

C. Template for response

Question	Comments / Response				
1.	U Mobile agrees with MCMC's proposed use of a beauty contest to allocate 700MHz spectrum. The beauty contest evaluation for 700MHz should require each interested MNO to submit a new application, rather than being based on the prior 700MHz application in early 2018. Given the time that has elapsed between the previous application and the upcoming 700MHz award, commitments from the previous submission may no longer be valid and thus should not form the basis for spectrum allocation.				
	As part of the award mechanism, MCMC should impose a sub-1GHz spectrum cap of 2×20MHz that considers spectrum in the 700MHz, 850MHz and 900MHz bands. As discussed in Section 2.2, a sub 1GHz spectrum cap will enable each MNO to have sufficient sub-1GHz spectrum for strong 4G coverage and is in line with global regulatory practice. In particular, a 2×20MHz cap will provide for an equal distribution of sub-1GHz spectrum across four MNOs and will ensure that all four have the spectrum to offer a widespread and competitive 4G coverage base layer with good QoS. Rationalising the market towards four strong MNOs will enable sustainable competition with benefits for consumers (as discussed in Section 1) and is in line with global practice.				
	U Mobile understands that an additional 2×5MHz of 700MHz may be made available at a later date on top of the 2×40MHz allocation currently being proposed. If the additional 2×5MHz of 700MHz is currently held by an MNO, that entity should not be eligible to receive any of the 2×40MHz of 700MHz during the upcoming allocation to ensure fair allocation of 4G coverage spectrum.				
	MCMC must consider the potential Celcom–Digi merger when assigning 700MHz spectrum in order to prevent anti-competitive effects. For example, it should consider assigning a single licence to either Celcom or Digi, but not to both, and must assess the need for the merged Celcom–Digi to return sub 1GHz spectrum to ensure that there are four MNOs which are able to compete on the basis of strong coverage.				
	In terms of the timeline for the 700MHz assignment, U Mobile believes that the spectrum should be made available for mobile use as soon as possible to facilitate the expansion of 4G coverage.				
2.	U Mobile agrees with MCMC's proposed allocation of four licences of 2×10MHz each for the 700MHz band. Providing 2×10MHz of 700MHz to four competitive MNOs would enable each MNO to provide a widespread 4G coverage base layer with good QoS and is in line with the NFCP's target of enabling 30Mbps average speeds across 98% of populated areas by 2023. U Mobile believes that MCMC should consider imposing regulatory obligations on 700MHz licensees in order to achieve this target. Obligations				



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	requiring licensees to share their 700MHz networks in rural areas (e.g. bottom 95% – 98% of populated areas by population density) would facilitate achievement of the 30Mbps target across Malaysia.				
	In addition, the assignment of four 700MHz licences is in line with the need to rationalise Malaysia's mobile market towards four MNOs to enable sustainable competition (as discussed in Section 1). Such rationalisation can drive benefits for consumers in areas such as: enhanced mobile market competition, lower retail prices and increased network investment.				
3.	U Mobile agrees with MCMC's proposed use of a beauty contest to allocate 2300MHz (TDD) spectrum, and believes that a comparative evaluation process should be used consistently for all bands in the upcoming spectrum award. However, as discussed in Sections 3.1 and 3.2, 2300MHz (TDD) and 2600MHz (TDD) spectrum should be allocated jointly as a TDD block via a beauty contest as they are both potential 5G bands. U Mobile does not agree with the proposed pre-determined assignment of 2600MHz (TDD) based on current assignment, as this is inconsistent with other bands and does not consider that other MNOs may place a higher value on the spectrum and/or may generate a greater public benefit from their use of spectrum, such as via 5G deployment.				
	MCMC must consider the potential Celcom–Digi merger when assigning TDD spectrum, in order to prevent anti-competitive effects. This is of particular importance for 5G, as a high concentration of TDD spectrum held by a single player could disincentivise 5G deployment by other MNOs and thus hinder 5G coverage expansion. Potential measures that MCMC could adopt include assigning a single TDD licence to either Celcom or Digi and assessing whether the merged Celcom–Digi should be required to return spectrum to ensure there are four competitive MNOs each with an equitable share of spectrum. In terms of the timeline for 2300MHz (TDD) and 2600MHz (TDD) assignment, U Mobile believes that both spectrum bands should be made available for mobile use as soon as possible to enable accelerated deployment of 5G in Malaysia.				
4.	As discussed in Sections 3.1 and 3.2, 2300MHz (TDD) and 2600MHz (TDD) spectrum should be considered as a joint TDD block as they are suitable for 5G use. In line with rationalising the market towards four MNOs to enable sustainable competition (as discussed in Section 1), spectrum in the TDD block should be divided into four licences, comprising three 30MHz licences in 2300MHz (TDD), and one 40MHz licence in 2600MHz (TDD). By allocating these licences to four MNOs, MCMC would ensure that each MNO has the spectrum to deploy competitive 5G networks. In addition, the assignment proposed above would provide for TDD spectrum blocks of greater than 20MHz, which				



