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**COMMUNICATIONS ALLIANCE
SATELLITE SERVICES WORKING GROUP (SSWG)**

SUBMISSION

to the

Australian Communications and Media
Authority (ACMA)

Options paper

Replanning of the 28 GHz band

17 May 2019

TABLE OF CONTENTS

GENERAL COMMENTS	4
INTRODUCING THE 37-43.5 GHZ RANGE (BANDS C, D, AND E)	5
THE PROCESS TO DATE	6
CONSIDERATION OF PLANNING OPTIONS	7
OUTCOME OF 26 GHZ BAND REPLANNING PROCESS	7
CONSIDERATION OF SPECTRUM OPTIONS FOR WWB	8
CONSIDERATION OF SPECTRUM OPTIONS FOR PTP	8
CONSIDERATION OF SPECTRUM OPTIONS FOR FWA	8
CONSIDERATION OF SPECTRUM OPTIONS FOR FSS	8
CONSIDERATION OF SPECTRUM OPTIONS FOR HAPS	9
CONSIDERATION OF TECHNICAL ISSUES	9
SHARING AND COEXISTENCE BETWEEN WWB/FWA AND FSS	9
SHARING AND COEXISTENCE BETWEEN PTP AND FWA	9
SHARING AND COEXISTENCE BETWEEN FSS AND PTP	9
28 GHZ OPTIONS	9
ASSESSMENT OF OPTION – A REPRISÉ OF THE PRINCIPLES	10
PRINCIPLE 1 – ALLOCATE SPECTRUM TO THE HIGHEST VALUE USE (HVU) OR USES	10
PRINCIPLE 2 – ENABLE AND ENCOURAGE SPECTRUM TO MOVE TO ITS HVU	11
PRINCIPLE 4 – TO THE EXTENT POSSIBLE, PROMOTE CERTAINTY AND FLEXIBILITY	11
PRINCIPLE 5 – BALANCE THE COST OF INTERFERENCE AND THE BENEFITS OF GREATER SPECTRUM UTILISATION	11
SUMMARY QUESTIONS FOR COMMENT	12

Communications Alliance

The Communications Alliance Satellite Services Working Group (SSWG) welcomes the opportunity to provide this submission on the Australian Communications and Media Authority (ACMA) Options paper *Replanning of the 28 GHz band*.

Communications Alliance acknowledges that some of its members, including Telstra and Optus, do not agree with some aspects of this submission, and that these members will be making their positions clear in separate submissions.

Communications Alliance is the primary telecommunications industry body in Australia. Its membership is drawn from a wide cross-section of the communications industry, including carriers, carriage and internet service providers, content providers, equipment vendors, IT companies, consultants and business groups.

Its vision is to provide a unified voice for the telecommunications industry and to lead it into the next generation of converging networks, technologies and services. The prime mission of Communications Alliance is to promote the growth of the Australian communications industry and the protection of consumer interests by fostering the highest standards of business ethics and behaviour through industry self-governance. For more details about Communications Alliance, see <http://www.commsalliance.com.au>.

GENERAL COMMENTS

The SSWG welcomes the timely advance of consideration by the ACMA of the replanning phase for the 28 GHz band. This follows the *28 GHz spectrum planning* Discussion Paper (September 2018). This submission should be read in conjunction with the proposals from the SSWG to that consultation.

One important point of departure in philosophy between the SSWG and the ACMA is the ACMA's decision to adopt a 'band-by-band' approach to its evaluation of the potential of frequency bands to respond to the spectrum needs of stakeholders.

The SSWG has long argued that a consolidated, 'multi-band' evaluation is necessary, given the complexity of many services competing for the available spectrum. The current Options Paper has elements of a re-run of the 26 GHz band evaluation, together with suggestions of how to fit multiple competing demands into the single 28 GHz band available. This approach carries a high risk in terms of regulation and may generate future dislocation and inconvenience, when the value and potential of other bands become available.

