**Summary of and response to submissions**Proposed assessment procedure and licence conditions for Earth stations in motion (ESIMs) in accordance with ITU Resolution 156 (WRC-15)

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# Introduction

Earth stations in motion (ESIMs) are stations that are in motion on land, on water or in the air. Regulatory arrangements for ESIMs communicating with geostationary space stations in the fixed-satellite service were considered at the World Radiocommunication Conference 2015 (WRC-15) in relation to WRC-15 agenda item 9.2.

As a result of considerations at WRC-15, ITU Resolution **156 (WRC-15)** (see [Final Acts WRC-15, World Radiocommunication Conference](http://www.itu.int/pub/R-ACT-WRC.12-2015)) was developed, which sets out the conditions for the use of the frequency bands 19.7–20.2 GHz and 29.5–30.0 GHz by ESIMs communicating with geostationary space stations in the fixed-satellite service. The requirements apply in part to:

* the notifying administration for the satellite network with which ESIMs are communicating
* the administrations authorising the operation of ESIMs in their territories

the satellite operator.

The ACMA consultation [IFC 12/2016](http://www.acma.gov.au/theACMA/regulatory-arrangements-for-stations-in-motion) considered the procedures to be used for licensing (within Australia) earth stations in motion.

Five responses were received from:

* Inmarsat
* Department of Defence (Defence)
* Global VSAT Forum (GVF)
* NBN Co Limited (NBN Co)

ViaSat.

This document gives a brief summary of the issues raised by the respondents on the proposed procedures, and feedback from the ACMA on the issues.

# Responses to submissions

## Class of station symbol

*Inmarsat’s submission proposed that:*

… provided the stations comply with Resolution **156** **(WRC-15)** - ESIMs will operate compatibly with other services in the band without the inclusion of the relevant class of station in the satellite network. It was further noted that delays incurred to achieve the new class of station would not be in the public interest.

The ACMA notes that the International Telecommunication Union (ITU) Radiocommunication Bureau (BR) has issuedCircular Letter[**CR/393**](https://www.itu.int/md/R00-CR-CIR-0393/en) (18 March 2016), which contains the following:

In order to be able to carry out the examination of the conditions associated with earth stations under No. **5.527A** [**5.5X**] included in Resolution **156 [COM5/2] (WRC-15)**, the Bureau has defined a new class of station for **Table 3** of the Preface to the BR IFIC (Space Services), as follows:

 **UF** - earth station in motion communicating with a geostationary satellite orbit station in the fixed-satellite service in the frequency bands referred to under No. **5.527A** [**5.5X**].

Resolution **156 (WRC-15)** contains obligations on the filing administration that is to be assessed by the ITU. Recent ITU software changes facilitate these examinations.

The ACMA is of the view that satellite networks should include the class of station UF for earth stations in motion. This view is consistent with the Australian views during the development of preparatory material for WRC-15 (which resulted in Resolution **156 (WRC-15)**).

It is noted though, that:

* there may be delays or difficulties in having satellite networks published with the new class of station
* modifying existing parts of a satellite networks to include the UF class of station can change the date of protection for those existing parts of network

adding new parts to an existing satellite network will result in a new date of protection (for the new parts only).

While it is the ACMA preference that filings be in accordance with ITU requirements, the ACMA understands the potential implications of a changed of date of protection and the procedures have been modified to support use of satellite networks filed before the ITU requirements came into effect.

The ACMA view is that as requirements for class of station were outlined in ITU Circular Letter[**CR/393**](http://www.itu.int/md/R00-CR-CIR-0393/en) of 18 March 2016, that by 1 July 2017 there would have been sufficient time to consider and have included the appropriate class of station in any newly-filed satellite networks. Consequently, when considering licence applications involving satellite networks filled after 1 July 2017, the ACMA will not issue a licence authorising ESIMs under the arrangements of this Business Operating Procedure (BOP) unless the satellite network includes the appropriate class of station.

