



Public Inquiry Response

Allocation of Spectrum Bands for Mobile Broadband Service in Malaysia

30th August 2019

YTL Communications Sdn Bhd

TABLE OF CONTENTS

1.	INTRODUCTION	1
2.	MAINTAINING HEALTHY COMPETITION	2
	Introduction of New Entrants with the Advent of 4G to Increase Competition	2
	The Need for a Balanced Holdings of Spectrum Bands and Adequate Bandwidth....	3
	YTL Communications and UMobile, the Only Mobile Operators Without Low Band .	4
	Refarming of 900 MHz and 1800 MHz Bands by MCMC	4
	Determination of Spectrum Assignment 2016 (P.U.(B) 365/2016)	6
	YTL Communications' Concerns.....	6
	Rebalancing of the Spetrum Holdings to Achieve NFCP Targets	6
	THE CURRENT SPECTRUM HOLDINGS OF CELCOM, DIGI, MAXIS AND UMOBILE (CDMU) ARE SUFFICIENT FOR THESE OPERATORS TO ACHIEVE THE NFCP TARGETS.....	6
	MCMC figures show that Celcom, Digi, Maxis and UMobile are able to meet NFCP throughput and coverage targets with their current spectrum assignments...	7
	Celcom, Digi, Maxis, and UMobile appear to be using their spectrum less intensively than their International peers	8
	Carrier aggregation will allow increase in mobile broadband speeds.....	10
	Upgrade of 2G/3G networks to 4G will increase capacity and coverage	11
	The Current Spectrum Holdings of Celcom, Digi, Maxis, and UMobile are Sufficient for them to Achieve the NFCP Targets	11
	Redressing the Spectrum Imbalance for YTL Communications	11
3.	THE 2300 MHZ BAND – NO TRIGGERS FOR VACATING OR REASSIGNING	13
4.	THE IMPACT OF THE PROPOSED CELCOM – DIGI MERGER.....	14
5.	CONCLUSION	15
	Equitable Allocation of the 700 MHz Assignment.....	15
	The 2300 MHz Spectrum Band Should Not be Vacated or Reassigned.....	15
	The Impact of the Celcom - Digi Merger and the Need to Maintain Competition...	15
	Schedule I.....	16
	Annexure A	
	Annexure B	

OVERVIEW

1. INTRODUCTION

- 1.1. YTL Communications Sdn Bhd ("**YTLC**") is grateful to be able to participate in the public inquiry and to be given the opportunity to share its views as an industry player and a key stakeholder on the issues raised in the Public Inquiry on the Allocation of Spectrum Bands for Mobile Broadband Service in Malaysia ("**PI Paper**").
- 1.2. YTLC understands that the Malaysian Communications and Multimedia Commission ("**MCMC**") is seeking views on:
- (a) the assignment for the 700 MHz band ("**700 MHz Assignment**");
 - (b) vacating and reassigning the 2300 MHz band ("**2300 MHz Reassignment**"); and
 - (c) the conversion of the 2600 MHz band from apparatus assignment ("**AA**") to spectrum assignments ("**SA**") ("**2600 MHz Conversion**"),
- collectively, the "**PI Paper Proposals**".
- 1.3. YTLC respectfully submits that in addition to consideration of the national policy objectives of the Communications and Multimedia Act 1998 ("**CMA**") and the targets of the National Fiberisation and Connectivity Plan ("**NFCP**"), the PI Paper Proposals must be considered against the backdrop of the following key factors:
- (a) the need to promote and maintain a healthy competitive environment for the industry;
 - (b) the existing allocation and distribution of spectrum in the different bands held by each telecommunications operator in Malaysia;
 - (c) the need for regulatory certainty to encourage investments and maintain a vibrant industry; and
 - (d) the impact on competition following the proposed merger between Axiata Group Berhad and Telenor ASA ("**Celcom - Digi Merger**").
- 1.4. The following paragraphs set out an analysis of these key factors. All capitalised terms and/or industry-specific terminology used in this response shall, unless expressly distinguished, have similar meanings to their corresponding references in the PI Paper.

[The rest of this page is intentionally left blank]

2. MAINTAINING HEALTHY COMPETITION

- 2.1. Spectrum is a valuable national asset, and YTLC fully supports the objective of the PI Paper to enable MCMC to develop an effective spectrum allocation strategy to achieve the national policy objectives set out in the CMA and the NFCP targets.
- 2.2. The national policy objectives for the communications and multimedia industry in the CMA include:
- (a) to regulate for the long-term benefit of the end users;
 - (b) to ensure an equitable provision of affordable services over ubiquitous national infrastructure; and
 - (c) to facilitate the efficient allocation of resources such as national assets.
- 2.3. A key feature in these objectives is the notion of maintaining healthy competition in the industry. To emphasise the point, the CMA dedicates the entirety of Part VI Chapter 2 of the CMA to address issues of general competition practices and has issued various guidelines to further illustrate the regulations surrounding competition practices in the communications and multimedia industry.
- 2.4. The explanatory statement of the Communications and Multimedia Bill 1998 ("**Bill**") clearly illustrates Parliament's intentions in respect of the concepts above. It states that the purposes of economic regulatory interventions are to promote consumer markets which offer choice, quality and affordability, any-to-any connectivity, competition in markets and investment and innovation in the sector. Further, the Bill also mentions the need to afford protection to small providers in the industry.
- 2.5. The need to improve services throughout the telecommunications sector in Malaysia via increased levels of competition is also recognised and acknowledged by the Government. At the "Malaysia: A New Dawn" an investors' conference held in October 2018¹, the Multimedia and Communications Minister YB Gobind Singh Deo said:

"I am looking at it from the perspective of generating competition so that we will have more new telecom players in the market, not just the existing ones.

We need to instill this idea of building competition so that we will see an increase in the efforts (by telecommunications companies) to make their products of better quality and pricing."

2.6. Introduction of New Entrants with the Advent of 4G to Increase Competition

- 2.6.1. In 2007, in a strategic move to bring in more competition and investment into the industry, MCMC awarded the 2300 MHz band to 4 new entrants. These were:
- (a) YTLC;
 - (b) Green Packet (now TM/Webe);
 - (c) REDtone (East Malaysia only); and
 - (d) AsiaSpace (Peninsula Malaysia only).