Furthermore, the analysis of the Principles which guide the ACMA's decision making has the potential to be a 'GIGO' exercise (garbage in, garbage out), depending critically on the input assumptions and the canvass of spectrum which is taken into consideration.

A more holistic approach – taking into account the 26, 28 and 37-43.5 GHz bands at the same time – leads (in the SSWG's view), to very different results and a compelling case for Option 4 – which is exclusive use of 28 GHz for the FSS.

The SSWG is conscious of and sympathetic to the needs of the IMT community, and the FWA and PTP service providers. For the needs of 5G, in the 26 GHz band, the SSWG is agreeable to approximately 2 GHz of spectrum being allocated to IMT, and possibly a further 400 MHz being made available to either IMT or FWA. The SSWG also notes the 2.6 GHz band is IMT-capable. This should cater for more than two full-line 5G carriers nationwide.

In addition, the SSWG supports a further 2 GHz being made available in the 37-40 GHz and 42-43.5 GHz range to support two more full-line 5G carriers. Noting the SSWG supports setting aside 2 x 2 GHz for Ubiquitous FSS (40-42 GHz downlink paired with 48.2-50.2 GHz uplink) along with 37.5-42.5 GHz and 47.2-50.2, 50.4-51.4 GHz for gateway use. Spectrum could be shared elsewhere.

In addition, up to 1 GHz should be made available in the 37-43.5 GHz range for FWA and PTP re-location, given that current assignments to PTP are inefficiently using spectrum in this valuable 28 GHz range, and that these two fixed services can be coordinated. This would pave the way for a solution to the longer term inherent incompatibility between ubiquitous services, which will flood into the market in the near future, and non-ubiquitous services. To avoid this impending reality, the ACMA should look to a more durable solution that obviates the need for future remedial action.

In many cases there is overlap and complementarity amongst future 5G providers, WiFi/FWA providers and satellite service providers.

Other services, such as aeronautical and maritime services, also bring in a satellite component by necessity and possibly a ground-to-air component. This also confirms that future service developments are not all about terrestrial 5G mobile cellular networks. WiFi is already a significant fixed alternative available for terrestrial Internet access and should be accommodated as a key component of 5G networks, and not be treated as a mere afterthought. .

For its part, the satellite industry has established its commitment to broadband and 5G service, with 28 GHz being the focus of massive investments in high capacity and mobility in the services it provides. The satellite community can live alongside other services, provided

that sufficient breadth of thinking in a 3-band strategy is given by the ACMA, as proposed in this submission.

This offers the lowest risk regulatory approach and avoids potential future poor decision making and costly recovery attempts – in other words, regulatory fiat artificially driving markets. Other higher mmWave bands are also under investigation by the ITU, with a total of 33 GHz of bandwidth under study in the current WRC-19 cycle. However, the IMT community has shown little interest for in-depth evaluation of these so far, except to lay claim to a fallback position should the WRC be less than amenable to its requests for spectrum. The two top priority bands for the IMT community are 26 GHz and 37-43.5 GHz, and the SSWG does not raise major concerns with this.

Finally, a housekeeping comment about what may seem minor but nevertheless is significant especially to non-Australian readers. Since the ACMA re-jigged the timing of the Five Year Spectrum Outlook (FYSO) in the past 18 months in order to align with the industry planning cycle and the Australian financial year, quarters referred to should coincide with the financial year (1 July - 30 June in Australia). In addition, the financial year itself is not necessarily known to others outside the country. In this respect, Q4 should refer to the June quarter.

Unfortunately, ACMA is issuing different references to quarters of the year, presumably because of different authors in the organisation. It is not only confusing stakeholders but it appears ACMA staff may be confusing each other. As an example, there is a propensity in the *Planning in the 28 GHz band Options Paper* to refer to, say Q4 2019 which logically indicates the December Quarter, whilst the nomenclature of the current FYSO document uses, say, Q4 2019/20 which indicates the June Quarter. This constitutes a difference of 6 months. The SSWG recommends the ACMA carefully review all current and future consultation documents in this context (and to clarify accordingly) and to define the financial year with view to overseas readers.