For satellite networks filled prior to 1 July 2017, the ACMA encourages the modification of the network to include the appropriate class of station. Where this has not occurred, the following procedures will apply:

* As operation is not consistent with ITU requirements (that is ITU Radio Regulation **4.4** applies), licence conditions reflecting this will be included to all space or space receive authorising ESIMs.
* The application will be assessed to ensure the applicant has appropriate access to a satellite network filed at the relevant orbital location containing FSS (or MSS) elements covering the frequencies within the licence application.
* The applicant must provide evidence of consultation with relevant Australian licensees and operators of Australian satellite networks, seeking their views as to whether any significant technical potential for interference is expected should the licence be granted. Note that additional licence conditions and advisory notes may result from such consultation.
* The purpose of this consultation is solely to identify significant potential technical concerns with ESIM use; it does not provide an obligation to obtain ‘permission’ or provide a right of veto.
* For the purpose of this item, the ACMA would consider relevant licensees and operators to be those with co-frequency GSO satellite networks within +/- 8 degrees (or that can be demonstrated would otherwise trigger a coordination threshold of ΔT/T >6%).

## Coordination

### Coordination with Australian-filed satellite networks

*Concern was raised in submissions from NBN Co and Defence about the operation of satellite networks that include ESIMs potentially causing interference to Australian-filed satellite networks where coordination agreements are not complete. Suggestions were made that the ACMA assess the level of coordination between the satellite networks of licence applicants against Australian satellite operators.*

The ACMA notes that this issue is not limited to ESIMs operation, and that for all satellites that are co-frequency with Australian satellite networks, there exists the theoretical possibility of this occurring if the ITU satellite coordination process is not completed (including cases where the network has been recorded in the MIFR in accordance with ITU Radio Regulation No. **11.41**).

The ACMA is not aware of interference to Australian satellite operators due this scenario, or for that matter an Australian licensed satellite service, under the existing satellite licensing regime. While the risks associated with this scenario are considered low, they are recognised by the ACMA and were considered when developing the proposed arrangements for ESIMs. How these where considered and the resulting interference management mechanisms included in those procedures are summarised in [Summary of interference management mechanism in ESIMS procedures](#Summary)*.*

While the ACMA does not necessarily agree with the observations regarding satellite networks that have not completed the ITU coordination process, we do acknowledge the concern. The ACMA is alert that the process proposed in submissions to address the issue may place undue regulatory burden on prospective licenses beyond the established international satellite coordination process

As a regulator, the ACMA is open to considering alternative approaches or improved risk management procedures, but believes it is best done in a more holistic way in relation to the ACMA’s current licensing procedures for space-based communications. However, it is our view that that this work should not delay the finalisation of arrangements for ESIMs, though any relevant outcomes from a broader licensing procedures review to be incorporated into finalised ESIMs procedures (if necessary).

In that regard, the ACMA notes that it may be timely to review existing satellite licensing procedures, including those contained in the ACMA’s Business Operating Procedure [Submission and processing of applications for earth station apparatus licences](http://www.acma.gov.au/~/media/Spectrum%20Transformation%20and%20Government/Information/Word%20Document/BOP%20Earth%20Station%20docx.docx), in light of trends in spaced-based communications systems to ensure that licensing procedures are appropriate and commensurate with the risk of interference. In doing so, the arrangements would be considered in the light of the government principle[[1]](#footnote-1) that if a system, service or product has been approved under a trusted international standard or risk assessment, then Australian regulators should not impose any additional requirements.

For consistency of approach, this review will be done broadly across all satellite arrangements, rather than for just the frequency bands and applications the subject of this consultation.

