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11 October 2021

**SUBMISSION OF PUBLIC CONSULTATION PAPER ON WIRELESS LOCAL  
AREA NETWORK (WLAN) IN THE 6 GHz FREQUENCY BAND**

As a leading global provider of information and communications technology (ICT) Infrastructure and smart devices, Huawei Technologies (M) Sdn Bhd would like to respond on the questions raised on the proposals related to the Wi-Fi usage in the 6GHz frequency band in Malaysia as announced to the public on 12 August 2021.

The detailed arguments and evidence to support the responses to the raised questions as per the attachment. Should MCMC require further information or any clarification to our response, please do not hesitate to me at +60 127226673.

On behalf of Huawei Technologies (M) Sdn Bhd

A handwritten signature in black ink, appearing to read "Nick Rao".

**Nick Rao**  
**Chief Technology Officer**



**PUBLIC CONSULTATION PAPER  
WIRELESS LOCAL AREA NETWORK (WLAN)  
IN THE 6 GHz FREQUENCY BAND**

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## Executive Summary

In this submission, Huawei Malaysia responds to a number of questions raised in the MCMC's **Public Consultation Paper: *Wireless Local Area Network (WLAN) in the 6 GHz Frequency Band***. Huawei Malaysia would like to submit the following for MCMC's consideration:

1. In principle, Huawei Malaysia calls for MCMC to consider the whole 5925-7125MHz to IMT licensed use, as the spectrum need for 5G development from 2025 to 2030 is around 2000MHz in Malaysia;
2. Even in case of difficulty to reserve the entire 5925-7125MHz band for licensed IMT use, Huawei Malaysia suggests MCMC to consider 5925-7125MHz usage planning after the conclusion of World Radiocommunication Conferences (WRC) 2023;
3. If MCMC must assign part of 6GHz for non-IMT use before WRC-23, Huawei Malaysia recommends MCMC to limit the usage consideration to 5925-6425MHz with a technology neutral position and adhere to the criterion applied on Low Power Indoor (LPI) or Very Low Power (VLP) conditions, **and**
4. Ensure appropriate measures to mitigate the unavoidable introduction of harmful interference to in-band incumbent services as well as to adjacent band;
5. Further, reserve 6425-7125MHz for licensed IMT systems and align the decision at the conclusion of WRC-23.

## Question 1

### Question 1

MCMC seeks your views and comments on the demand for spectrum for Wi-Fi in the 6 GHz frequency band.

#### 1. Wi-Fi spectrum is not an urgent bottleneck to address.

- a) According to the SPEEDTEST website, with the similar existing 600 MHz ~ 700 MHz of Wi-Fi spectrum, the throughput variance in neighboring countries is significant, ranging from 200 Mbit/s in Singapore to 100 Mbit/s in Malaysia. Therefore, the spectrum is not a determinant and bottleneck restricting Wi-Fi development. China's big cities are the most densely populated places in the world, and even then there is no pressure to allocate new Wi-Fi spectrum. In Malaysia, the situation is similar, the current spectrum for Wi-Fi is not a bottleneck.
- b) With the new Wi-Fi 6 technology, even the current Wi-Fi spectrum can reach high throughput levels up to 9.6 Gbit/s, meeting all requirements.
- c) Huawei is also a leading Wi-Fi solution provider. Based on our understanding, the priority to be addressed in home, enterprise, and urban Wi-Fi hotspot scenarios is multi-user performance improvement, not spectrum. Technology such as FTTR (Fiber to the Room) is being deployed for performance improvement.

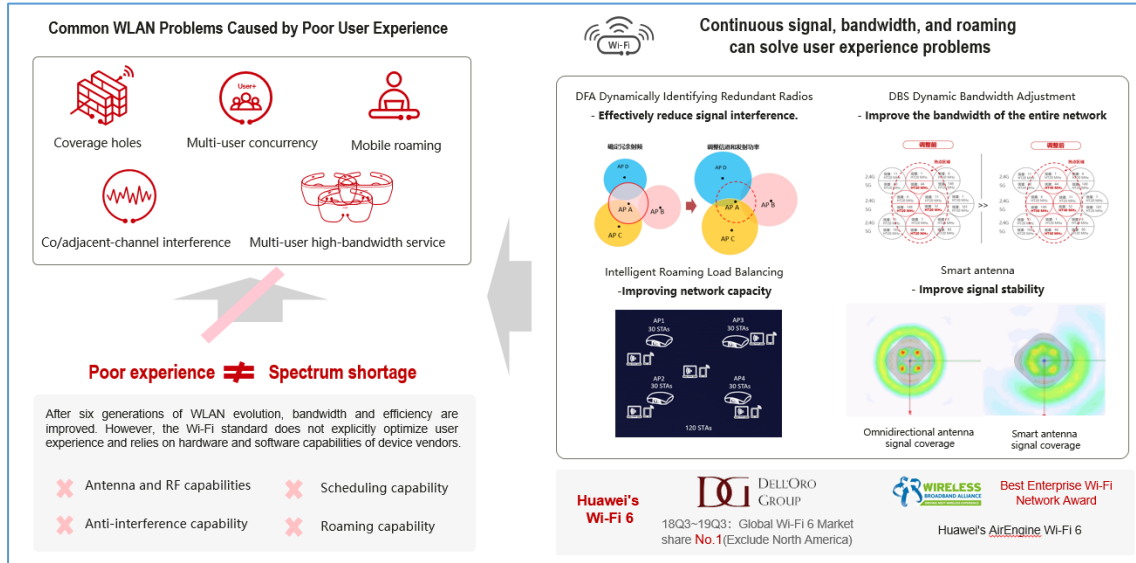


Figure 1-1: Common WLAN Problems Caused by Poor User Experience

2. Malaysia's DOU has reached 20G+, comparable to Thailand, one of the fast digitally developing country. Maximizing the usage of 6 GHz is crucial to country's digital transformation strategy.

3. The lack of IMT spectrum is the bottle neck for consistent Malaysia's telecommunication development.

- a) GSMA, in its recent white paper, mentioned the necessity to reserve 2 GHz spectrum for each country by 2030. Leading countries are already working towards realizing this goal.

**The GSMA recommends that governments and regulators:**

- Plan to make 2 GHz of mid-band spectrum available in the 2025-2030 time frame. This is the average value needed to guarantee the IMT-2020 requirements for 5G;
- Carefully consider 5G spectrum demands when 5G usage will be reaching its peak, and advanced use cases will carry additional needs;
- Base spectrum decisions on real-world factors including population density and extent of fibre rollout; and
- Support harmonised mid-band 5G spectrum (e.g., within the 3.5 GHz, 4.8 GHz and 6 GHz ranges) and facilitate technology upgrades in existing bands

Figure 1-2: GSMA recommendations to Governments and Regulators

- b) The current IMT spectrum reserves in Malaysia are still insufficient compared to leading countries, e.g. Thailand. There is total 200 MHz mid-band identified for 5G in Malaysia, which is about 1/10 of targeted average value of required spectrum in the region. This does not match the current and expected DoU levels in Malaysia. We estimate that Malaysia will need 960 MHz spectrum in 2025 and 2,161 MHz in 2030 for 5G.
- c) Currently, 6 GHz is the only mid-band option for 5G spectrum expansion in the next 10 years.
- d) Also, if “6G” technology is put into commercial use in 2030, MCMC has to consider the spectrum availability for 5.5G/6G implementation as well. We believe that large bandwidth is still the fundamental requirement for next-generation technologies development. Thus, 6 GHz is one of the best choices for mid-band expansion in the near future.
- e) The value of unit spectrum used in IMT is more than four times that of Wi-Fi and tens of times that of satellite and transmission communications.