INTRODUCING THE 37-43.5 GHz RANGE (BANDS C, D, and E)

ITU-R studies of candidate bands for IMT are now advancing to different levels of maturity ahead of the WRC-19 meeting to be held during October/November 2019. The most advanced considerations lie with the 24.25-27.5 GHz and 37-43.5 GHz bands.

Other countries have already taken steps to formalise their commitment to these bands. The ACMA has recently moved ahead with the 26 GHz band. The 28 GHz band should be the subject of further, in-depth and broader thought, rather than echoing the approach taken in respect of the 26 GHz range.

It is extremely important for Australia and countries with a similar demographic to avoid widening the digital divide between densely populated urban areas and rural regions through denying FSS access to the most profitable markets in favour of IMT. It is simply not financially viable to launch a satellite to service the thin markets alone and such a spectrum allocation technique would work to exacerbate the divide.

The Global Satellite Coalition has proposed an inclusive strategy for the allocation of spectrum in the range 37-43.5 GHz, on a Regional basis.

In brief, this observes the developing Regional trends, with R3 prioritising 40.5-43.5 GHz for IMT, and NOC for 37-40.5 GHz. Existing allocations to the HDFSS are also preserved in this strategy.

Further details and reasoning are given in ANNEX 1.

In addition, ViaSat is designing next generation GSO satellites, which will cover Region 3 and Australia to use the V-Band for "gateway type" use (37.5-42.5 GHz and 47.2-50.2 GHz, 50.4-51.4 GHz). It is vital the FSS not lose the ability to use these bands due to WRC decisions. Within

these bands there is a defined need for 2 x 2 GHz of core satellite spectrum (48.2-50.2 GHz, 40-42 GHz) with shared spectrum between FSS and the MS elsewhere.

Whichever way this plays out in the WRC this year, it appears that the IMT community can look forward to a very generous allocation to complete their needs, in addition to the 26 GHz band, thus leaving the 28 GHz band available for innovative satellite developments. The 38 GHz band referred to by the ACMA for FWA/PTP potential would also still remain a reasonable expectation within this proposal.

THE PROCESS TO DATE

The SSWG would like to add some further comments to the ACMA's summary of submissions to the September 2018 *28 GHz spectrum planning* Discussion Paper, as follows :

- (a) **FWA:** The SSWG has no qualms with a provision of 1 GHz for future FWA. Indeed FWA is an important aspect of the future. The SSWG notes the potential for sharing of these services, in particular with PTP services, and the potential for 100 MHz (for proposed 5G equipment) or 112 MHz (for existing FWA equipment) and the opportunity for use of the 38 GHz band as suggested by the ACMA. These observations have been built into the narrative of this SSWG submission.
- (b) **FSS:** The satellite industry is clearly focussed on the 28 GHz band as a purposed band for ubiquitous ESIM and other broadband services, together with gateways for those services. Current use of the band and continued investment activity shows this. In the course of time and a ramping up of ubiquitous services, gateway relief for the 28 GHz band will be required, and this is the planned intention for the 50 GHz band. Exclusive use by gateways in that band would allow for coordinated use of the 50 GHz band.

Geographical delineation of ubiquitous services would be temporary and short sighted. It would be artificially constraining and defeat the purpose of ubiquitous operation. It would also create a digital chasm between city and rural areas as FSS operators will avoid covering countries where the provision of a profitable service was rendered impossible.

All submissions from the satellite industry have rightly rejected the notion of sharing with terrestrial mobile broadband services in the 28 GHz band. Ubiquitously deployed satellite and terrestrial mobile user terminals are simply not feasible in the same area. In addition, harmonisation across the whole 27.5-29.5 GHz band and across the whole country is a key to the successful deployment of the new innovative generation of satellite services.