¹ The Edge Financial Daily, 10 October 2018 <https://www.theedgemarkets.com/article/govt-seeks-heighten-competition-telecom-sector>

Of the new entrants, YTLC is the only operator to have fully complied with MCMC's requirements to roll out a nationwide network and has to-date invested in excess of RM4 billion in infrastructure costs.

- 2.6.2. In 2013, to facilitate the introduction of LTE technologies, MCMC then awarded the 2600 MHz band to all existing mobile operators, namely Maxis, Celcom, Digi, UMobile, REDtone, TM/Webe and YTLC, and introduced yet another new operator, Altel.
- 2.6.3. These awards of spectrum in the 2300 MHz and 2600 MHz bands have resulted in the roll out of LTE services by YTLC, TM/Webe, Celcom, Digi, Maxis and UMobile. The other companies, namely REDtone, AsiaSpace and Altel, have not build their own networks but have instead shared their spectrums with the other operators.
- 2.6.4. It should be noted that YTLC being the first mobile operator to offer a 4G service, led the way in driving down broadband prices to affordable levels firstly through its WiMAX (IEEE 802.11e) service and subsequently, through its LTE and VoLTE services.

2.7. **The Need for a Balanced Holdings of Spectrum Bands and Adequate Bandwidth**

- 2.7.1. Today, YTLC is the only mobile operator still without any spectrum in the mid or low bands. The need for a balanced holdings of spectrum bands is a well-established principle and is an approach that has been adopted by regulators in numerous other jurisdictions when determining spectrum distribution.
- 2.7.2. For example, when Singapore awarded the license for the fourth new entrant into the Singapore mobile telecommunications market to TPG Telecom Pte Ltd ("**TPG**") in 2016, TPG was awarded both low band (20 MHz in the 900 MHz) and high band (40 MHz in the 2300 MHz) by the Infocomm Media Development Authority of Singapore ("**IMDA**") to allow TPG to be capable of being a credible competitor. The decision to allocate a mixture of low and high frequency to the new entrant was a deliberate one, as IMDA (then the Infocomm Development Authority of Singapore ("**IDA**")) had in its 2016 explanatory memorandum on the framework for the allocation of spectrum explained that "IDA assessed that a new MNO would require access to sufficient low and high frequency spectrum to offer competitive data capacity and service coverage to compete in the mobile market" and "the roll out of a mobile network that relies primarily on high frequency spectrum is expected to require several times the capital investment to roll out a mobile network using low frequency spectrum in an urban setting"².
- 2.7.3. The need for low band spectrum is also recognised in other jurisdictions, for example:
 - (a) in the United States, the US Federal Communications Commission (FCC) noted with respect to making low spectrum bands available that, "while other cost related factors exist, ensuring that multiple providers are able to access a sufficient amount of low-band spectrum is a threshold requirement for extending and improving service in both rural and urban areas"; and

² Source: https://www2.imda.gov.sg/-/media/Imda/Files/Inner/PCDG/Consultations/20150707_SecondPublicConsultation/Decision.pdf?la=en, paragraphs 32 and 34.

(b) similarly, in the United Kingdom, the Office of Communications (Ofcom) adopted policies which were explicitly designed to ensure such balanced outcomes and to promote competitive markets. In determining the efficient spectrum allocation among the telecommunication operators in UK, Ofcom considered the overall holdings of mobile spectrum and in particular in the sub-1GHz spectrum to "mitigate the risk of highly asymmetric spectrum holdings ... leading to lower competitive industry".

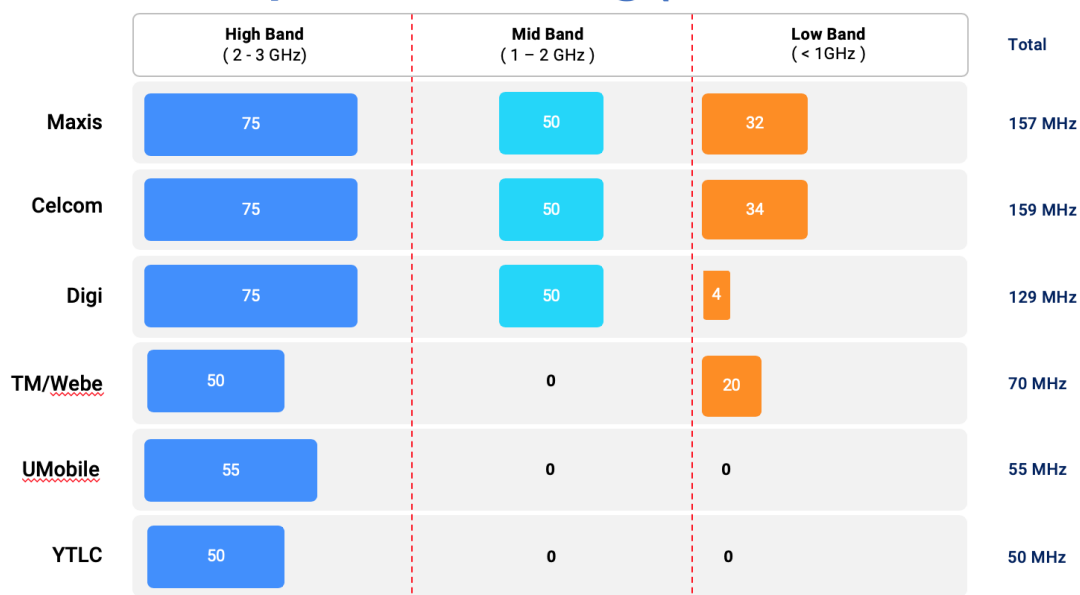
2.7.4. To promote a vibrant, competitive and best in class telecommunications industry, a combination of spectrum in the high, mid and low bands, as well as non-discriminatory allocation of adequate bandwidth, are both essential and necessary for telecommunication operators to achieve the most efficient usage of spectrum and to effectively service end users in line with the national policy objectives of the CMA and to achieve the NFCP targets.

2.8. YTL Communications and UMobile, the Only Mobile Operators Without Low Band Spectrums Prior to the 2016 Refarming

2.8.1. In Malaysia, following the award of the 2300 MHz and 2600 MHz bands, the spectrum distribution among all mobile operators was as shown in **Figure 1**.

Figure 1: Nationwide Spectrum holding among all mobile operators after award of 2300 MHz and 2600 MHz

Nationwide Spectrum Holding (Before 2016 Refarm)



It can be clearly seen that the only 2 mobile operators without any spectrum in the low bands were UMobile and YTLC.

