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Dear M4. Makgotlho

Re: Draft Frequency Regulation and Frequency Migration Plan  
August 2012  
ICASA Notice 606 of 2102  
Government Gazette 17 August 2012, No. 35598

The Meraka Institute, an Operating Unit of CSIR would like to thank you for the opportunity to comment on the Draft Frequency Regulation and Frequency Migration Plan, August 2012, ICASA Notice 606 of 2102, Government Gazette 17 August 2012, No. 35598.

The Meraka Institute is actively engaged in telecommunications research that requires access to radio spectrum. Many projects are undertaken with funds made available by the Department of Science and Technology.

Meraka is deeply aware of the long process leading up the publishing of the above regulations and migration plan.

Our submission is attached. Our main concerns regarding the migration plan deal with the possible economic impact of some of the proposals on existing services. We are also concerned that in some instances the migration proposals are only aimed at aligning the existing National Radio Frequency Plan as published in Government Gazette 33409, dated 30 July 2010 with that of the ITU-R Regulations and Regional Plans, but not necessarily in line with the latest developments within the ITU after the last World Radio conference WRC 2011/12.

We respectfully request these comments are taken into account when finalising the above regulations and migration plans.

Meraka would welcome an opportunity to make oral representations at the public hearings scheduled for 8 – 12 October 2012.

Yours sincerely



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Meraka Institute

# **Meraka Institute Response to the public Consultation Process Published by ICASA:**

## **Draft Frequency Migration Regulation**

**And**

## **Frequency Migration Plan**

**GG 35598 (vol 566) 17 August 2012 (ICASA notice 606)**

### **Introduction**

Meraka welcomes the opportunity to comment on the above regulations and plan published by the Independent Communications Authority of South Africa (ICASA).

Meraka is supportive of ICASA's commitment to improving the efficient use of radio frequency spectrum in South Africa. We are however very concerned that some of the proposals tabled in the Draft Regulations and Migration Plan impact significantly on the proper and efficient utilisation of satellite capacity available over the region. In particular we draw your attention to the negative impact the proposal to extend Broadband Fixed Wireless Access (BFWA) in a band traditionally allocated to C - band satellite services. Many users of services provided to consumers and large corporate companies in South Africa and Sub-Saharan Africa depend on these services for connectivity. Some of the services in current use are Cellular Backhaul Connectivity, Connectivity for existing wireless terrestrial networks, Internet Backbone Connectivity, Satellite TV Service Contribution and Distribution links, Satellite News Gathering Services and Point-to-Point Communication Services.

All the above services will be compromised by the proposed C - band migration plan.

In particular, ICASA's attention is drawn to the fact that the South African National Antarctic Programme ( SANAP) is almost entirely dependent on C - band FSS services for its broadband connectivity between South Africa, Marion Island, Gough Island, the main South African Antarctic base as well as the supply ship SA Agulhas II.

There are also bases belonging to other countries in the Antarctic dependent on C - band connectivity between South Africa and those bases.

Furthermore, the proposal to migrate all VSAT satellite services and operations from 3600 – 3800 MHz to the Ku-band without due cognisance of the impact on service quality and services costs, especially in rural areas, will risk reducing the availability of satellite-based communication services.

Additionally, we are concerned that the proposed new allocations in bands reserved for Mobile Satellite Services (MSS) have overlooked the high risks of interference to these services and in some cases the proposed allocations are contrary to international trends and even in contradiction to ITU regulations governing these bands.

## Background

The draft regulations and migration plan proposed by ICASA proposes several changes to South Africa's National Radio Frequency Plan (hereinafter referred to as "The Plan"). These changes are purported to be to ensure alignment of The Plan with the International Telecommunications Union (ITU) World Radio Conference (WRC) Resolutions, Regional African Conference Resolutions and , the SADC Frequency Allocation Plan.

Satellite radio frequency allocations are global allocations designed to ensure that satellite services are made available globally in spectrum allocations guaranteed to be free of interference anywhere and everywhere.

We are concerned however, that the SADC FAP as referred to in the Plan has not been updated to reflect the developments and Final Acts of the latest WRC.