- (c) **Area wide WWB:** The seven submissions which identified 5G as the intended technology standard for the 28 GHz band can only be regarded as an ambit claim or fallback against the generous availability of spectrum in the 26 and parts of the 37-43.5 GHz bands (see above). We have reached the point where realistic and practical claims should now be central to decision making – investment, service and equipment availability are no longer academic considerations. Higher mmWave bands also offer the opportunity for further claims where that might be necessary.

In the ACMA's band-by-band approach we have seen the orphaning of WiFi services and FSS to make room for WWB in the 3.6 GHz band, and without any offer of compensation (which is typically not the case in other jurisdictions). While this 'is history', it should be recognised as an unwelcome sudden change of regulatory policy and an economic burden to industry. While the actions taken in the 3.6 GHz band may have been justified, as previously argued, any regulatory solutions should nevertheless take into account a broader and longer term picture in a holistic

approach to spectrum management which is not constrained by a focus on one band at a time.

One submission argued that further study was required for compatibility of WWB with NGSO gateways, whilst three submissions argued that sharing between ubiquitous FSS and WWB was feasible with different combinations of appropriate band and geographic segmentation, and appropriate protection levels. The SSWG disagrees with these arguments, based on our view that adequate spectrum (other than 28 GHz) ought to be made available via a holistic approach. We also highlight the impracticality of implementing these methods whilst sustaining the growth and viability of each service which would be very difficult for a regulator to monitor and enforce. The ideas behind the current sharing observation by the ACMA would combine to destroy the validity and realisation of the full potential of satellite services in the 28 GHz band.

(d) Fixed PTP :

The SSWG recognises the importance of PTP services. Given the small number of current assignments and inefficient use of spectrum together with inappropriate coexistence with ubiquitous services, the SSWG believes it is timely to fully explore the use of the 38 GHz band, given that it appears that the channel bandwidths can be accommodated and the propagation distances at 38 GHz are generally within the scope of existing services.

There would also appear to be little correlation between where IMT is deployed in 26 GHz and where FWA is needed. We understand that the ACMA is considering 3.3 GHz for FWA along with bands other than 28 GHz. We suggest the ACMA fully explore shared use between fixed and mobile IMT prior to looking at any other bands.

(e) Other submissions :

Two other submissions commented on exclusive use of the 28 GHz band, one of these with respect to a potential allocation to HAPS. Neither appear to be immune to solutions in other bands. The SSWG also notes that the Softbank proposal for HAPS is for a *downlink* in the 27.9-28.2 GHz range.

CONSIDERATION OF PLANNING OPTIONS

The SSWG notes some further comments and views on the services and planning issues discussed for the 28 GHz band:

Outcome of 26 GHz band replanning process

The planning decisions arrived at by the ACMA amount to an attempt to satisfy all needs within the context of a single band. This previous consideration of the 26 GHz band has led to some 2.4 GHz of spectrum nominated for IMT, and other services being budgeted.

As stated, the SSWG would be much more comfortable with a holistic approach to spectrum planning, and the balance of a further 2 GHz of IMT spectrum would come from parts of the frequency range 37-43.5 GHz (see above). This, along with utilising 26 GHz where it is not allocated for mobile along with 3.3 GHz, should more than reasonably cater for the overall spectrum demands of the mobile cellular network operators. This would also avoid the pitfall of focussing the current round of planning considerations on the single 28 GHz band and potentially a frivolous decision to accommodate IMT in the 28 GHz band. Based on previous 3G and 4G generations, a total of four full-line 5G operators may be all that the market and significant network and spectrum investments can support. For more spectrum there are higher mmWave bands available as well as the ability to re-farm spectrum of previous mobile generations.

Consideration of spectrum options for WWB

The notion of a viable terrestrial equipment IMT ecosystem for the entire 24.5-29.5 GHz range is based on the tunability of 5G equipment. However, tunability in itself is not an argument for spectrum allocation. The equipment designed for satellite systems is also tuneable over wide ranges including the entire 24.5-29.5 GHz. However, the satellite industry is honouring the WRC-15 decisions on bands to be studied for the different services.