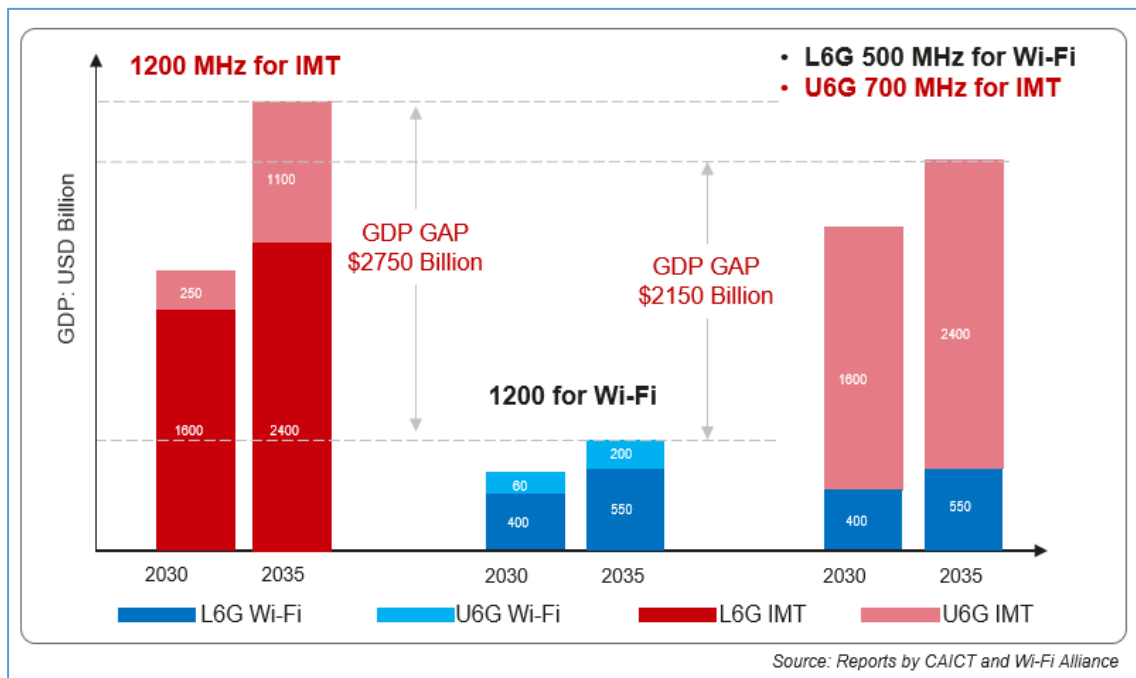


Figure 1-3: Spectrum Use and GDP Impact

**4. Conclusive 6GHz research by multiple standard organizations is still under progress. Informed decisions are advised post WRC-23.**

Due of the importance of 6GHz, ITU has approved research on 6GHz band IMT identification at the WRC-19 and initiated feasibility research as per WRC-23 agenda item 1.2. It is estimated that the coexistence and channel model will be completed in June 2021. Further research on coexistence with satellite and microwave services is expected to start soon.

**GSMA** has given top priority to 6 GHz band in the WRC-23 agenda.

**3GPP** has started standardization of the full 6GHz band and is determined to define a new band number for it. It is expected that specific parameters of this frequency band will be defined in Release 17.

**EU** intends to leave upper 6GHz to IMT, and decision is subject to WRC-23 conclusion.

During WRC-19, all APT members agreed to support 7025-7215MHz for IMT licensed use. Malaysia’s plan to allocate entire 6GHz to unlicensed service will be against the global harmonization for the 7025~7125MHz spectrum.



Figure 1-4: APT Member Views of 7025-7126 MHz

Indonesia recently announced their 5G spectrum roadmap, where frequency band 6425~7125 MHz is earmarked as 5G/5G+ spectrum.

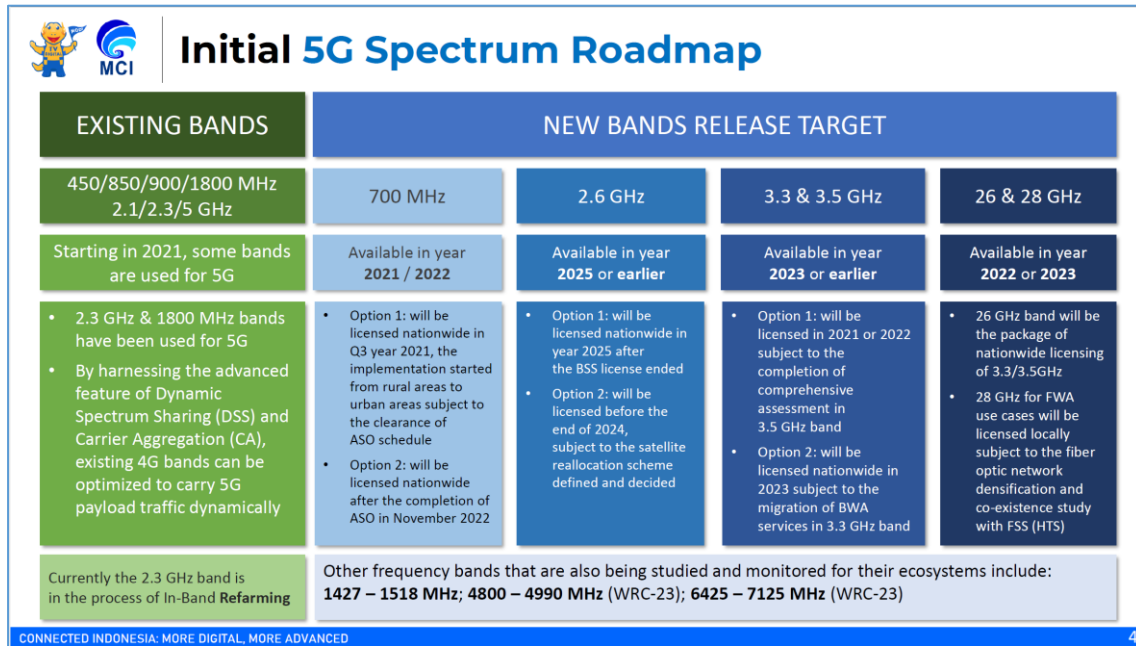


Figure 1-5: MCI: Initial 5G Spectrum Roadmap

Thailand NTBC published their consideration for 6 GHz spectrum as well, the principles are equitable access, compatibility with existing usage, efficiency and innovation. NTBC’s consideration of the frequency bands 3300-3400 MHz, 3600-3800 MHz, 6425-7025 MHz, 7025-7125 MHz and 10.0-10.5 GHz will be in accordance with Resolution 245(WRC-19).