## Chapter 3: Principals Governing Frequency Migration

Meraka fully supports the process as tabled in chapter 3 of The Plan. However there are concerns that in some instances the SADC FAP is not fully in line with WRC Resolutions and Final Acts. We respectfully suggest that where such inconsistencies are found, that the ITU-R Regulations and WRC Resolutions will should take precedence over the SADC FAP and Regional Conference Resolutions.

## Chapter 4: Development of the RFMP

We specifically draw attention to ICASA's commitment in Chapter 4 section 4.3 of The Plan.

ICASA commit to consider all factors that may have negated the need for frequency migration, especially whether the bands are currently optimally utilised and taking into account global trends which may no longer support the proposals contained in for example the SADC FAP.

Additionally ICASA undertakes in section 4.3 to consider all resolutions adopted at WRC 7 and 12. While the ultimate goal is to fully align South African National Frequency plan applicable in Region 1, ICASA undertakes to determine the applicability to South Africa of any changes to The Plan. We specifically refer here to the negative economic impact on satellite services that result out of the addition of BFWA allocations (which are in line with the ITU-R Plan) but are not applicable in the South African context. We further suggest that the conditions within most of Africa also do not support some of the migrations plans as tabled and should not be pursued simply for the purposes of aligning ourselves with international and regional plans.

Section 4.4.3 table a number of examples where the previously proposed migrations never took place. We suggest that more analysis should be undertaken to determine the reasons why these migration plans were not implemented. The lessons learnt for this analysis should be used to test the validity of the new proposals.

Section 4.7 tables various WRC resolutions. Yet this table does not draw sufficient attention to WRC 7 & 12 resolutions dealing with FSS and MSS services and fails to highlight the concerns at WRC dealing with harmful interference between BFWA and existing FS and FSS services as an example. Also, in the MSS bands the proposals made in this Plan contradict both international trends going as

far to propose migrations that are not in line with these trends simply to ensure alignment of the NFRP with existing ITU-R plans.

Meraka did not attempt to analyse all the allocations and migration plans in depth. We focussed on those that impact on existing deployments and services to the Science community in South Africa.

In this instance we suggest that the lack of services in a particular band should not be the motivation to begin allocations that are contrary to international trends simply because the bands are not in use within South Africa at this point in time. We suggest that this is a recipe for setting up future scenarios requiring another round of migrations that could have been avoided by not implementing the proposals as tabled in this Plan.

We further suggest that in some instances the amount of spectrum released as a result of the DTT process has not been quantified fully and that as a result, pressure is being put on portions of the spectrum for more allocation for BFWA which would be much better served by allocations out of the digital dividend process.

## **ICASA Migration Plan**

### **Migration Plan Impact on Spectrum allocated to Satellite Services**

ICASA proposes to adopt the *proposed* SADC allocation plans in C - band, L – band and S – band to various Broadband FWA and Broadband Mobile FWA systems and services. The proposals further state that all VSAT services should be moved from FSS C - band (3600 – 3800 MHz) to FSS Ku – band allocations.

Meraka suggests that the proposals do not take into account the issues raised in the sections below. We therefore recommend that the proposals in the Regulations and The Plan should be reconsidered after an evaluation of the issues raised in the sections tabled in this submission.

### **Importance of Satellite Spectrum for Africa and Sub-Saharan Africa**

Satellite systems and networks involve very large financial investments, made over a number of years by many countries. These investments are made after many years of research, advanced planning, construction and deployment of satellites and ground station equipment.

The environment under which such international initiatives takes place is based on a stable regulatory framework governed by radio frequency allocations made in terms of the ITU radio band plan.

MSS satellite systems are global systems relying on spectrum allocations recognised and honoured by all countries and regions. Most of these systems are deployed wherever mobile services are required, and are no longer seen as only for maritime use. Many of the services and systems play a vital role in the provisions of emergency services and disaster recovery systems.

FSS satellite services have for more than 40 years been the backbone on which telecommunication services are provided in underserved areas of the world, particularly in Africa.

Terrestrial Optic fibre systems are gradually reducing the dependency on satellite communication services. However there remain vast areas of Sub Saharan Africa and Africa as a whole that do not have access to terrestrial optic fibre networks. C - band satellite services remain the most reliable alternative. Thus the C - band allocations have to remain and be protected from harmful interference as defined in the ITU-R radio band plan as well as in terms of the interference studies carried out by various WRC working groups. ( WRC 07 and WRC 12). The most recent report issued by the ITU-R (Report ITU-R S2199) entitled "Studies on compatibility of BWA systems and FSS networks in 3400 – 4200 MHz), which was approved by study groups 4 and 5, ITU-R, once again showed that there are very serious compatibility issues between BWA and FSS.