In part the ACMA has recognised this need for further work through one of the regulatory and service planning projects identified for 2016–17 in the ACMA’s [*Five-year spectrum outlook 2016–2020*](http://www.acma.gov.au/Industry/Spectrum/Spectrum-projects/Mobile-broadband/five-year-spectrum-outlook-2016-20). This item flags:

… the monitoring of trends in space-based communications systems for consideration of possible future reviews and updates to regulatory policies and procedures supporting the satellite filling and coordination process, and licensing of space-based communications system in Australia.

Contingent on priorities and resourcing, the ACMA intends to undertake this review in the 2017 calendar year.

ACMA considerations in developing ESIMs procedures

Two key considerations for the ACMA in developing the proposed arrangements were ensuring that Australia’s obligations as a member of the ITU are met, and minimising the regulatory burden placed on industry (consistent with the government regulatory reform agenda on cutting red tape and requirements of the regulator performance framework). The proposed arrangements also need to be in accordance with the aforementioned government principle that if a system, service or product has been approved under a trusted international standard or risk assessment, then Australian regulators should not impose any additional requirements, unless there is a good and demonstrable reason to do so.

Under those principles, given that the coordination of satellite networks with other satellite networks is undertaken through the ITU process, then the ACMA ’s processes should not attempt to duplicate the international satellite network coordination process by developing additional criteria outside that process (beyond the existing safeguards for when that process is yet to be completed). This principle is reflected in the ACMA’s long-standing approach to management and licensing of space-based communication systems and was applied in the development of arrangements for ESIMs as recorded in the finalised procedures ACMA’s business operating procedure:

Submission and processing of applications for licences authorising the use of earth stations in motion (ESIMs) communicating with geostationary space stations in the fixed-satellite service in the frequency bands 19.7–20.2 GHz and 29.5–30.0 GHz.

The interference management mechanisms included in those procedures are summarised below.

Summary of interference management mechanism in ESIMS procedures

Considering the requirements of Resolution **156** **(WRC-15)** and the above principles, the procedures for licensing of ESIMs include the following interference management mechanisms:

1. Checking the consistency of any licence application with the relevant published satellite network.
2. Checking the international coordination status of a satellite network, including seeking a letter of assurance if the network has not been recorded in the MIFR (requiring that all efforts be made to immediately address and resolve cases of actual harmful interference).
3. Requesting documentation confirming compliance with Resolution **156 (WRC-15)** as part of the licence application process, and applying licence conditions obliging compliance with the Resolution.This documentation required for a licence application includes evidence:
	1. that the administration responsible for the satellite network will meet its obligations under ITU Resolution **156 (WRC-15)**,including that the administration has ensured that the ESIMs employ techniques to track the associated GSO FSS satellite and that they are resistant to capturing and tracking adjacent GSO satellites (*resolves 2*)
	2. the administration has ensured that they have the capability to limit operations of such earth stations to the territory or territories of administrations having authorised those earth stations and to comply with Article **18** (*resolves 3*)
	3. that the licensee is required to ensure that earth stations are subject to permanent monitoring and control by a Network Control and Monitoring Centre (NCMC) or equivalent facility, and are capable of receiving and acting upon at least ‘enable transmission’ and ‘disable transmission’ commands from the NCMC (*resolves 1.6*).
4. Checks on class of station (see section [*Class of station symbol*](#Class)).

Reinforcement of the need to operate in accordance with the above is provided through various special conditions to be applied to licences issued for ESIMs. One set of special conditions are to be applied to licences where the satellite network of the applicant is recorded in the ITU’s MIFR. In this case, the international satellite coordination is either complete, or operation is on a no-interference basis to satellite networks where there is outstanding coordination.

A separate set of special conditions are used when the relevant satellite network has not been recorded in the MIFR, and further confirmation is required by the ACMA (particularly in relation to there being a low likelihood of interference and requirements for mitigation should interference occur). The former conditions were included in Appendix A of the June 2016 [proposed assessment procedures](http://www.acma.gov.au/theACMA/~/media/8B429C352FFA438EABDC57D6E97A8AF4.ashx), and the latter requirements were in Appendix B.