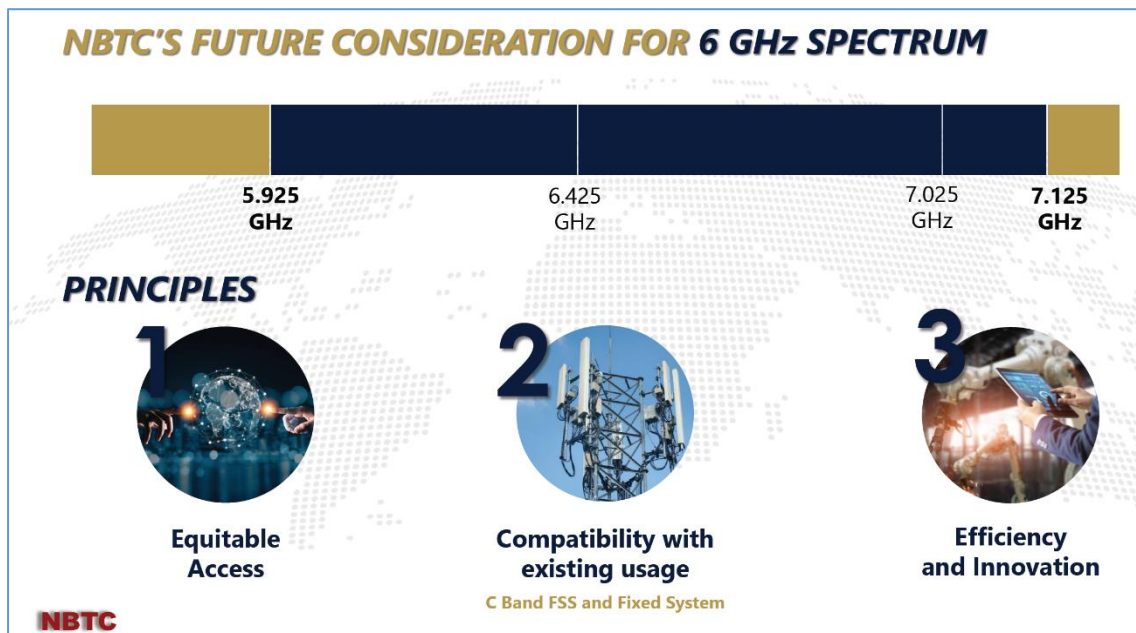


Figure 1-6: NBTC: Future Consideration for 6 GHz Spectrum



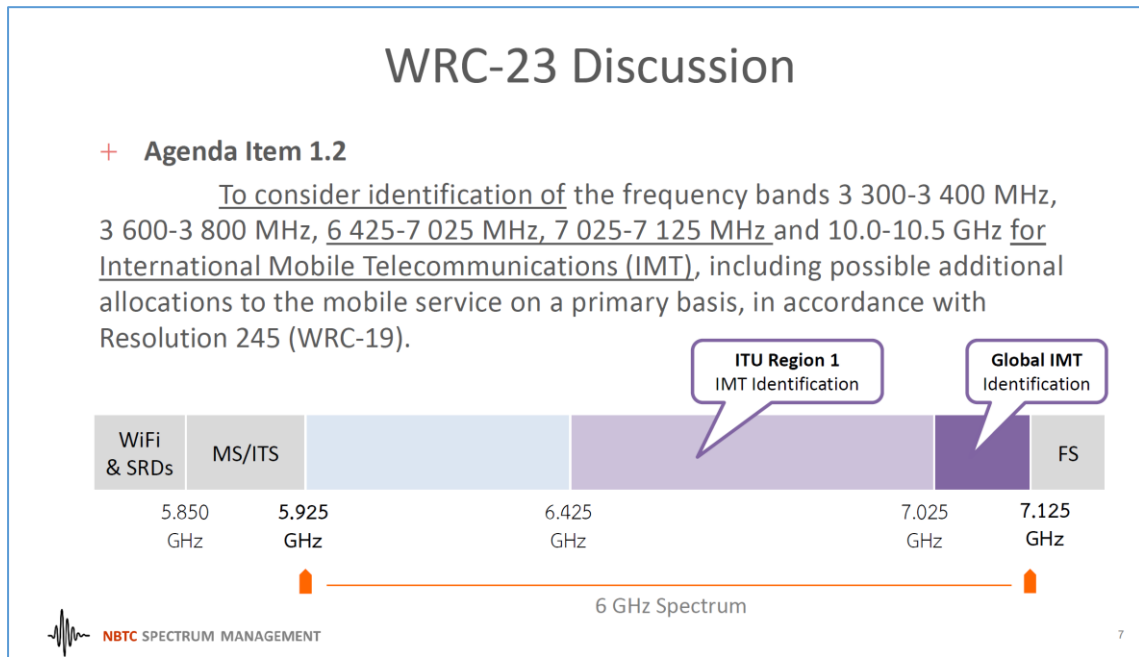


Figure 1-7: WRC-23 Discussion on 6 GHz Spectrum

**China's** IMT-2020 Promotion Group already started the 6GHz IMT field test in H1 2021, and

**Russia's** Radio Research and Development Institute (NIIR) will start the 6 GHz IMT field test in H2 2021. Commercial products will be released before WRC-23.

It is recommended to start the 6 GHz IMT field test in Malaysia as well to take a well informed decision.

## Question 2

### Question 2

MCMC seeks your views and comments on the emerging technologies utilising the 6 GHz frequency band.

### IMT: Best technology in 6GHz to fulfil the 5G spectrum need

IMT technologies using 6GHz as licensed spectrum are specifically designed for operation in the controlled interference environments in order to serve eMBB, FWA, V2X, and a variety of vertical use cases, including URLLC and mMTC that require a predictable QoS, with different combinations of low latency, ultra-reliability, macro contiguous coverage, seamless indoor and outdoor experience, mobility, security, etc.

6GHz used by IMT technologies, is the key band for 5G as:

1. 6GHz has continuous large bandwidth of 1.2GHz. GSMA and Coleago have forecasted and called for 2GHz mid-band spectrum in 2025 - 2030 to meet ITU 5G targets of - 100 Mbit/s downlink and 50 Mbit/s uplink, anytime and anywhere [1] [2]. Now Malaysia has only 200MHz mid-band spectrum in C band for 5G. Considering the mid-band spectrum below 10GHz, **6GHz with 1.2GHz spectrum bandwidth is the best choice for 5G.**
2. 6GHz IMT system can achieve similar coverage as C-Band. Coverage simulation with ray-tracing model conducted on 6GHz and 3.5GHz @C band in dense urban area in Hangzhou, China, as show in Figure 1 reflects comparable coverage and performance to 3.5GHz IMT system.