ECC Report 100 undertaken by CEPT entitled "Compatibility Studies in the band 3400 – 3800 MHz between Broadband wireless Access (BWA) systems and other services, Feb 2007", supports the conclusions that BFWA and FSS systems cannot co-exist effectively in any area without very large exclusions zones and guard-bands between services. The net effect of these measures is to either reduce the areas in which BFWA can be deployed or to compromise both services due to the levels of harmful interference generated.

The above are only 2 such reports; there are many others such as ITU-R report M.2109, and references provided by the satellite industry. These are available on the website, [www.fss-toolkit.com](http://www.fss-toolkit.com).

Meraka believes any moves to introduce BFWA into this band will be to the detriment of both services.

Meraka suggest that a very simple GIS study using modern tools is sufficient to illustrate the limited area in which BFWA will be deployable in South Africa given the location of the existing C - band terminals (which have to be protected from harmful interference), using the ITU-R defined parameters. Most of these C - band earth stations are located in heavily populated areas, leaving the possible deployment of BFWA systems using this band to sparsely populated areas where the service densities are likely to make such deployments unsustainable. We therefore propose that ICASA undertakes such a study before implementing a migration plan in the band.

### **Impact on Investments in the Provision of Satellite Capacity over Africa**

Vast investments in Satellites systems (measured in trillions of USD) have been made by governments and private companies in the past 40 years.

Specifically, numerous reports by international satellite research companies such as Futron Corporation ([www.futron.com](http://www.futron.com)), Comsys ([www.comsys.co.uk](http://www.comsys.co.uk)), as well as organisations such as The European Satellite Operators Association (ESOA) are available detailing the amount of MSS and FSS satellite capacity available over Africa.

In particular, there are of the order of 42 satellites operating C - band services over Southern Africa. The most recent satellite launched and taken into service is Intelsat IS 20. This satellite plays a vital role in the delivery of DTH television and radio services in South Africa. A further 5 satellites are due for launch in the near future, all providing payloads that include C – band capacity. MSS satellite services are dependent on feeder links provided in C – band.

We wish to draw ICASA's attention to the fact that the New Dawn Satellite which also provides for a C - band payload is a joint venture between Intelsat and a group of South African investors.

The impact that the proposed reservation of the band 3600 – 3800 MHz to BFWA and the proposal to allow BFWA services in the MSS bands must be considered by ICASA in the drafting of the South African Frequency Band plan and the migration Plan which is the subject of this consultative process.

In our opinion, the ICASA proposals effectively take away C - band, L – band and S – band capacity from the satellite operators in the largest economy in Sub Saharan Africa.

## **Comments on Specific sections of the Proposed Migration Plan**

### **Section 4.11.31: BFWA Allocations in the 3600-4200 MHz band**

This band has been allocated on a co-primary basis to FSS and FS services. The band was and is still extensively used for PTP international communications, cross border systems and inter-continental systems. The band is extensively used by broadcasting for contribution and distribution services providing backbone connectivity to many terrestrial broadcasting services.

The band is critical for operators who provide services to large geographical areas. The C – band services thus make it possible to provide sustainable services in sparse areas with low population densities and low service requirements.

C – band is required to provide high availability, high quality services to users because the band is the least affected by atmospheric and weather conditions.

The whole of the current FFS band 3600 – 4200 MHz is fully utilised by the satellites operating over Southern Africa.

The current National Radio Frequency Plan as published in Government Gazette 33409, 30 July 2010, provides for FS and FSS services in these bands on a co-primary basis.

Services must be co-ordinated to ensure neither service experiences undue harmful interference.

The current ITU Radio regulations state BFWA services can be provided for in this band on condition that these new services do not cause harmful interference with services provided under the existing regulations.

The latest WRC 2007 and 2011/12 studies again confirmed the lack of compatibility between BFWA, FSS and FS services in this band.

Thus any increased utilisation of this band by new services such as BFWA, will increase the risk of interference, effectively meaning the prevention of new earth stations in any area where BFWA is deployed.