### Off-axis limits of Resolution 156 (WRC-15) Annex 1

*The NBN Co submission contains:*

… post 1 January 2017, the ACMA plans to simply rely on compliance with the off-axis limit provisions contained in Annex 1 of the Resolution to deal with the potential for harmful interference, presumable on the basis that compliance with the Annex 1 provisions would be sufficient.

This is not the case and was not proposed by the ACMA. The ACMA notes that the off-axis limits in Annex 1 of Resolution **156 (WRC-15)** are not intended to substitute existing international satellite coordination procedures. The off-axis limits instead set a minimum[[2]](#footnote-2) performance in the absence of otherwise agreed values, and this is viewed as a condition additional to the international satellite coordination process.

## Licence conditions

*Submissions from Inmarsat and the Global VSAT Forum noted duplication in content between obligations under Resolution* ***156 (WRC-15)*** *and the licence conditions proposed.*

It is noted that the obligor (be this the filing administration, the licensing administration or the operator) under Resolution **156 (WRC-15)** and the licence conditions is different, although the obligation is very similar. This has been done to try to limit ambiguity in who is responsible for certain obligations.

The ACMA proposes to include licence conditions as drafted to address the requirements of Resolution **156 (WRC-15)**.

In reviewing the proposed licence conditions and advisory notes, it was noted that there was an inconsistency in how the name of the satellite with which communications are authorised with is specified on the licence. When the satellite was recorded in the MIFR, the satellite name was identified by advisory note, when not recorded in the MIFR, the satellite name was specified by special condition. Knowing which satellite communications are authorised with is a key part of the coordination framework and as such is to be recorded as a special condition.

## ESIMs operating with NGSO satellite systems

*In the submission from the Global VSAT Forum, it was suggested that further work be undertaken with respect to NGSO ESIMs operation.*

Resolution **156 (WRC-15)** is limited to GSO operation, and hence is outside of the scope of this body of work. The ACMA recognises the need for further work on ESIMs and such work is included in the ACMA’s [*Five-year spectrum outlook 2016–2020*](http://www.acma.gov.au/Industry/Spectrum/Spectrum-projects/Mobile-broadband/five-year-spectrum-outlook-2016-20), where one of the regulatory and service planning projects identified for 2016–17 is monitoring development in use of ESIMs. The scope of this work is monitoring of development in the use of ESIMs for consideration of possible future reviews and development of future regulatory arrangements beyond arrangements being developed to implement ITU Resolution **156 (WRC-15).**

## Approach to publishing ESIMs licensing procedures

*It was suggested in the submission from Defence that the current text be incorporated into a Radiocommunications Assignment and Licensing Instruction (RALI).*

The ACMA is of the view that the material is more appropriately considered procedural than providing instructions for assigning, and hence would be best contained within a BOP, which provides the procedures that must be followed for particular interactions with the ACMA. The ACMA is of the view that a BOP will provide the guidance suggested in the enumerated list in the Defence submission.

## Process mechanics

*In the submission from Defence, it was suggested that electronic submission of licence applications (rather than paper based submission) be facilitated.*

The ACMA notes that the proposed text inadvertently required submission of paper licence application forms. Provided the information requested in the paper forms is supplied to the ACMA, electronic submission is acceptable.

The ACMA has amended the text to include the option of electronic submission.

1. Refer to [Acceptance of international standards and risk assessments for product approvals](https://www.dpmc.gov.au/domestic-policy/taskforces-past-domestic-policy-initiatives/industry-innovation-and-competitiveness-agenda/acceptance-international-standards-and-risk-assessments-product-approvals) on the Department of Prime Minister and Cabinet website, with additional information on the government’s cutting red tape website. [↑](#footnote-ref-1)
2. It is noted that lower limits than contained within the Annex may be agreed through bilateral coordination agreements. [↑](#footnote-ref-2)