2.9. Refarming of 900 MHz and 1800 MHz Bands by MCMC

2.9.1. In an attempt to redress this imbalance among Celcom, Digi, Maxis and UMobile, MCMC undertook a refarming of the 1800 MHz and 900 MHz ("**2016 Refarming**") bands in

January 2016 and rebalanced the spectrum allocation by re-assigning such spectrums between them, as shown in **Figure 2** below:

Figure 2: Spectrum held by Celcom, Digi, Maxis and UMobile before and after the 2016 Refarming

Spectrum Band	Players	Before 2016 Refarming	After 2016 Refarming
900 MHz	Celcom	2 x 17	2 x 10
	Digi	2 x 2	2 x 5
	Maxis	2 x 16	2 x 10
	UMobile	0	2 x 5
1800 MHz	Celcom	2 x 25	2 x 20
	Digi	2 x 25	2 x 20
	Maxis	2 x 25	2 x 20
	UMobile	0	2 x 15

The 2016 Refarming, which was undertaken without a tender, gave UMobile an additional 40 MHz of spectrum in the 900 MHz and 1800 MHz bands thereby levelling the playing field for UMobile and giving it the regulatory certainty to invest in expanding its network.

Figure 3: Nationwide Spectrum Holdings of Mobile Operators Post 2016 Refarming

Nationwide Spectrum Holding (Current)



* YTL's shared 30 MHz AsiaSpace spectrum is for Peninsula Malaysia only and not nationwide

Following this exercise, YTL is now the only mobile operator without any low or mid band spectrums as shown in Figure 3 above.

2.10. **Determination of Spectrum Assignment 2016 (P.U.(B) 365/2016)**

2.10.1. In a surprise move, after the 2016 Refarming, a Determination of Spectrum Assignment 2016 (P.U.(B) 365/2016) ("**2016 Ministerial Determination**", attached as **Annexure A**) was issued by the Minister of Communications and Multimedia Malaysia ("**Minister**") in August 2016 that effectively reserved the assignment of the 700 MHz band to Celcom, Digi, Maxis, and UMobile only.

2.10.2. At that time, the 700 MHz band had not yet been refarmed, pending the Analogue Switch Off ("**ASO**") exercise. However, it appears that this low band spectrum is being set aside for Celcom, Digi, Maxis and UMobile to the detriment of the newer entrants like YTL, even though each of the 4 operators already have significant low band spectrum. Not only does this go against the principles of fair and equitable competition enshrined in the CMA, it is also a departure from international best practices.

2.11. **YTL Communications' Concerns**

2.11.1. YTL voiced its strong concerns to the Minister regarding this unfair and penal action that would allow these 4 operators to increase their holdings of the low band spectrums whilst stifling YTL's ability to compete effectively against these established operators. Without any low band spectrum, all other existing operators would in all likelihood be forced to exit, resulting in a 4-player market.

2.11.2. The Minister assured YTL that this obvious imbalance would be redressed when the 700 MHz band is made available for assignment after the ASO. Relying on this assurance, YTL continued to invest in strengthening its network and its services to its end users.

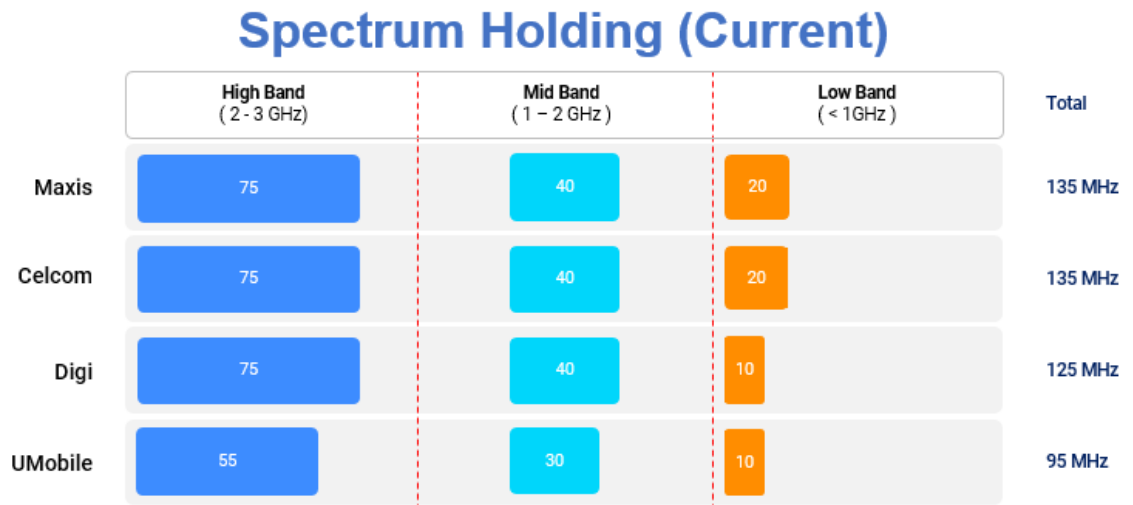
2.12. **Rebalancing of Spectrum Holdings to Achieve NFCP Targets**

2.12.1. The current proposal to allocate the 700 MHz band provides the ideal opportunity to rebalance the spectrum holdings of the various operators, especially the ones without any low band, and create a healthy and robust competitive market that will address the national policy objectives of the CMA and achieve the NFCP targets.

2.13. **The Current Spectrum Holdings of Celcom, Digi, Maxis and UMobile (CDMU) are Sufficient for these Operators to Achieve the NFCP Targets**

2.13.1. Currently, the distribution of spectrum holdings between Celcom, Digi, Maxis, and UMobile (including the spectrum that is available through spectrum sharing arrangements with REDtone and Altel) is as shown in **Figure 4** below.