ICASA will be required to implement very strict co-ordination criteria in areas where existing C – band earth stations exist. This effectively means that tens and even hundreds of kilometres around all existing C – band terminals will have to be free of BFWA systems.

### **Section 4.11.31: VSAT Migration to Ku-Band only.**

The ICASA proposal states that All VSAT Services should be migrated to Ku – band. This proposal is motivated on the grounds that it is difficult to co-ordinate ubiquitous user terminals used for BFWA.

In the same section ICASA states that "... in the band 3600-3800 MHz, BFWA,FS, PTP and FSS applications will have to operate on a co-ordinated basis".

Nowhere in the proposal is the term "VSAT Services" defined.

Meraka believes that the forced migration of all VSAT services does not remove the obligation for co-ordination and is thus not an appropriate solution to the difficulties regarding proper co-ordination. There are many improvements in the management and co ordination of spectrum such as the use of appropriate GIS systems that do allow for the proper co-ordination of allocations between these competing services.

VSAT operators in South Africa provide critical services to many consumers, small and medium businesses at acceptable service levels via C – band VSAT terminals. These operators have all made very large investments in C – band VSAT networks. Similarly, as previously mentioned, the satellite operators providing C – band capacity over the region have also invested large amounts to provide satellite capacity in C – band.

All these operators may be forced to abandon the provision of C – band capacity over Southern Africa as a result of this migration.

Meraka suggests that there is neither a technical nor an economic justification for the implementation of the above VSAT services migration plan.

### **Section 4.11.21-23: L-Band Migration Proposals.**

We wish to draw ICASA's attention to the following issues which have a bearing on the migration proposals in The Plan.

- Most other countries (including those with ICASA migration proposals) provide sufficient capacity for FS (including FBWA) in other parts of the spectrum, without the need to place under threat the L-band allocations made to MSS.
- The band 1518-1525 MHz (downlink), matched with the band 1668-1675 MHz (Uplink) will be brought into service by Inmarsat with the launch of their Alphasat Satellite System in the near future. Both these bands are required to operate the proposed Inmarsat service. The uplink band has the potential to cause interference with users of any FS services provided within Southern Africa. It is for this reason that WRC 07 in resolution 744 resolved to place power limits on systems. While this report focussed on mobile MSS terminals, the same rules would have to apply to fixed terminals.
- The downlink band will be seriously compromised by harmful interference from FS services. This band like the band 1525-1530 MHz will be used by MSS services for many years to come. It has been shown that whilst there is such an allocation to FS in both these bands, the use of FS in these bands is not compatible with MSS service operation. Meraka does not believe any purpose will be served by providing for such a FS allocation in the SA band plan

when experience in the rest of the world has shown that such an allocation is not compatible with MSS.

- All these bands are to be used by mobile terminals, which means that there is a risk that these mobile terminals will cause interference to any terrestrial systems in the region if FBWA is deployed in these bands.

Meraka recommends that no changes be made to the South African band plan to incorporate allocations to FS in any of these bands simply to align the South African plan with the ITU-R plan when it has already been demonstrated in other parts of the World that MSS services cannot co-exist with FS services.

#### **Section 4.11.25: S-Band Migration Proposals.**

This band may be under-utilised by MSS at the moment, but the allocation remains reserved for MSS services. There are already plans in place to utilise this band for MSS in Europe, where two operators have been identified (Solaris and Inmarsat).

Resolution 716 (WRC 2000) requests administrations to migrate existing services in these bands to other allocations with the precise purpose of allocating these bands to MSS services.

Meraka recommends that ICASA continues with its efforts to migrate existing services out of these bands to allow for the future deployment of MSS services in these bands.

### **Conclusion**

Meraka recognises the need for adequate spectrum allocations to broadband services. However we believe the allocation of additional spectrum to broadband services should not be at the expense of existing highly utilised services in bands with a proven track record of efficient spectrum utilisation.

Meraka therefore requests ICASA to reconsider the proposals affecting satellites services taking into account the concerns raised in this submission.

We remind ICASA of the close ties between Meraka and ICASA, and our involvement with a number of projects underway within ICASA.

Meraka is available to provide any further comment and is also prepared to respond to any questions ICASA may have regarding this submission.

Meraka also wishes to be given an opportunity to make a presentation at the planned public hearings to be held on 8- 11 October 2012.