The ACMA's announcement to work towards facilitating 2.4 GHz for issue via spectrum licences is entirely in keeping with the WRC-15 Agenda Item 1.13 resolution on IMT spectrum studies. Under this Agenda Item, parts of the 37-43.5 GHz and the 66-71 GHz bands are also included (amongst other bands) and the comments by the SSWG on a holistic approach are entirely in keeping with this.

The SSWG notes that the ACMA recently consulted on the 66-71 GHz band and is currently in the monitoring stage of the 37-43.5 GHz band. The SSWG agrees with the consultation on 66-71 GHz band, and strongly advocates that this current 28 GHz consultation should foreshadow involvement of parts of the 37-43.5 GHz band. Not to do this would mean to work with an incomplete scenario which could lead to errors in judgement that go against the international trends.

Consideration of spectrum options for PTP

The SSWG thanks the ACMA for a very helpful summary of PTP band assignments and the accompanying analysis of potential for the 38 GHz band to house future PTP assignments for channels ranging up to 112 MHz. This longer term potential is consistent with international harmonisation (ITU-R F.749) and serves as a timely solution ahead of any substantial growth of PTP links in these higher frequency bands.

The SSWG agrees with a decision to cease support for new 28 GHz PTP assignments and a grandfathering strategy for existing PTP licences. Based on recent experience with grandfathering of the 3.6 GHz band, a period of 2 years would seem appropriate with special considerations available up to 5 years. Other periods may be negotiable with other licence holders and would rely on circumstances.

Consideration of spectrum options for FWA

The ACMA has identified two options for additional FWA spectrum in the 28 GHz band. However, one further option in a broader context of a primary status of FWA and PTP could be set up in the 38 GHz band. Coordination would ensure coexistence.

A further alternative would be to impose secondary status on FWA and PTP. This would essentially transform Option 3 into Option 4. Whilst this would appear to satisfy the SSWG preference for Option 4, the practical management of this by the regulator would probably be very challenging.

Yet another option would be to assign 2 GHz of the 26 GHz band to IMT services, and use the balance of 400 MHz for PTP/FWA assignments with a primary status.

Consideration of spectrum options for FSS

The SSWG re-affirms that satellite operators would prefer no limitations on the geography or frequency of ubiquitous service operations, including ESIM, so that service delivery is greatly simplified and there is no denial of access to some areas. Whilst the ACMA states that this needs to be balanced against the spectrum needs of other services, the SSWG has a firm opinion that those other services can be comfortably accommodated in bands other than 28 GHz if a broader mix of 26 GHz, 28 GHz and 37-43.5 GHz is analysed.

The SSWG accepts the ACMA's view that options for both fixed ubiquitous and ESIM should be considered in the 28 GHz band – and the SSWG adds that fixed gateways be included until gateway relief is in prospect.

Consideration of spectrum options for HAPS

The SSWG notes the ACMA's comments on HAPS and the summary of ITU progress in a variety of bands. The SSWG looks forward to the separate consultation foreshadowed, and in the meantime observes that the current HAPS proposal from Softbank is for a *downlink* application in the range 27.9-28.2 GHz.

CONSIDERATION OF TECHNICAL ISSUES

Under this heading, the SSWG offers the following comments regarding the ability for WWB, FWA, PTP and FSS to share or coexist in the 28 GHz band:

Sharing and coexistence between WWB/FWA and FSS

Because the longer term future for the 28 GHz band, by virtue of investment commitments and market growth, is towards totally ubiquitous terminals, these sharing scenarios are, in the SSWG's view academic and impractical in the longer term.

The defining conditions suggested by the ACMA for managing planning arrangements would act to seriously impede the full potential of satellite services. Gateways can obviously be accommodated in planning arrangements, but ubiquity brings the full value of the satellite services – especially with ESIM – and this is virtually impossible to guarantee without exclusive access to the spectrum. The same is true of IMT services in the 26 GHz and the 37-43.5 GHz bands.