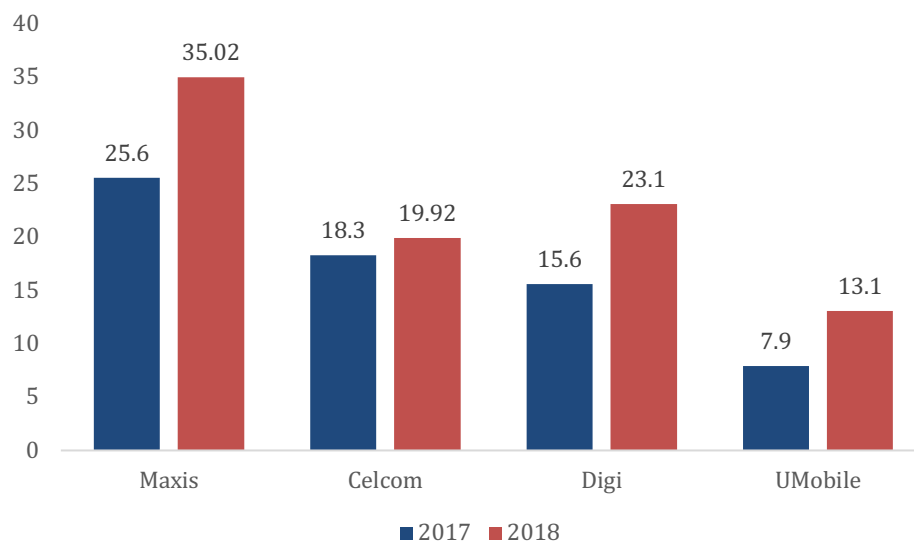
Figure 4: Current Spectrum Holdings of Celcom, Digi, Maxis and UMobile



2.13.2. **MCMC figures show that Celcom, Digi, Maxis and UMobile are Able to Meet NFCP Throughput and Coverage Targets with their Current Spectrum Assignments**

MCMC figures show that Celcom, Digi, Maxis and UMobile are able to meet NFCP throughput and coverage targets with their current spectrum assignments. As indicated in the 2018 MCMC Industry Performance Report, among the 4 operators, 1 operator already fulfills the NFCP throughput target, with average downlink speeds ranging from 13 to 35 Mbps (**Figure 5** below). Considering that the 4 operators have very similar spectrum assets (**Figure 4** above), the difference in the throughput is mainly due to their network topology. Thus, as shown by Maxis' performance which exceeds the NFCP target, it is still possible to improve performance by using network densification and other techniques, as more capacity could be provided with an increased number of base stations and use of carrier aggregation ("**CA**").

Figure 5: Average download throughput for wireless broadband in Malaysia (Mbps)



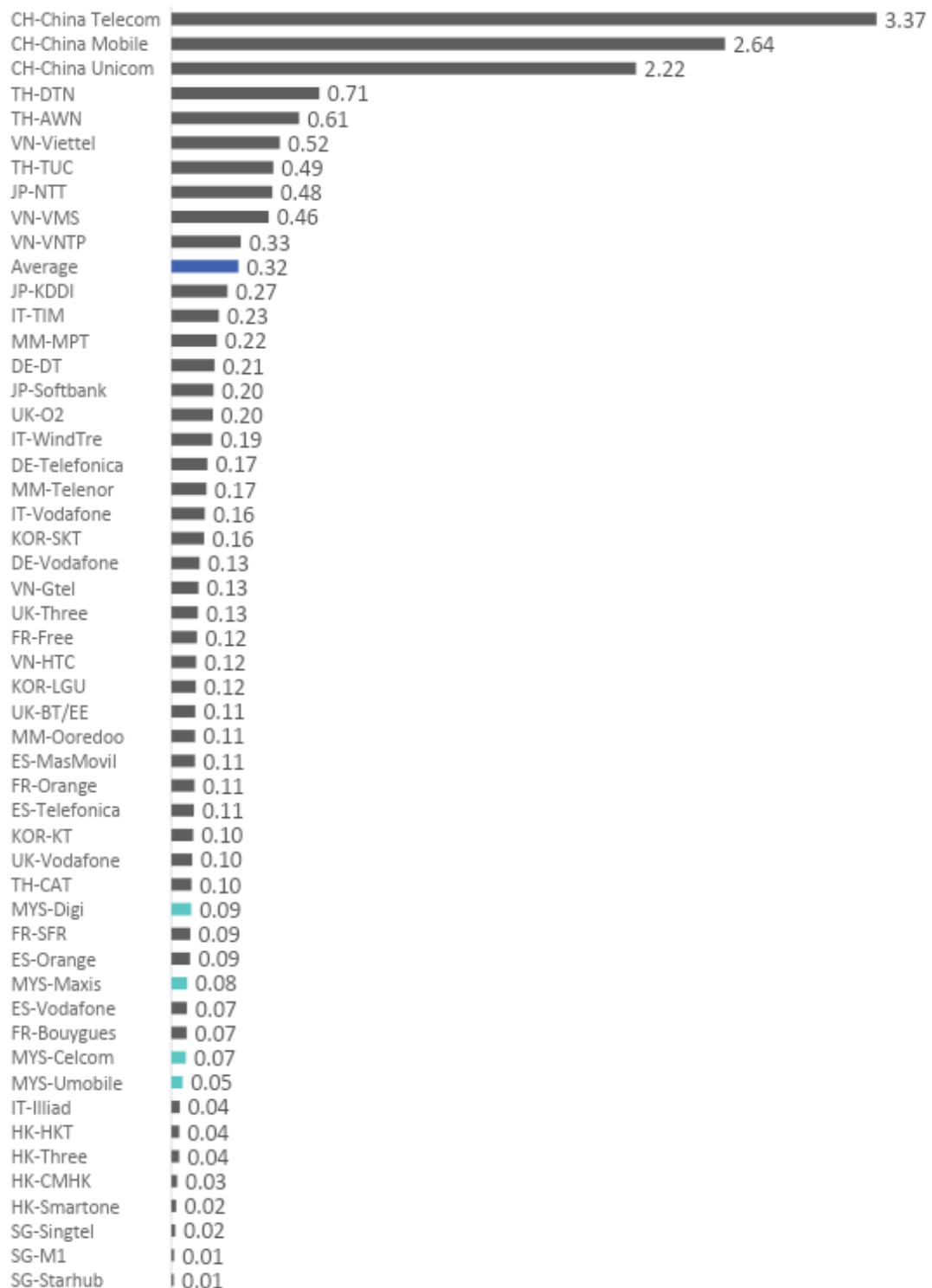
Source: MCMC

2.13.3. **Celcom, Digi, Maxis and UMobile Appear to be Using their Spectrum less Intensively than their International Peers**

A review of spectrum holdings and subscribers of 51 mobile providers in 14 countries in Asia and Europe (**Figure 6** below) shows that these 4 operators have among the lowest number of subscribers per MHz assigned. The average number of subscribers per MHz of the sample, is 300,933 subscribers/MHz. By comparison, these four mobile operators are currently serving between 53,841 and 94,839 subscribers per MHz with the spectrum available to them through their own assignments or via leasing arrangements, well below the sample average.

