend or cancel the mmWave Spectrum Right (2020) in whole or in part, and/or impose a financial penalty of such amount as IMDA thinks fit, in accordance with Regulation 16 of the Telecommunications (Radio-communication) Regulations.

18. Rights upon Termination, Suspension or Cancellation

18.1 Any termination, suspension or cancellation of this mmWave Spectrum Right (2020) shall be without prejudice to the rights and remedies which may accrue to the Grantee or IMDA under this mmWave Spectrum Right (2020) or any written law as at the date of termination, suspension or cancellation, except that the Grantee shall not have the right to seek compensation or refund of the mmWave Spectrum Right (2020) fee paid under Condition 4.1 or any other fee paid in advance, whether in whole or in part.

19. Variation of mmWave Spectrum Right (2020)

19.1 IMDA may vary the conditions of this mmWave Spectrum Right (2020) in accordance with the Telecommunications (Radio-communication) Regulations.

20. Resumption of mmWave Spectrum Right (2020)

20.1 IMDA may, in accordance with Regulations 17 and 18 of the Telecommunications (Radio-communication) Regulations, resume this mmWave Spectrum Right (2020) in whole or in part.

21. Exceptions and Limitations on Obligations

21.1 The Grantee shall not be held to have failed to comply with its obligations in this mmWave Spectrum Right (2020) if and to the extent that IMDA is satisfied that it is prevented from complying with those obligations for the following reasons:-

- (a) malfunction or failure of any equipment where IMDA determines that reasonable measures were taken beforehand to prevent such malfunction or failure;
- (b) the act or omission of any national authority, local authority or international organisation; or
- (c) any other factor, which, in the opinion of IMDA is beyond the Grantee's reasonable control and which notwithstanding the exercise by it of reasonable diligence and foresight, the Grantee was unable to prevent or overcome,

provided always that the Grantee shall use all reasonable endeavours to resolve with all reasonable speed the factor(s) preventing compliance of its obligations and shall resume complying with its obligations as soon as the factor(s) which prevented such compliance thereof is resolved.

PART VI: MISCELLANEOUS CONDITIONS

22. Governing Law

22.1 This mmWave Spectrum Right (2020) shall be governed by and construed according to the laws of Singapore.

23. Service of Notices

23.1 All notices under this mmWave Spectrum Right (2020) shall be in writing and shall be deemed to have been given if sent by hand or pre-paid post or by facsimile to the Grantee's registered address as lodged with the Accounting and Corporate Regulatory Authority or by electronic mail to the Licensee's electronic mail address as stated in its licence application to IMDA, or such other electronic mail address as notified to IMDA from time to time.

24. Severability

24.1 Every condition and part thereof shall be construed as a separate and severable provision so that if any condition and/or part thereof is held invalid, unenforceable or illegal for any reason, the remainder of this mmWave Spectrum Right (2020) shall remain in full force in every respect.

Dated 2 November 2020



**Director-General (Telecoms & Post)
Info-communications Media Development Authority**

SCHEDULE OF INTERPRETATION

In this mmWave Spectrum Right (2020), unless the context otherwise requires:

- (a) Words importing the singular or plural shall be deemed to include the plural or singular respectively;
- (b) The titles to the provisions of this mmWave Spectrum Right (2020) are for convenience of reference only and are not part of this mmWave Spectrum Right (2020) and shall not in any way affect the interpretation thereof;
- (c) Any word or expression used in this mmWave Spectrum Right (2020) shall have the same meaning as it has in the Act;
- (d) Any reference in this mmWave Spectrum Right (2020) to the Act shall include any regulations made thereunder;
- (e) Any reference in this mmWave Spectrum Right (2020) to any regulations made under the Act shall include any regulations made under any predecessor legislation until such regulations are revoked or repealed by subsidiary legislation made under the Act;
- (f) Any reference in this mmWave Spectrum Right (2020) to a person shall be deemed to include both corporations and natural and legal persons;
- (g) Any reference to monetary amounts in this mmWave Spectrum Right (2020) shall be deemed to be denominated in Singapore Dollars; and
- (h) Any reference to any Codes, guidelines or other rules or documents promulgated by IMDA shall be read as reference to such as may be amended from time to time.

SCHEDULE A

ASSIGNMENT OF RADIO FREQUENCY SPECTRUM

1. The Assigned Radio Frequency Spectrum means the radio frequency band(s) consisting of the range of radio frequencies between the upper and lower frequency limits of the radio frequency bands specified in the table below:

Lower Frequency Limit	Upper Frequency Limit
26.3 GHz	26.7 GHz
29.1 GHz	29.5 GHz

SCHEDULE B

PAYMENT FOR THE GRANT OF MMWAVE SPECTRUM RIGHT (2020)

Year	Payment Due Date	Payment Amounts Due ⁱⁱⁱ
1 (Base Year)	9 November 2020	S\$202,520.55 ^{iv} + S\$48,000 ^v = S\$250,520.55
2	31 December 2020	S\$1,232,000 ^{vi}
3	31 December 2021	S\$1,232,000 ^{vi}
4	31 December 2022	S\$1,232,000 ^{vi}
5	31 December 2023	S\$1,232,000 ^{vi}
6	31 December 2024	S\$1,232,000 ^{vi}
7	31 December 2025	S\$1,232,000 ^{vi}
8	31 December 2026	S\$1,232,000 ^{vi}
9	31 December 2027	S\$1,232,000 ^{vi}
10	31 December 2028	S\$1,232,000 ^{vi}
11	31 December 2029	S\$1,232,000 ^{vi}
12	31 December 2030	S\$1,232,000 ^{vi}
13	31 December 2031	S\$1,232,000 ^{vi}
14	31 December 2032	S\$1,232,000 ^{vi}
15	31 December 2033	S\$1,232,000 ^{vi}
16	31 December 2034	S\$1,232,000 ^{vi}

ⁱⁱⁱ Excluding the applicable GST.

^{iv} Annual frequency management fee pro-rated till 31 December 2020.

^v Application and processing fee.

^{vi} Annual frequency management fee.