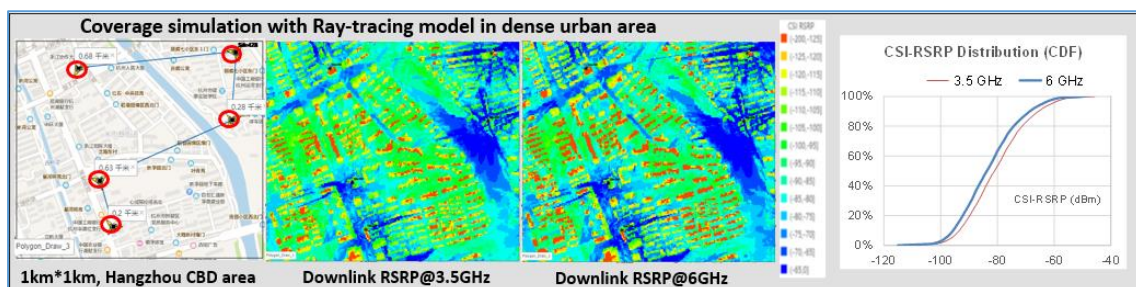


Figure 2-1: Coverage simulation on 6GHz and 3.5GHz

Coverage field test has also been carried out on U6G and C band in Figure 2-2.

**U6G IMT system also has comparable coverage and performance to C- band system.**

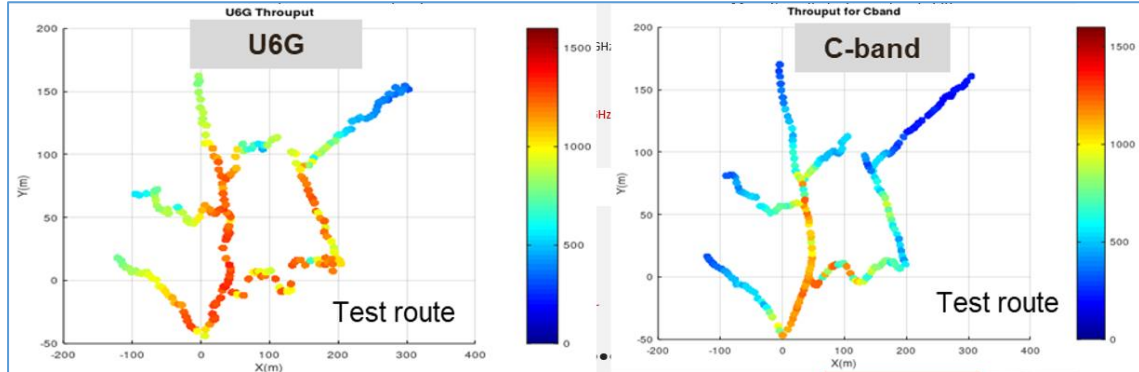


Figure 2-2: Coverage field test on U6G system and C-band system

3. IMT using 6GHz possesses great social and economic value. It can be seen from GSMA report [3] that, global mobile economy has contributed \$4.1 trillion (4.7% of GDP) and created 30 million Jobs in 2019 as shown in Figure 3 and Figure 4. And another GSMA report [5] suggests, by 2024 the global mobile economy GDP contribution is predicted to increase to 4.9%. This can only happen, however, if sufficient mid- band spectrum resources (1000 - 2000MHz) are available and in place to provide the capacity for innovation and development. As analyzed above, **6GHz is the best choice for this 1000 – 2000MHz mid-band spectrum resource, and is essential to the future GDP growth.**

**Additional indirect and productivity benefits bring the total contribution of the mobile industry to \$4.1 trillion (4.7% of GDP)**

Billion, % of GDP

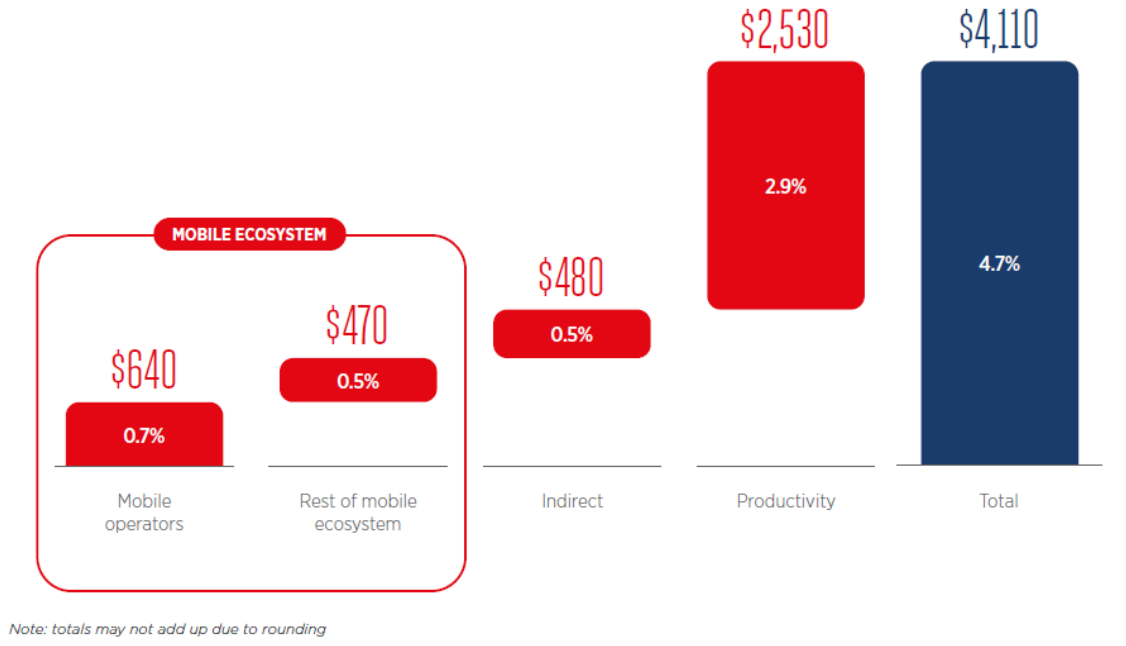


Figure 2-3: Global Mobile Industry's Contribution to the Economy

**The global mobile ecosystem directly employs 16 million people, plus another 14 million indirectly through adjacent industries**

Jobs (million)