[The rest of this page is intentionally left blank]

Figure 6: Subscribers per MHz by selected mobile providers in Europe and Asia, 2018 (Million subs/MHz)

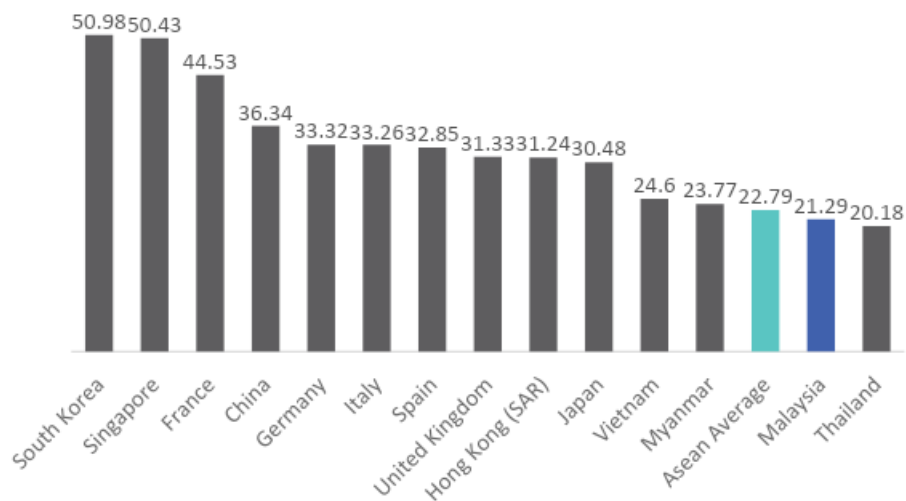


Source: TMG Analysis

In addition to serving relatively fewer subscribers per MHz than their peers, Maxis, Celcom, Digi and UMobile are achieving average mobile broadband speeds that are lower than those of peer countries. While mobile broadband speeds have improved with the roll-out of 4G networks, average download speeds in Malaysia remain below both NFCP targets and average speeds in the countries reviewed in Figure 7.

Importantly, however, as discussed in **Paragraph 2.13.2** above, these established networks are capable of reaching average speeds consistent with the NFCP targets which suggests that network topologies can be further optimized to increase performance.

Figure 7: Average mobile broadband download speeds in selected countries, July 2019 (Mbps)



Source: TMG Analysis

2.13.4. Carrier Aggregation will Allow Increase in Mobile Broadband Speeds

The use of CA and other LTE-Advanced techniques could lead to increased efficiency in the use of the same blocks of spectrum. Table 1 shows the maximum theoretical peak throughput that can be achieved by a network using the spectrum bands available in Malaysia, which could be aggregated. Based on this information, depending on which stage of technology each network has deployed, it is possible for the four established operators to improve their efficiency and increase the capacity provided in some bands. Based on current throughput measurements, this would support fulfilling NFCP targets with their existing spectrum holdings.

Table 1: LTE peak data rates

Spectrum (MHz)	LTE Band	Bandwidth (MHz)	Theoretical Peak DL Throughput (Mbps)	Antenna MIMO
2600	7	2x20	300	4x4
2100	1	2x15	225	4x4
1800	3	2x20	300	4x4
900	8	2x10	75	2x2

Source: 3GPP TS 36.101 Table 5.6A.1-2b.

2.13.5. **Upgrade of 2G/3G Networks to 4G will Increase Capacity and Coverage**

Celcom, Digi, Maxis and UMobile, all of who have spectrum in the 900 MHz, 2100 MHz and 2600 MHz bands, can also take advantage of spectrum efficiency improvements when shifting their existing networks from 2G/3G to 4G. In calculating the benefits of migrating 2G networks to use 3G for voice and 4G for data, studies have shown that a typical operator in Europe could serve up to 45 million subscribers with total spectrum assets of 140 MHz and a similar distribution as that of these 4 operators.³

2.13.6. **The Current Spectrum Holdings of Celcom, Digi, Maxis and UMobile are Sufficient for them to Achieve the NFCP Targets**

There is no doubt that based on their current spectrum holdings, each of Celcom, Digi, Maxis and UMobile already have sufficient spectrum to meet the NFCP targets. A detailed analysis of the capacity of these 4 operators to meet NFCP targets with their existing spectrum is set out in **Section 1.2** of the report issued by the Telecommunications Management Group ("**TMG Report**") in **Annexure B**.

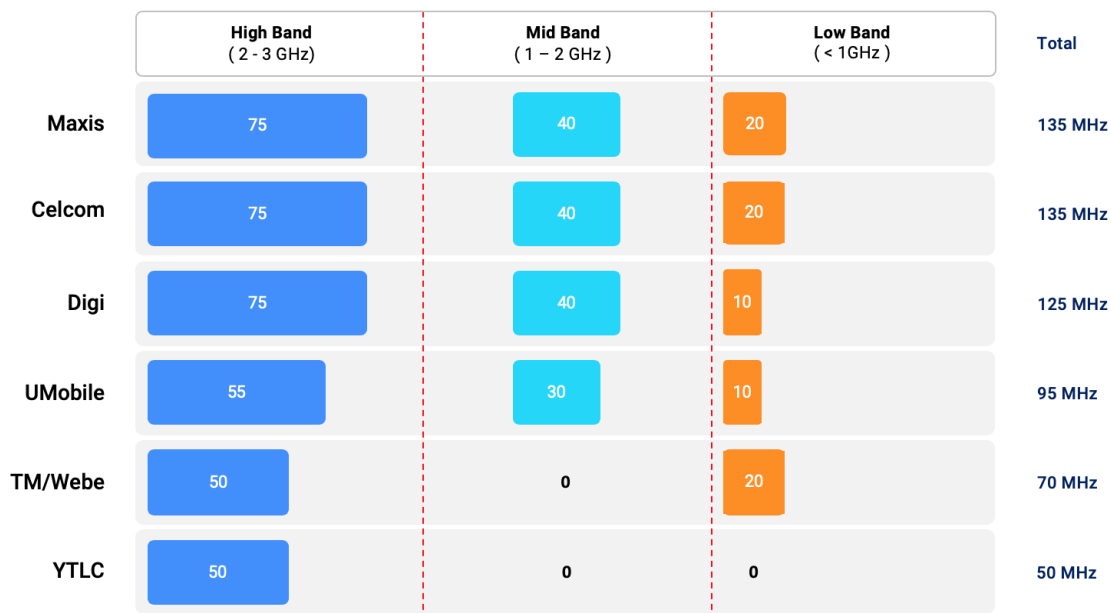
2.14. **Redressing the Spectrum Imbalance for YTL Communications**