For ESIM, the ACMA suggests that the most practical option would be to segregate operations by geography or frequency. The SSWG contends that this would destroy the business case for the service, and other bands should be employed in a holistic sense to achieve the more desired result of all services achieving their full potential.

Sharing and coexistence between PTP and FWA

The SSWG notes the ACMA's optimism for coexistence between PTP and FWA through appropriate coordination procedures as has been the experienced in the 1800 MHz and 2.1 GHz bands, and that coordination is expected to improve in the mmWave bands.

The SSWG encourages the ACMA to continue along this way and to seriously engage with the 38 GHz band as the best option to accommodate these services.

Sharing and coexistence between FSS and PTP

As the ACMA observes, sharing is only possible under restrictive conditions – but those conditions would limit the full potential of the satellite services and deny the full value of true ubiquity. This would not be necessary with a more holistic approach to spectrum allocation.

We are aware the ACMA has experience with sharing between the FS and FSS in the 18 GHz band and due to the extremely low probability of interference has permitted FSS (rx) and FS coexistence. SSWG submits that the probability of FSS (tx) interference into the dynamic beams of P-MP FWA is much lower due to the higher band and tighter FSS beams and that any FWA in 28 GHz could successfully be secondary in nature (NINP). Nonetheless SSWG believes FWA is unnecessary in 28 GHz as sufficient spectrum is available elsewhere.

28 GHz OPTIONS

For the foregoing reasons, the SSWG maintains that Option 4 will yield the greatest benefit to Australia. With a broader perspective of a 3-band approach, all of the advantages associated with the other options can be realised without detriment to the objectives while minimising risk..

A fall-back could be Option 3 with PTP and FWA reduced to secondary status, but this may be a difficult prospect to manage by the ACMA.

Assessment of Option – A Reprise of the Principles

The ACMA's *Principles for Spectrum Management* draw together the framework by which spectrum management can be understood and decided on at the highest level of decision making in the ACMA.

Whilst the Framework is undoubtedly a valuable tool, like most algorithms it is only as good as the underlying assumptions which go into it, and the ACMA needs to be cautious that those assumptions are valid. While a focus on the availability of just a single 28 GHz band leads to credible outputs, a different assumption of a broader availability of 3 bands yields completely different outcomes. The ACMA will need to decide on the more sanguine approach that is likely to lead to more durable outcomes. The SSWG wishes to avoid a future re-evaluation when other bands come under the microscope. The SSWG also wishes to avoid a GIGO (garbage in, garbage out) result.

A common fundamental to the ACMA's rebuttal to Option 4 against each of the Principles is that the option does not support multiple services. The ACMA does not offer the causal argument to this statement. In fact, it would seem intuitively obvious that the opposite should prevail. This conclusion by the ACMA is only the case because of the narrow approach to considering the 28GHz band in isolation and trying to force-fit different services into a mismatched patchwork quilt. Taking away this fundamental constraint by including the potential which the 37-43.5 GHz band brings also eliminates the difficulty caused by limited spectrum. In this way, Option 4 then becomes very attractive without diminishing the prospects for other services. In fact the highest value use would accrue to Option 4 for the 28 GHz band which is increased because of effective use of spectrum.

Principle 1 – Allocate spectrum to the highest value use (HVU) or uses

The SSWG wishes to avoid a risk of regulatory decisions which the ACMA may live to regret at some time in the future by being faced with potential large scale re-locations. Considering only the 26 and 28 GHz bands can generate misleading conclusions on the Total Welfare Standard (TWS) because of a lack of a holistic approach. By involving 3 bands – 26 GHz, 28 GHz and 37-43.5 GHz – the TWS picture is transformed and the regulator is not left struggling to accommodate more usage demands than the spectrum allows. This also can lead to an inefficient patch work of spectrum allocation because of the different needs and incompatibilities. Inclusion of the third band – 37-43.5 GHz – takes scarcity out of the equation and removes the inefficiencies of cramming services into inadequate spectrum. This then leaves Option 4 as a very viable front runner.