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	would enable 5G deployments in Malaysia to deliver mobile broadband speeds that substantially surpass current 4G standards.				
5.	MCMC's proposed approach of awarding 2600MHz (TDD and FDD) spectrum via a pre- determined approach is not justified. In particular, the proposed 2600MHz (FDD) allocation is based on spectrum sharing arrangements which fail to account for the reservation of capacity for the actual spectrum licensees (e.g. Altel/Redtone). As discussed in Section 4.1, the full 2×10MHz of shared spectrum should not be awarded to each of Maxis, Celcom and Digi as their existing 2600MHz (FDD) capacity is shared with other players. In addition, the existing spectrum sharing arrangements were facilitated by the specific position of the frequency assignments (as shown in Figure 4.1 earlier). U Mobile should not be prevented from receiving additional 2600MHz (FDD) spectrum due to its frequency assignment being adjacent to those of the primary MNOs rather than licensees that failed to use their spectrum effectively.				
	In addition, the proposed pre-determined allocation approach for both the 2600MHz (TDD) and 2600MHz (FDD) bands is inconsistent with the beauty contest approach that is proposed for the 700MHz and 2300MHz (TDD) bands. The pre-determined allocation does not consider that other MNOs may place a greater value on the spectrum and/or may generate a greater public benefit from their use of spectrum, such as via 5G deployment.				
	As such, MCMC should allocate the 2600MHz (TDD) and 2600MHz (FDD) bands via a beauty contest approach to ensure consistency across all bands. The structure of spectrum licences within each band should be aligned with rationalising the market towards four MNOs, to enable sustainable competition with benefits for consumers (as discussed in Section 1).				
	<u>2600MHz (FDD)</u>				
	For the 2600MHz (FDD) band, MCMC should allocate two 2×15MHz licences and two 2×20MHz licences via a beauty contest. Having a minimum 2×15MHz allocation in 2600MHz (FDD) will facilitate 4G competition and enable the most cost-efficient 4G carrier deployment with the highest potential throughput. To enable an equitable distribution of 4G capacity spectrum, allocation of the 2600MHz (FDD) band should take existing 1800MHz and 2100MHz spectrum holdings into consideration (in line with practice observed in markets such as the Netherlands).				
	<u>2600MHz (TDD)</u>				
	The 2600MHz (TDD) band should be considered in conjunction with the 2300MHz (TDD) band as a joint TDD block with potential for 5G and allocated as four licences of at least				