- 2.14.1. As mentioned earlier, YTLC is the only nationwide player without spectrum in the mid or low bands. Therefore, taking the overall mobile spectrum holdings of all operators, it is only equitable that YTLC be assigned 2 x 20 MHz of the 700 MHz band to allow YTLC to effectively compete and continue to invest to meet NFCP targets. This would be consistent with the approach MCMC took in the 2016 Refarming to redress UMobile's spectrum imbalance by assigning 40 MHz of spectrum in these bands to it.

³ Nokia, Mobile Broadband with HSPA and LTE – capacity and cost aspects, pp.5, 2010, http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=4555.

Figure 8: Current Nationwide Spectrum Holdings of Mobile Operators

Nationwide Spectrum Holding (Current)



* YTLC's shared 30 MHz AsiaSpace spectrum is for Peninsula Malaysia only and not nationwide

- 2.14.2. The assignment of the 2 x 20 MHz of the 700 MHz band to YTLC will result in a far more balanced spectrum holding across all mobile operators in the country. It will allow YTLC to compete on a level playing field against the 4 established operators as well as enable YTLC to achieve the NFCP targets.
- 2.14.3. The proposed assignment of 2 x 20 MHz of the 700 MHz Assignment to YTLC will still leave 40 MHz of spectrum in that band for further allocation to the remaining operators.

[The rest of this page is intentionally left blank]

3. THE 2300 MHZ BAND – NO TRIGGERS FOR VACATING OR REASSIGNING

- 3.1. The proposal to vacate and reassign the 2300 MHz band is both surprising and disturbing as the triggers for a mandatory refarming exercise of the 2300 MHz band (such as the need to increase spectrum efficiency, to promote technological change or to harmonise spectrum usage) are simply not present. The latest technologies are already being deployed in the 2300 MHz band, leading to efficient use of the spectrum and increased competitive pressure in the market. See **Section 3.2** of the TMG Report in **Annexure B**.
- 3.2. Further, as explained in **Paragraph 2.13.2** above, Celcom, Digi, Maxis and UMobile already have sufficient spectrum holdings to meet the NFCP targets. None of them require any additional spectrum for this purpose. Conversely, the 2300 MHz band is YTLC's primary band and, coupled with the assignment of the 700 MHz band proposed in **Paragraph 2.14**, is fundamental to YTLC's ability to achieve the NFCP targets.
- 3.3. As one of the new entrants that was awarded spectrum in the 2300 MHz band pursuant to the Government's strategic move to introduce more competition into the industry⁴, YTLC commercially launched its network in Peninsula Malaysia in November 2010, and in East Malaysia in 2012. Just 3 years ago, YTLC was granted approval to use its 2300 MHz band for LTE. In this period, YTLC has invested more than RM4 billion in rolling out its network, initially for WiMAX then LTE. As with any new entrant, fair opportunity and time must be afforded to YTLC to recover its investment without being subject to mandatory refarming of its spectrum.
- 3.4. The 2300 MHz Reassignment would only affect the networks of the new entrants, namely YTLC and TM/Webe. Any forced shift to the 2600 MHz band would cause both operators to incur unnecessary time and cost to re-engineer their networks and migrate their end users to the 2600 MHz band. It would also disrupt service to such end users and prevent the 2 new entrants from being able to achieve the NFCP targets. Inability to achieve viable scale to compete in the mobile broadband market will force YTLC to exit the market.
- 3.5. We respectfully submit that there are no strong reasons for undertaking the 2300 MHz Reassignment. Instead, reassigning of the 2300 MHz band through conversion to SA would be the most efficient route to achieving NFCP targets.
- 3.6. More importantly, converting from an AA to SA regime does not require users to vacate the spectrum bands, therefore avoiding market disruption, costs of migration and stranded investments. As MCMC already proposes to implement a direct, cost-free conversion from an AA to SA regime in the 2600 MHz band in order to prevent disruption to current services, MCMC should adopt an identical approach for the 2300 MHz band. By converting both bands to SA regime, MCMC would provide the regulatory certainty and flexibility necessary to ensure that operators will continue to invest and provide innovative and competitive services.

⁴ <https://www.thestar.com.my/business/business-news/2007/03/16/malaysia-shuns-big-telcos-for-wireless-broadband-licenses>

4. THE IMPACT OF THE PROPOSED CELCOM – DIGI MERGER

- 4.1. The merger between Celcom and Digi needs to be factored into this spectrum allocation exercise for the following reasons:
- (a) mergers between mobile operators will result in a concentration of spectrum resources, which, in turn, will lead to competition concerns. With the proposed merger of Celcom and Digi, the number of mobile operators will decrease from 6 to 5. Moreover, as explained above, the proposed 2300 MHz Reassignment has the potential to result in the exit of YTLC and TM/Webe from the market. This combined outcome would likely reduce competition in the provision of mobile broadband services, hinder the achievement of NFCP targets and significantly reduce consumer choice; and
 - (b) the merged entity will have a disproportionately large spectrum holding. Based on the existing spectrum holdings (**Figure 8** above), if the spectrum bandwidths of Celcom and Digi are combined, it would result in a combined holding of 260 MHz of spectrum bandwidth (including 40 MHz from the sharing arrangements with Altel) which would mean the combined Celcom and Digi entity would hold the lion's share of over 41% of the spectrum bandwidth in a 5-player market. In this scenario, MCMC must carefully consider if there is any justification in assigning additional spectrum to the merged entity.
- 4.2. For a discussion of the impact of the Celcom - Digi Merger on the industry, see **Section 1.4** of the TMG Report in **Annexure B**.
- 4.3. Thus MCMC should ensure that a robust, competitive and healthy 5-player market is maintained post the Celcom-Digi Merger. This will require all operators to have an equitable spectrum holding across high, mid and low bands as proposed in **Paragraph 2.7.4** above and for the PI Paper Proposals to be modified such that they will not force the exit of YTLC or any other player from the market.