The SSWG agrees with the ACMA observation that sufficient spectrum has been earmarked for WWB in the 26 GHz band and that other (than 28 GHz) mmWave bands are available for consideration.

Continuing the consideration of other bands available to FWA, the band 37-43.5 is a very valid band for expansion of FWA, especially at 38 GHz. Thus, whilst the ACMA states that Option 2 and 3 represent the options most likely to maximise economic value under the TWS, this is no longer the case if the value is arrived at by involving 38 GHz. In addition the TWS is then further maximised because of restraints being taken off the FSS in the 28 GHz band. Consequently, this further supports Option 4 as being the most beneficial.

With respect to PTP, the ACMA is encouraged to further explore the utility of the 38 GHz band for PTP instead of the 28 GHz band. The current use is clearly sub-optimal and detracts from an estimate of the TWS. This further consideration of the 37-43.5 band adds to the conviction that slimming down the 28 GHz demands will lead to a higher TWS through Option 4.

The conclusion arrived at by the ACMA that “an approach that allows multiple services to operate on the same frequency and in the same (or reasonably close) area is likely to be welfare maximising and result in the highest value use combination” may be argued if one was only considering the 28 GHz band. This conclusion is a direct consequence of limited spectrum and potential spectrum denial. However, by also considering the 37-43.5 GHz band these constraints on spectrum availability are being lifted and Option 4 becomes the first choice.

Principle 2 – Enable and encourage spectrum to move to its HVU

The analysis on which the ACMA evaluated Principle 1 was based on support of FWA, PTP, ubiquitous FSS, and FSS gateways. The argument put forward by the ACMA to not support Option 4 is that there are no arrangements to support the use of the band by FWA or PTP.

However, as pointed out in the foregoing, better arrangements are available by exploiting the 38 GHz band for PTP and FWA, thereby eliminating the ACMA's argument for not supporting Option 4.

Thus, the full context of HVU is only realised through a 3-band assessment of meeting spectrum demand.

The ACMA observes that “it is possible for multiple ubiquitous FSS operators (and FSS gateway operators) to coexist in the same areas using the same frequency. Extension of the existing arrangements that support ubiquitous FSS use in the 28.5 - 29.1 GHz band may be the most appropriate solution.” The SWG agrees with this observation and advocates for Option 4.

Principle 3 – Use of least-cost and least-restrictive approach to achieving policy objectives

The ACMA argues that Option 4 could be considered the most restrictive of all the options as it only provides arrangements for the FSS. However, this is a continuation of the ACMA's argument behind Principle 2 which was brought about by a requirement to support all services. However, in a holistic approach this is no longer a constraint.

A licensing arrangement which supports class licensing is clearly the least restrictive, and other restrictions are removed by the available use of the 37-43.5 GHz band.

The Government's policy objectives of promoting sharing and fostering a competitive telecommunications market – by supporting shared use spectrum by multiple different operators and services – are best met by applying these objectives efficiently across a 3-band approach which lifts the sharing scenario to a higher and more fertile level. In this scenario, Option 4 becomes a very valuable contributor to achieving the policy objectives.

Principle 4 – To the extent possible, promote certainty and flexibility

Again, the ACMA states its opinion on Option 4 as providing the least flexibility as it only provides support for the FSS. However, this approach also does not recognise the lack of certainty which only a more holistic approach brings – a certainty with immunity to future evaluation of other bands, in particular the 37-43.5 GHz band.

Flexibility comes with the breadth of consideration, and the SSWG believes that the ACMA Options Paper lacks that breadth of approach. Flexibility can be best created with a 3-band approach which builds in greater certainty and anticipates a usage of all three bands.

To discredit Option 4 because of these reasons is not a reasonable outcome.