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	30MHz. The rationale for joint allocation of the TDD bands is set out in Section 3, along with U Mobile's views on the award mechanism and optimum spectrum per operator for this joint TDD block.				
	Merger considerations				
	MCMC must consider the potential Celcom–Digi merger when assigning 2600MHz (FDD) spectrum, particularly due to its implications for 4G competition. As shown in Figure 4.3, a post-merger allocation of 4G capacity spectrum based on the 2600MHz (FDD) allocation proposed in the PI document and existing 1800MHz/2100MHz spectrum holdings will give Celcom–Digi over 50% of 4G capacity spectrum in the market. This will provide it with a significant advantage in the 4G market and will reduce competition in the downstream retail market, with a resulting negative impact on consumers in areas such as consumer choice, retail prices and network investment. MCMC should account for this by using a beauty contest to allocate the 2600MHz (FDD) band, with existing 1800MHz and 2100MHz spectrum holdings taken into consideration when determining the specific assignment for each MNO. In addition, MCMC must also assess if the merged entity should be required to return a portion of its 4G capacity spectrum for reallocation to enable a level playing field in the market. In particular, the merged entity will have over half of the 1800MHz/2100MHz spectrum in the market based on existing holdings and must be required to return part of this spectrum for reallocation.				
	Similar considerations regarding the potential Celcom–Digi merger are also applicable to the 2600MHz (TDD) band, as discussed in Section 3.3.				
	Timeline				
	In terms of the timeline for 2600MHz (TDD) and 2600MHz (FDD) assignment, U Mobile believes that both spectrum bands should be made available for mobile use as soon as possible to enable accelerated deployment of 5G in Malaysia as well as expansion of 4G capacity.				
6.	Potential measures that MCMC can adopt to mitigate interference between the FDD and TDD blocks in the 2600MHz band include the use of guard bands, block edge masks, and additional filters. Each measure may be adopted on a standalone basis or in combination with others.				
	MNOs assigned with 2600MHz (TDD) or 2600MHz (FDD) spectrum may face the need to use operator-specific measures (e.g. filters) to mitigate for interference. Such measures may require the MNO to incur additional costs when using the spectrum for network deployment. The extent to which such filters are required is expected to be affected by the levels of interference faced – this may vary by the specific frequency range assigned				



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	to each MNO. MCMC should therefore consider offering subsidies or discounts on the spectrum assignment fees for 2600MHz licensees that incur additional costs associated with interference mitigation measures. The subsidies or discounts on spectrum assignment fees should be determined from the estimated additional costs incurred due to interference mitigation measures – for example, this could be based on the cost of installing filters at affected sites. This should promote a fairer assignment of specific frequency ranges in the 2600MHz band to individual MNOs.				
7.	As discussed in Sections 5.1 to 5.3, SA fees for the upcoming spectrum award must be set at a reasonable level – MCMC should use benchmarks of normalised reserve prices to assess the SA fees, with a discount applied on 700MHz fees to reflect its diminished value for 4G coverage.				
	Column (A) of Figure 5.2 below shows the normalised price per MHz / population / ARPU for each band in USD based on reserve price benchmarks. Details of the normalised reserve price benchmarks for each band are provided in Annex A. The benchmarks have been multiplied with Malaysia's mobile ARPU as shown in column (B) to derive the price per MHz / population in USD that is applicable to Malaysia before accounting for a discount for 700MHz as shown in column (C). These figures have then been converted to MYR as shown in column (D) based on an exchange rate of 1 MYR = 0.24 USD.				
	Spectrum band	(A) Price per MHz / population / ARPU based on benchmarks	(B) Malaysia's mobile ARPU in USD	(C) Malaysia's price per MHz / population in USD before 700MHz discount	(D) Malaysia's price per MHz / population in MYR before 700MHz discount
	700MHz	USD0.0183 per MHz / population / ARPU	USD11.76 / month ¹	USD0.215 / MHz / population	MYR0.896 / MHz / population
	2300MHz (TDD)	USD0.0015 per MHz / population / ARPU	USD11.76 / month	USD0.0176 / MHz / population	MYR0.0733 / MHz / population
	2600MHz (FDD)	USD 0.0038 per MHz / population / ARPU	USD11.76 / month	USD0.0447 / MHz / population	MYR0.186 / MHz / population
	2600MHz (TDD)	USD 0.0017 per MHz / population / ARPU	USD11.76 / month	USD0.0200 / MHz / population	MYR0.0833 / MHz / population