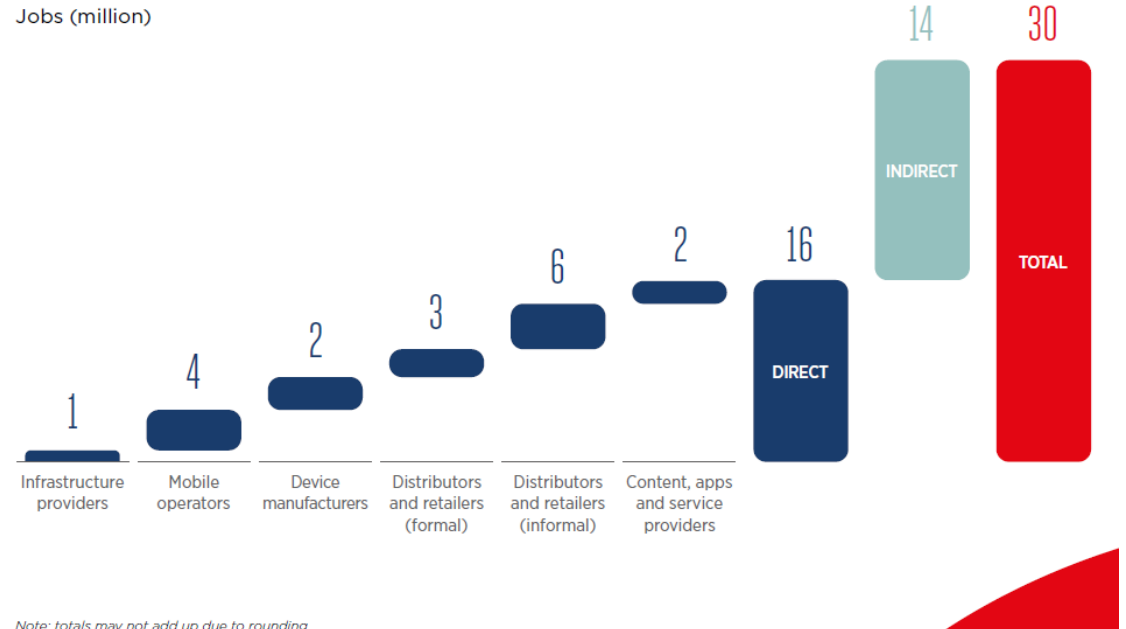


Figure 2-4: Global Mobile Industry's Contribution to Job Opportunities

GSMA report [4] compares mobile service to WLAN unlicensed service and concludes mobile

service resulting in 4 times more economy value. Similarly, **6GHz used by IMT technologies could bring more than 4 times economy value than 6GHz used by Wi-Fi.**

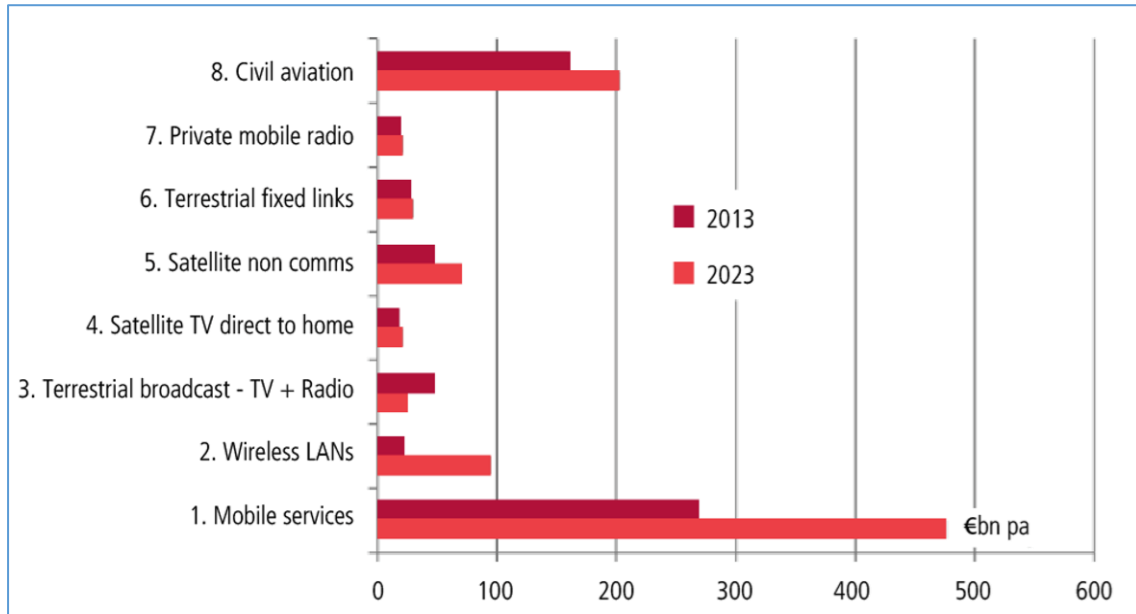


Figure 2-5: Economic Value of the Applications Compared

We do note that there are incumbent services in 6GHz as well, i.e., Fixed Service and Fixed Satellite Service. ITU-R has started conducting the co-existence work between IMT and these incumbent services. At present ITU-R has finished collecting system parameters of these services. The co-existence results are expected before WRC-23 in 2023.

**5G NR unlicensed spectrum (NR-U): Not an ITU accepted IMT technology and performance is not guaranteed.**

NR-U is rather a Radio Local Area Network (RLAN) technology and like other unlicensed technologies it only offers best effort QoS (mainly in hot spots indoor, with no mobility, limited use cases, and higher latency and lower reliability). It also suffers from non-graceful degradation of performance when the number of users increase. License exempt technologies cannot supplant the IMT mobile networks.

3GPP has clearly stated in 3GPP TR 38.889 (NR-U) that: “The quality of service offered by a licensed regime can therefore not be matched. Hence, unlicensed access is viewed as complementary, and does not reduce the need for additional allocations for licensed operation in view of the increased demand for wireless broadband access.”

NR-U is extended from 4G License Assisted Access (LAA). 4G LAA has been rarely used in the world, in fact there are less than 2% (11 out of 800) of global 4G operators who have deployed LAA, and most of them are in US. There are only 1.2% Global 4G commercial devices which support LAA (209 out of 17000+).

It should be noted that NR-U is not accepted by ITU IMT-2020.

**References:**

- [1] Coleago, "IMT spectrum demand: Estimating the mid-bands spectrum needs in the 2025-2030 timeframe," December 2020
- [2] GSMA, "Vision 2030 - Insights for Mid-band Spectrum Needs",
- [3] GSMA, "The Mobile Economy Report 2020"
- [4] GSMA, "Valuing the use of spectrum in the EU"

## Question 3

### Question 3

MCMC seeks your views and comments on the frequency range within the 6 GHz frequency band that could be considered for Wi-Fi under the Class Assignment in Malaysia. Should MCMC consider allowing Wi-Fi to operate in the entire 1200 MHz (5925 MHz to 7125 MHz frequency band) or only in the 500 MHz (5925 MHz to 6425 MHz frequency band)?

Huawei Malaysia recommends:

1. As mentioned in response to question1, Huawei recommends not to use 6GHz for Wi-Fi.
2. Considering WRC-23 outcome yet to be concluded, 6GHz usage for Wi-Fi may be decided in line with the WRC-23 outcome later.
3. 500MHz bandwidth@5GHz is sufficient for current and future Wi-Fi services. (Please refer to supplement below)
4. In case of unlicensed allocation now, it will be impossible to retract the spectrum later. Please refer to supplement below)
5. 6GHz band is valuable and would be better to address the lack of spectrum by assigning to current IMT technologies.