Principle 5 – Balance the cost of interference and the benefits of greater spectrum utilisation

Clearly, the cost of interference is minimised if Option 4 is implemented. Greater spectrum utilisation is available through a holistic assessment of spectrum allocation through a 3-band approach.

The ACMA recognises the sharing potential between FWA and PTP, and at this early stage if the 38 GHz band is applied, then coordination offers a useful benefit. Any re-location costs involved are able to be mitigated by grandfathering.

The trade-off between fixed services and the deployment of ubiquitous terminals is certainly a challenge for increasing spectrum utilisation and managing interference. In fact it is more of a 'time bomb', which can be avoided by judicious placement of services in the available spectrum. A combination of Option 4 at 28 GHz and the use of the 37-43.5 GHz band for other ubiquitous IMT services and fixed PTP and FWA services would defuse the situation before it arises.

The SSWG also recommends that the ACMA revisit its analysis on this and all of the Principles basing its approach on a broader viability of spectrum as suggested throughout this submission.

SUMMARY QUESTIONS FOR COMMENT

The ACMA posed specific question which the SSWG has addressed in detail throughout the submission. In brief these answers are summarised below.

1. Do stakeholders have comments or further views on the services and planning issues discussed for the 28 GHz band?

A: Yes – the major issue is the lack of a holistic approach.

2. If a decision was made to remove 28 GHz PTP arrangements, what is the minimum appropriate length of time to grandfather existing PTP licences?

A: Two years, except for exceptional circumstances or commercial negotiations.

3. Are there any other conditions that should be considered for PTP grandfathering?

A: Relocation to the 38 GHz band or 3.3 GHz band.

4. Are there any other technical issues the ACMA should consider regarding the ability for WWB, FWA, PTP and FSS to share or coexist in the 28 GHz band?

A: A solution which recognises the genetic incompatibility between ubiquitous and non-ubiquitous services.

5. Do stakeholders have comments on any of the options proposed in this section or other options to propose?

A: Addressed in the body of the submission.

6. Is the definition of 'large population centres' (as described in Appendix A), suitable for application in Options 1a, 1b, 2 and 3?

A: The definition is not relevant to the preferred option which emerges as a result of a more holistic approach.

7. Do stakeholders have any comments on the assessment of each option against the Spectrum Management Principles?

A: The Principles can produce different answers depending on the input assumptions. Given a broader holistic input approach, Option 4 becomes a favourite option.

8. Is there any relevant evidence that provides an indication of the value the WWB sector places on additional spectrum in the 28GHz band?

A: This is not obvious given that the top priorities for the WWB sector are the 26 GHz and 30-43.5 GHz bands. 28 GHz appears to be a fall-back or bargaining chip which is not helpful for other stakeholders.

9. Is there any relevant evidence that provides an indication of the value the FWA sector places on additional spectrum in this band?

A: The FWA sector would no doubt appreciate stability and a guarantee of spectrum for the future. This is best assessed in a holistic approach.

10. What value do PTP operators place on having access to 112 MHz channels? If similar arrangements could be implemented in the 38 GHz band, would they be a suitable replacement for the 28 GHz band?

A: The satellite sector would certainly view this as a suitable replacement and one which is supported by the SSWG.

11. Is there any evidence that provides an indication of the value the PTP sector places on maintaining access to this band?

A: There is an insufficient number of assignments in order to judge the value.

12. Is there any evidence that provides an indication of the value the FSS sector places on access to this band?

A: Already massive investment which pre-supposes a guaranteed access to this band for many years to come, together with innovative services targeted at this particular band.

13. The ACMA invites comment on its currently preferred options. Should other options be considered?

A: One option may be possible – to make PTP and FWA secondary in Option 3. This effectively creates Option 4 but may be troublesome in a regulatory management sense. Effectively, all options should be re-visited against the background assumption of a 3-band availability of 26 GHz, 28 GHz and 37-43.5 GHz bands. Different outcomes are then evident, leading to Option 4 as being favoured because of the elimination of spectrum scarcity and the overall ability to satisfy all demands.



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