¹ Based on 2018 ARPU of MYR49 / month as reported by MCMC in its Industry Performance Report 2018 and an exchange rate of 1 MYR = 0.24 USD



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	The price per MHz / population applicable to Malaysia before accounting for a discount for 700MHz is shown again in column (A) of Figure 5.3 below. A discount ranging between 4 – 33% as shown in column (B) is applied to 700MHz based on benchmarks (see Figure 5.1) to reflect its diminished value for 4G coverage. The resulting price per MHz / population applicable to Malaysia after accounting for a 700MHz discount is then multiplied with Malaysia's population of 32.5 million as shown in column (C). This thus derives the price per MHz applicable to Malaysia in MYR as shown in column (D) on an NPV basis, inclusive of both one-off and annual payments.				
	Spectrum band	(A) Price per MHz / population applicable to Malaysia before 700MHz discount	(B) Discount due to late release for 4G coverage	(C) Malaysia's population	(D) Price per MHz applicable to Malaysia on NPV basis
	700MHz	MYR0.896 / MHz / population	4 – 33% discount	32.5 million	MYR19.51 – 27.96 million / MHz on an NPV basis
	2300MHz (TDD)	MYR0.0733 / MHz / population	N/A	32.5 million	MYR2.38 million / MHz on an NPV basis
	2600MHz (FDD)	MYR0.186 / MHz / population	N/A	32.5 million	MYR6.05 million / MHz on an NPV basis
	2600MHz (TDD)	MYR0.0833 / MHz / population	N/A	32.5 million	MYR2.71 million / MHz on an NPV basis
	Based on the SA fees from the 900MHz and 1800MHz reallocation in 2016, the NPV of the total SA fee payments were split between: approximately 60% of the NPV via an upfront price component and approximately 40% of the NPV via the annual fee component. This has been calculated based on a weighted average cost of capital (WACC) of 10% which is in line with MCMC's WACC for mobile services as stated in its Review of Access Pricing in 2017. As such, a similar 60/40 proportion has been applied to derive the proposed price component and annual fee component of SA fees for the upcoming spectrum allocation as shown in columns (B) and (C) respectively in Figure				



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	5.4 below. The annual fee component is calculated based on a licence validity of 15 years which is in line with the current 900 and 1800MHz assignment. Figure 5.4: Proposed SA fees for Malaysia by price and annual fee components				
	Spectrum band	(A) Price per MHz applicable on NPV basis	(B) Price component (60% of NPV)	(C) Annual fee component (40% of NPV) ²	
	700MHz	MYR19.51 – 27.96 million / MHz on an NPV basis	MYR11.71 – 16.78 million / MHz	MYR1.03 – 1.47 million / MHz annually	
	2300MHz (TDD)	MYR2.38 million / MHz on an NPV basis	MYR1.43 million / MHz	MYR0.12 million / MHz annually	
	2600MHz (FDD)	MYR6.05 million / MHz on an NPV basis	MYR3.63 million / MHz	MYR0.32 million / MHz annually	
	2600MHz (TDD)	MYR2.71 million / MHz on an NPV basis	MYR1.63 million / MHz	MYR0.14 million / MHz annually	
	component and annual fee component from the approximate 60/40 proportion seen with the 900/1800MHz licences. For example, this could involve a higher proportion of				
	the SA fees charged via the price component with a resulting reduction in the annual fee				
	component. U	Mobile is prepared to	support any such	potential changes in the	
	both the price component and appual fee component should remain in line with				
	normalised reserve price benchmarks as shown in column (A) of Figure 5.4 above.				

² The NPV of the annual payments shown in this column across a 15-year period with a WACC of 10% are equivalent to 40% of the total price per MHz applicable to Malaysia on an NPV basis as shown in column (A). This 40% proportion is in line with MCMC's past SA fees from the 900/1800MHz reallocation.