Supplements for point 3. Why 500 MHz is sufficient for Wi-Fi services:

500 Mbps can meet the requirements of home and office services in the next 5 to 10 years. Wi-Fi 6@5 GHz Access Points (AP's) in the industry can reach 10 Gbps per device that is sufficient to support high-speed FTTH services for enterprises. The existing user experience is poor as the software/hardware technology of the device needs to be upgraded, however are not limited by spectrum availability.

The following figure is Huawei's analysis for home scenario, the conclusion is 5GHz can meet home Wi-Fi Scenario requiring no more spectrum.

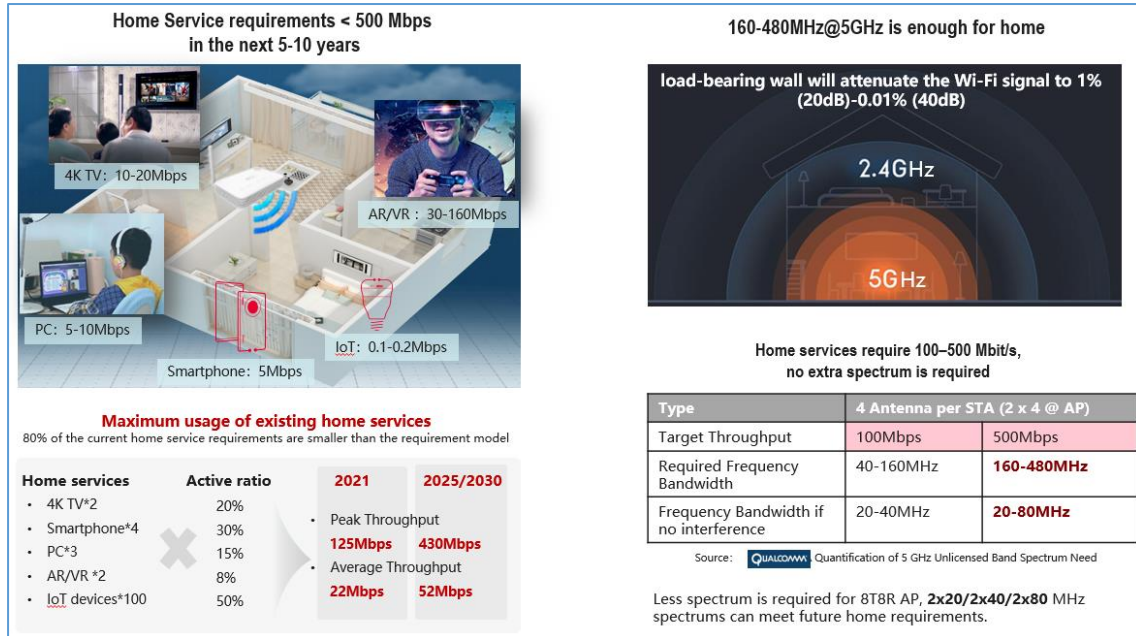


Figure 3-1: Huawei's Analysis for Home Scenario

The following figure is Huawei's analysis for office scenario, the conclusion is existing 5GHz meets enterprise Wi-Fi Scenario requiring no more spectrum.

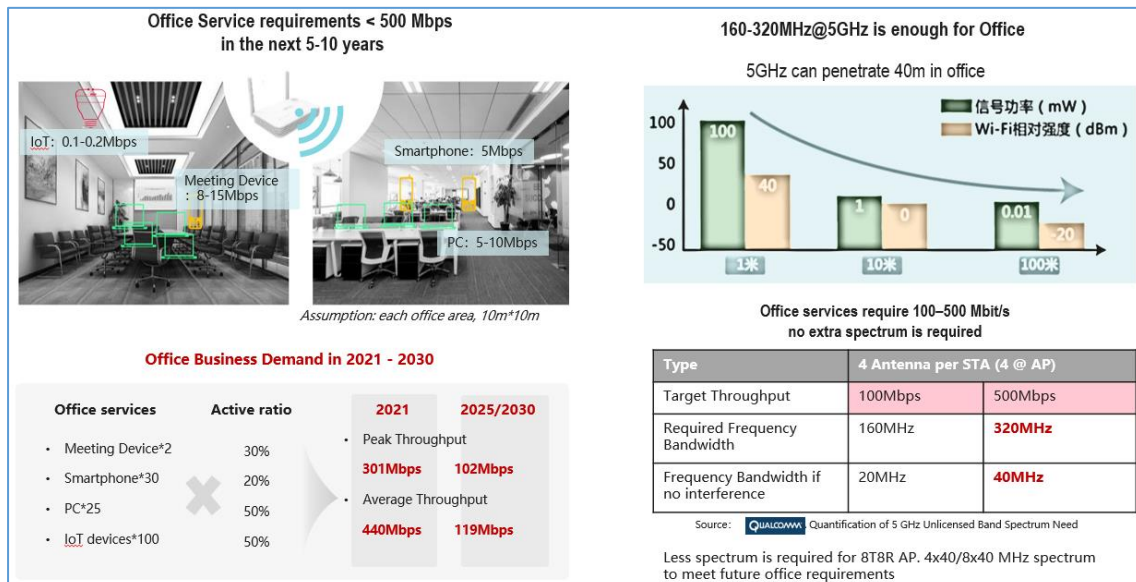


Figure 3-2: Huawei's Analysis for Home Scenario

The following figure is Huawei's analysis for public scenario, the conclusion is existing 5GHz



can meet public Wi-Fi Scenario requiring no more spectrum.

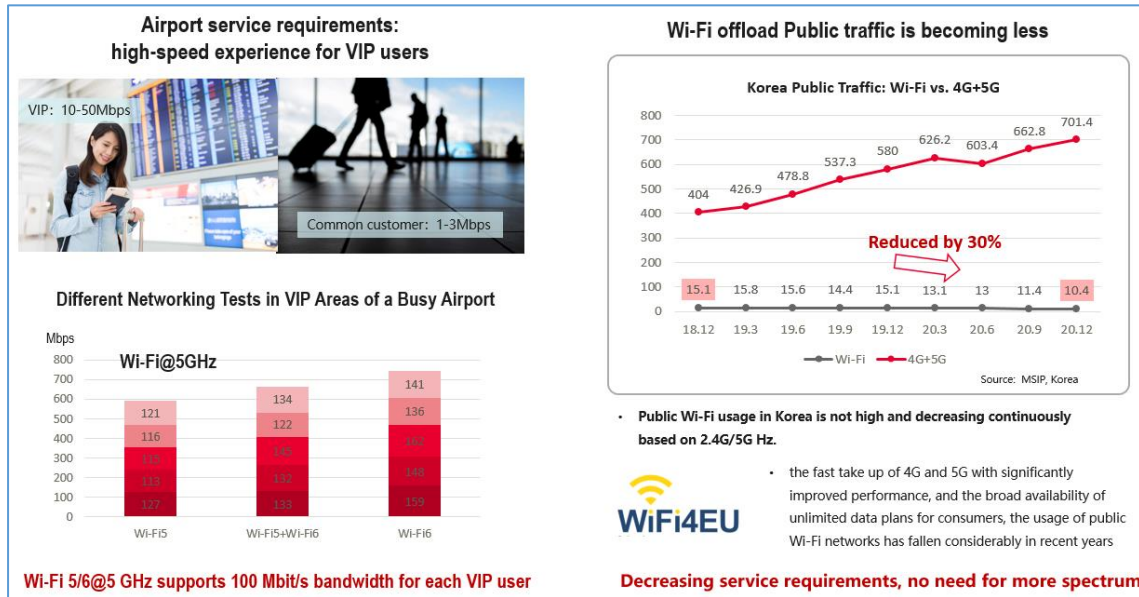


Figure 3-3: Huawei's Analysis for Public Scenario

Supplements for point 4. Why 6 GHz must be assigned to IMT:

According to the GSMA's spectrum value report on the EU, 5G (on mid-band spectrums) will bring over 4 times more economic value per MHz than Wi-Fi (on 6 GHz) and tens of times that of satellite usage. Allocating mid-band spectrum for IMT is the optimal choice for long-term economic growth. For this very reason, countries are migrating FS and FSS services to high frequency bands. (Data Source: HIS, GSM)

For IMT, the 6 GHz spectrum can achieve high-power continuous coverage. 6 GHz will drive IMT to explore innovative wide-area applications that can improve our services including eMBB, industrial automation, telemedicine, interconnected transportation, and smart cities (Source: GSMA).

In the context of Industry 4.0, given varied latency levels, the spectral efficiency of 5G is 1.4 to 3.3 times higher than that of Wi-Fi 6. When latency becomes a critical index (10ms or lower), 5G is the optimal solution (source: 5G ACIA). Given Malaysia's national 4IR objectives, this is recommended to be considered for economic benefits in line with Digital Malaysia plans.

## Question 4

### Question 4

MCMC seeks your views and comments on:

- i. the coexistence between Wi-Fi and incumbent services (i.e. fixed service and fixed-satellite service); and
- ii. the potential interference mitigation between these services.

Huawei recommends not to allocate 6GHz to Wi-Fi now, as mentioned in question 1 to 3. In case of even a portion of 6GHz being allocated to Wi-Fi and incumbent services, the following may be considered carefully:

#### ➤ **Coexistence between Wi-Fi and Fixed Service**

**Although few research works show that Wi-Fi coexistence with Fixed Service is feasible in strict conditions including low power, etc., however more and more evidences indicate that Wi-Fi could still cause considerable interference issues with Fixed Service**

Recently CEPT has done co-existence studies of Wi-Fi and fixed services only on 5925-6425MHz (L6G). CEPT Report 75 and ECC Decision (20)01 contain the conclusion that co-existence between Wi-Fi and fixed services operating in 5945-6425 MHz band would be technically feasible under some generic technical conditions of maximum 200 mW EIRP (23dBm) for indoor use only and maximum 25 mW EIRP (14dBm) for both indoor and outdoor use.

However, it is worth noting that **FWCC (Fixed Wireless Communications Coalition) has submitted a pleading [5] against the harmful interference to Fixed Service from unlicensed use of 6GHz in 2020**, with lab test inside, and in which, the conclusion shows that, **“it is pretty clear from the test set presented that Wi-Fi interference can cause severe damage to PTP microwave links specially when operating co-channel”**. The lab testing results show Wi-Fi in 6GHz generate considerable interference and damage the performance of co-channel micro-wave links. It [5] further explains, for Wi-Fi Tx power of 1 Watt (30dBm) over 80 MHz of bandwidth, co-channel interference to micro-wave link becomes noticeable when attenuation as strong as 40 dB applies. And with a reduction on attenuation, the micro-wave link experiences worse performance downturns such as downshift on modulation,

frequency shifting, and link availability reduction, etc. **And with the uncontrolled proliferation of devices, the risk will become significantly higher.**

It is also noted that, **AT&T has taken FCC to court over 5G backhaul** [6] in September, 2021. AT&T in its latest filing claimed that, Wi-Fi signals in the 6GHz band are "very likely to result in harmful interference at unpredictable places and times." A test report [7] has been provided in this case, that shows: **"the measurements from this real-world testing demonstrate that a single Commercial off the Shelf RLAN unit, operating co-channel with a licensed link and in the main beam of that link's receive antenna, will impact that link significantly. And that multiple units so operating will additively impact the link and likely render the link unusable."**

The above analysis is based on low EIRP such as 200 mW and 25mW. When EIRP reaches 1W, there will be co-existence problems with FS. Therefore, if public Wi-Fi outdoor usage reaches 2W -5W EIRP, then either 5GHz or 6GHz would not be appropriate at all in such kind of scenarios.

➤ **Potential interference mitigation between Wi-Fi and Fixed Service**

Based on the analysis above, CEPT report 75 and ECC Decision (20)01 identify the following use cases and related conditions for use by Wi-Fi in 5945-6425 MHz band:

- Low power indoor (LPI) use, maximum 200 mW EIRP (23dBm), with no outdoor use allowed;
- Very low power (VLP) portable use, maximum 25 mW EIRP (14dBm), both indoor and outdoor use.

➤ **Coexistence between Wi-Fi and Fixed-satellite Service**

**Wi-Fi coexistence with Fixed Service is feasible in strict conditions including low power, etc., however could still cause problems if outdoor usage increases**

6GHz (5925-7125 MHz) is extensively used by the FSS in the Earth-to-space direction in Malaysia, as shown in Figure 4-1.

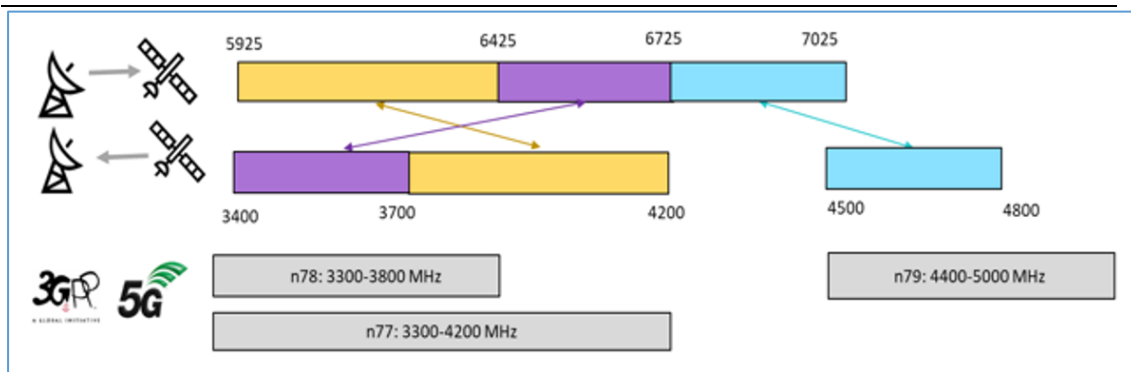


Figure 4-1: FSS Service used in 6GHz in Malaysia

For the coexistence study between Wi-Fi and Fixed-satellite Service, ECC Report 302 analyzed the increase of outdoor Wi-Fi usage proportion in 5925-6425MHzband, resulting in up to 5% sensitivity increase. The results showed that the protection criteria for the FSS is exceeded for two of the four considered FSS space receivers. **These results highlight the risk of excess interference in case of higher power outdoor usage increase beyond that specified in the agreed baseline parameters.** This concern and potential risk could be addressed by controlling the usage of higher power Wi-Fi devices operating outdoors.