5. CONCLUSION

5.1. YTL Communications to have Equitable Allocation of the 700 MHz Assignment

5.1.1. Priority for the 700 MHz Assignment must be given to operators who do not have any low band spectrums. As the only mobile operator currently without any low band spectrum, and consistent with the 2016 Refarming, YTLC should be assigned 2 x 20 MHz spectrum in the 700 MHz band to redress the imbalance that currently exists in the distribution of spectrum across the mobile operators. With the assignment of such spectrum in addition to its holding of high spectrum bands, YTLC would continue to invest to achieve the NFCP targets.

5.2. The 2300 MHz Spectrum Band Should Not be Vacated or Reassigned

5.2.1. The triggers for a mandatory refarming of the 2300 MHz band are not present and therefore there is no reason to undertake the 2300 MHz Reassignment. Moreover YTLC and TM/Webe are the only mobile operators who are holding spectrum in the 2300 MHz band and require the spectrum to compete effectively in the market. On the other hand, Celcom, Digi, Maxis and UMobile already have sufficient spectrum to meet the NFCP targets and do not require additional spectrum in the 2300 MHz band.

5.2.2. The 2300 MHz band is YTLC's core spectrum. Vacating this spectrum would have a severe and adverse financial impact on YTLC given that it has invested over RM4 billion for the roll out and maintenance of its network.

5.2.3. MCMC should instead convert the existing AA to SA for the current holders of the 2300 MHz band in a fair and equitable manner, similar to its proposed approach for the 2600 MHz Conversion.

5.3. MCMC Must Ensure Healthy Competition Post Celcom - Digi Merger

5.3.1. The Celcom - Digi Merger, if completed, would result in a dominant mobile player that would hold a disproportionate amount of spectrum and concentrate market power in the merged entity. The PI Paper Proposals therefore should be viewed in conjunction with the potential outcomes of the Celcom - Digi Merger discussed in **Paragraph 4.1** above. MCMC must ensure that a robust, competitive and healthy 5-player market is maintained post the Celcom-Digi merger.

* * *

YTLC trusts that MCMC would take into consideration the above matters and the responses to the specific questions in the PI Paper in **Schedule I** below.

The Ministerial Determination 2016 is attached as **Annexure A**.

The TMG report, which contains an analysis of the PI Paper proposals against international best practices on each of the foregoing points, is attached as **Annexure B**.

Schedule I

Response to Specific Questions in PI Paper

All capitalised terms and/or industry-specific terminology used in this response shall, unless expressly distinguished, have similar meanings to their corresponding references in the PI Paper and the overview above. All references to "Annexures" are to the annexures to the overview above.

No	Question	Comments/Responses
1.	<p>MCMC would like to seek views on the proposed allocation plan for the 700 MHz band, in particular on:</p> <p>(i) Award mechanism</p> <p>(ii) Timeline for assignment</p>	<p><i>Award Mechanism</i></p> <ol style="list-style-type: none"> 1. The 2016 Ministerial Determination must first be revoked in order to remove the restrictions that effectively reserve the 700 MHz band to Celcom, Digi, Maxis and UMobile only. 2. As discussed in Paragraphs 2.7.1 to 2.7.4 of the overview above, prioritising a balanced distribution of spectrum between various bands is in line with international best practices, which promotes further competition within the market. The most prudent way to achieve this is to ensure that priority for the 700 MHz band is given to operators that do not have any spectrum in the low bands, such as YTLC (see Figure 8 in Paragraph 2.14.1 of the overview above). 3. 2 x 20 MHz of spectrum should be given to YTLC so that it is given a fair, reasonable and equitable distribution of spectrum bands that would enable it to effectively compete with the incumbent operators who already have a diverse range of spectrum and an overall larger spectrum holding, and to achieve the NFCP targets. 4. As discussed in Paragraph 2.9.1 of the overview above, MCMC had undertaken the 2016 Refarming as a way of redressing previously inequitable allocations. This exercise resulted in UMobile gaining 40 MHz of 1800 MHz and 900 MHz bands and consequently, the regulatory certainty to invest in expanding its network. However, following the 2016 Refarming, YTLC is the only mobile operator without any spectrum in the low bands. As such, a similar exercise should be carried out in order to redress this imbalance. 5. As the assignment of spectrum in the 700 MHz band to YTLC would be for the purpose of an equitable rebalance of spectrum allocation, the assignment should not be subject to

		<p>any tender / beauty contest process, similar to the 2016 Refarming.</p> <p>6. In relation to MCMC's proposal for the allocation of the 700 MHz band by way of SA, YTLC agrees that the award should be by way of SA (as opposed to AA)</p> <p><i>Timeline for assignment</i></p> <p>7. In relation to the timeline for the assignment proposed by MCMC, MCMC's proposal stated in the Section 3.1.3.1 of the PI Paper would be feasible.</p>
2.	MCMC would like to seek views on the optimum spectrum block per operator for assignment of the 700 MHz band	<p>1. As discussed in our response to Question 1 above, priority for the 700 MHz Assignment must be given to operators who have not been assigned spectrum in the low bands. In fact, the assignment of spectrum of the 700 MHz band cannot be viewed in isolation as each existing operator's overall spectrum allocation for all the available bands should be considered as well in order to determine the optimum spectrum block that should be awarded to ensure healthy competition and encourage innovation and growth of the industry.</p> <p>2. Therefore, taking the overall holdings of mobile spectrum of all operators, it is equitable that YTLC be assigned 2 x 20 MHz of the 700 MHz band to allow YTLC to effectively compete and continue to invest to meet NFCP targets. As noted in Paragraph 2.14 of the overview above, the proposed assignment of 2 x 20 MHz of the 700 MHz band to YTLC will still leave 40 MHz of the spectrum for assignment to the remaining operators. However, based on their current spectrum holdings, Celcom, Digi, Maxis and UMobile already have more than adequate spectrum to meet service demands and NFCP targets. See Paragraphs 2.13 of the overview above.</p> <p>3. We note that in Paragraph 3.1.2.5 of the PI Paper, MCMC is of the view that an assignment of less than 2 x 10 MHz spectrum may not be ideal to deliver high data rate, and this may affect the ability of operators to achieve the NFCP targets and ensure improvements of QoS. In this regard, we would respectfully disagree. The 700MHz band is an ideal spectrum for coverage and building penetration, and not for capacity. Therefore, in order for any operator to meet the NFCP targets, an operator needs to take a holistic view and combine all its spectrum holdings to create the right balance of coverage and capacity through the use of low, mid, and high bands. In addition, the evolution of new technologies such as the use of</p>