➤ **Potential interference mitigation between Wi-Fi and Fixed-satellite Service**

Two examples are found showing the potential interference mitigation between Wi-Fi and Fixed-satellite Service.

**1. US**

Considering the protection of the FSS information above, In the U.S., FCC has mandated a vertical elevation mask on license-exempt transmitters such that the **EIRP would be limited to 125mW (21dBm) above a 30-degree elevation from the horizontal** [8].

FCC adopted this EIRP density elevation mask as a “precautionary measure” to address the concerns raised by FSS operators about the potential for aggregate interference into FSS space station receivers from hundreds of millions of 6 GHz unlicensed devices in the Continental United States [9]. Based on a detailed simulation submitted by Wi-Fi proponents, which assumed an average satellite G/T of +2 dB/K and a deployment of millions of 6 GHz capable devices in Continental United States by 2025 of which 2% are deployed outdoors with an activity factor of 0.44%, the FCC concluded that aggregate I/N into FSS space station receivers would “never rise above -20 dB” (or -21.9 dB as estimated by the RKF simulation) [10].

## 2. Europe

ECC Report 302 recommended “taking steps such as limiting the use to indoor only deployment and/or introducing an EIRP limit, would help further ensuring long term protection of FSS space stations from aggregate interference from WAS/RLAN devices in the band 5925-6425MHz.”

**ECC Decision (20)01 was to adopt an indoor-only restriction and an EIRP limit on low-power Wi-Fi operations** (allowing outdoor operation only for very-low power operations).

The above analysis is based on low EIRP such as 200 mW and 25mW. When EIRP reaches 1W, there will be co-existence problems with FSS. Therefore, if public Wi-Fi outdoor usage reaches 2W -5W EIRP, then either 5GHz or 6GHz would not be appropriate at all in such kind of scenarios.

On the other hand, IMT technologies including 5G NR are specifically designed for operation in the controlled interference environments to provide the service which require predictable QoS, with different combinations of low latency, ultra-reliability, macro contiguous coverage, seamless indoor and outdoor experience, mobility, security, etc. As its licensed spectrum scheme, naturally, coordination could be implemented and other mitigation technologies including flexible power control, etc., could be used, in order to fully control the interference.

### References:

[5]FWCC Supports APCO's 6 GHz Petition for Stay,

<https://ecfsapi.fcc.gov/file/106040035611332/01432982.PDF>

[6]<https://www.lightreading.com/5g/atandt-takes-fcc-to-court-over-5g-ackhaul/d/d-id/772166>

[7] Test Report on the Effects of 6 GHz Unlicensed RLAN Units on Fortson to Columbus Microwave Link,

<https://ecfsapi.fcc.gov/file/106231367519302/6%20GHz%20Columbus%20Test%20Report%20-%20June%202021.pdf>

[8] <https://s3.amazonaws.com/rkfengineering-web/6USC+Report+Release+-+24Jan2018.pdf>

[9] <https://docs.fcc.gov/public/attachments/DOC-363490A1.pdf>

[10] [https://ecfsapi.fcc.gov/file/101261169015803/6%20GHz%20Ex%20Parte%20\(Bureaus\).pdf](https://ecfsapi.fcc.gov/file/101261169015803/6%20GHz%20Ex%20Parte%20(Bureaus).pdf)

## Question 5

### Question 5

MCMC seeks your views and comments on the potential technical and operational conditions to be imposed if the 6 GHz frequency band is introduced for Wi-Fi under the Class Assignment. Should part of the frequency band be limited to indoor operation? Should standard power devices operating under the Automatic Frequency Coordination (AFC) system be adopted in Malaysia?

Industry has expressed a preliminary view about chances of harmful interference by low power and uncontrolled devices. With the future growth of these devices, the risk will become significantly higher. MCMC regulation team will need to engage in an expensive and time-consuming solution for mitigating the interference, and the identification of these devices is extremely difficult.

**Huawei strongly recommends MCMC to consider a detailed study of co-existence and compatibility with incumbent network services.**

Relating to Automatic Frequency Coordination (AFC), the AFC standard is yet to be developed, and there is no successful practice on AFC systems at the moment globally. The possible AFC testing and certification process are foreseen to take years [11]. Due to above, AFC adoption must also be carefully considered.

### **References:**

[11] M. Gibson, 6 GHz Automated Frequency Coordinating System: Basic Requirements & Testing / Certification, 16<sup>th</sup> European Spectrum Management Conference, 23-25<sup>th</sup> June 2021, <https://www.youtube.com/watch?v=kdEvIaVrP2M&list=PL-w3m3Fi4ZVns7rzgP6JIVdf1IQTDkzfD&index=11>

## Question 6

### Question 6

What other key issues need to be considered in introducing Wi-Fi in the 6 GHz frequency range?

The following issues need to be comprehensively considered:

- 1) The actual bandwidth requirement of Wi-Fi: 500MHz bandwidth@5GHz is sufficient for current and future Wi-Fi services.
- 2) The industry value chain of Wi-Fi 6E: There are only 8 terminals supporting Wi-Fi 6E in 2021 compared to more than one thousand IMT terminals, as supported by big MNOs, terminal vendors, etc. There will also be comparable types of IMT terminals in 6GHz after the spectrum is ready in 2023, as 6GHz IMT is also supported extensively by big MNOs, terminal vendors, etc.
- 3) How to maximize the 6 GHz value: The spectral efficiency of 5G is 1.4 to 3.3 times higher than that of Wi-Fi 6, spectrum for mobile services will be generating higher economic value.
- 4) The lack of IMT spectrum: Average bandwidth requirement to guarantee the IMT-2020 requirements for 5G is 2GHz.
- 5) WRC-23 AI1.2 involves 6 GHz. It is recommended that MCMC consider decisions after WRC-23 is concluded to avoid conflicts with WRC-23 recommendations. APG has initiated research on WRC-23 AI1.2 and recommends MCMC to participate in APG-related research.

In summary, Huawei recommends not to use 6GHz for Wi-Fi. Considering WRC-23 outcome yet to be concluded, 6GHz usage for Wi-Fi may be decided in line with the WRC-23 outcome later. 500MHz bandwidth@5GHz is sufficient for current and future Wi-Fi services. 6GHz band is valuable and would be better to address the lack of spectrum by assigning to current IMT technologies.