		<p>CA among different spectrum bands can lead to dramatically improved throughput speeds. Kindly refer to Section 1.2.3 of the TMG Report attached in Annexure B, which supports this proposition.</p>
<p>3.</p>	<p>MCMC would like to seek views on the proposed allocation plan for the 2300 MHz band, in particular on:</p> <p>(i) Award mechanism</p> <p>(ii) Timeline for assignment</p>	<p>Award Mechanism</p> <ol style="list-style-type: none"> 1. The 2300 MHz band should not be vacated or reassigned. Instead, MCMC should follow the same approach taken for the 2600 MHz, i.e. maintaining the same spectrum allocation but to convert from AA to SA regime. 2. The main reasons, as set out in the overview portion above, can be summarised to the following key points: <ol style="list-style-type: none"> (a) the triggers for a refarming exercise of the 2300 MHz band (such as the need to increase spectrum efficiency, to promote technological change or to harmonise spectrum usage) are simply not present (see Paragraph 3.1 of the overview); (b) the 2300 MHz band would only affect the networks of YTLC and TM/Webe, who are the new entrants to the wireless telecommunications market with the least amount of spectrum. If the 2300 MHz band is reduced or taken away entirely, this would have an adverse impact on YTLC and TM/Webe's ability to effectively compete in the market. This would be against enshrined principles of the CMA and the need to promote competition in the market (see Paragraph 3.4 of the overview and Section 1.4.3 of the TMG Report in Annexure B); (c) spectrum allocation must take into consideration the current spectrum holdings of all network operators (see Paragraph 2.13 of the overview) and in particular, the outcome of the proposed Celcom - Digi Merger (see Paragraph 4 of the overview); and (d) YTLC and TM/Webe have not had sufficient time to recoup their investments made in the 2300 MHz band. Vacating the 2300 MHz band at this juncture would significantly impair both operations and create uncertainties which will potentially discourage future investments in the telecommunications sector (see Section 1.3.3 of the TMG Report in Annexure B).

		<p><i>Timeline for assignment</i></p> <p>As mentioned, YTLC strongly opposes any policy to vacate and/or reassign the 2300 MHz band. No vacating or reassigning of spectrum should be scheduled.</p>
4.	MCMC would like to seek views on the optimum spectrum block per operator for assignment of the 2300 MHz band	YTLC proposes that the same spectrum block per operator is maintained, and that the AA for this spectrum be converted to SA in the same manner as the 2600 MHz Conversion proposed by MCMC.
5.	<p>MCMC would like to seek views on the proposed allocation plan for the 2600 MHz band, in particular on:</p> <p>(i) Award mechanism</p> <p>(ii) Timeline for assignment</p>	<p><i>Award Mechanism</i></p> <p>1. YTLC has no objections for the direct conversion of existing AA to SA while maintaining the existing assignments.</p> <p><i>Timeline for Assignment</i></p> <p>The proposed timeline in 3.3.3.1 of the PI Paper is acceptable.</p>
6.	MCMC seeks suggestions on approaches to mitigate interference between FDD and TDD blocks to facilitate efficient spectrum utilization in the 2600 MHz band	1. All mobile operators must adhere to the SKMM SRSP-523 published on 28 November 2012
7.	MCMC would like to seek views on the appropriate range (per MHz) for SA fees (price component and annual fee component) and the rationale for the proposed fees,	1. Recently, Finance Minister YB Lim Guan Eng stated that in the next 5 years, RM21.6 billion of investment will be required from various parties as well as the private sector to achieve NFCP targets. As such, the proposed SA fees, if any, should be nominal given the current industry landscape and the need to properly allocate financial resources in order to encourage operators to achieve and deliver on the NFCP targets by investing on infrastructure rollouts, and improving network coverage and the quality of service.

<p>for the following spectrum bands:</p> <p>(i) 700 MHz</p> <p>(ii) 2300 MHz; and</p> <p>(iii) 2600 MHz.</p>	<p>2. 700 MHz Band</p> <p>a. Price Component - YTLC proposes for MCMC to consider removing the requirement of a price component or impose a nominal fee so that the operators can invest in improving infrastructure instead. In countries like South Korea and Japan, the operators are given spectrum without the "Price Component". In return, each of the operators deliver certain requirements with regard to coverage and service quality. This way, the operators can use the cost associated with the "Price Component" and apply the investment to the Network Expansion and Quality of Service in line with NFCP targets.</p> <p>In addition given that this is a new spectrum band, it will require significant investment to deploy and develop a support ecosystem. The operators will not only need to invest in the network deployment, but also drive the development of the device ecosystem which is currently supported by a lower number of devices in comparison with other low bands such as the 900 MHz band (see Section 2.5 of the TMG Report in Annexure B).</p> <p>b. Annual Fee Component – YTLC proposes for MCMC to consider an annual fee equivalent to existing annual AA fee structure</p> <p>3. 2300 MHz Band</p> <p>a. Price Component - YTLC proposes for MCMC to consider no "Price Component" fee for this band in light of current investments that have been made by the operators to roll out their networks in the recent years and allow them the fair and equitable time to recoup their investments</p> <p>b. Annual Fee Component – YTLC proposes for MCMC to consider an annual fee equivalent to existing annual AA fee structure</p> <p>4. 2600 MHz Band</p> <p>a. Price Component - YTLC proposes for MCMC to consider no "Price Component" fee for this band in light of current investments that have been made by the operators to roll out their networks in the recent years and allow them the fair and equitable time to recoup their investments</p> <p>b. Annual Fee Component – YTLC proposes for MCMC to consider an annual fee equivalent to existing annual AA fee structure</p> <p>5. In order for MCMC to promote investments in network deployment and ensure the achievement of the NFCP targets, SA fees, if any, should be a secondary consideration for the Government.</p>
--	---

Annexure A

The 2016 Ministerial Determination

Annexure B

TMG Report