



Southern African Communications Industries Association

(Section 21 company incorporated not for gain)

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Attention: Mr Manyapelo Richard Makgotlho
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RE: Response to the request for comments of the Draft National Radio Frequency Spectrum Plan 2017 (NRFP 17)

Good day Mr Makgotlho,

The South African Communications Industries Association (SACIA) submits its views on the draft NRFP.

The proposed changes have a significant impact on all users of wireless microphones in South Africa. To this end we have three specific requests for ICASA to consider:

- Increasing the 50 mW ERP limitation on wireless microphones to 100 mW ERP throughout all bands
- Developing a wireless migration strategy that includes the use of wireless microphones from 470 MHz to 854 MHz, to be in line with the national project plan for the Analogue to Digital Switchover
- An opportunity to engage with ICASA directly on matters related to the Radio Frequency Spectrum Regulations of 2015

We would like to participate in the public hearings scheduled for the 9th and 10th of February 2017.

Yours sincerely

Kevan Jones
Executive Director

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EXECUTIVE SUMMARY

The Southern African Communications Industries Association (SACIA) is a not-for-profit company established in 2009 to promote the adoption of professional standards and ethical business practices in the communications industry throughout Southern Africa.

For the purposes of this submission, we represent the large majority of providers of wireless microphones in South Africa, from distributors of equipment to rental companies to end-users groups.

The importance of this submission to SACIA is to inform the Independent Communications Authority of South Africa (ICASA) of the scope of use of wireless microphones in South Africa, how the draft National Radio Frequency Plan 2017 (NRFP 2017) may impact our members and our proposed options to ICASA for consideration.

We wish to raise the following specific matters:

- The current stock of wireless microphones in South Africa operates in radio frequency bands ranging from 40 MHz all the way up to 952 MHz, with some systems operating in the GHz ranges.
- The proposed changes have far-reaching implications for a broad spectrum of end-user groups. Schools, Houses of Worship, broadcasters and thousands of small and medium enterprises in the events management industry could be required to invest in new wireless microphone stock.
- SACIA offers its assistance to ICASA to develop a migration strategy that will both protect consumers who own existing microphones but will also remove this equipment from the South African market over a period of time.

We have three specific requests for ICASA to consider:

- Increasing the 50 mW ERP limitation on wireless microphones to 100 mW ERP throughout all bands
- Developing a wireless migration strategy that includes the use of wireless microphones from 470 MHz to 854 MHz, to be in line with the national project plan for the Analogue to Digital Switchover
- An opportunity to engage with ICASA directly on matters related to the Radio Frequency Spectrum Regulations of 2015

1. Introduction to SACIA

The Southern African Communications Industries Association (SACIA) is a not-for-profit company established in 2009 to promote the adoption of professional standards and ethical business practices in the communications industry throughout Southern Africa.

In February 2015, SACIA was recognised by the South African Qualifications Authority (SAQA) as a professional body and we currently award professional designations to industry professionals working in:

- Broadcast & Communication Technology
- Audio Visual Technology
- Theatre and Live Events
- Film & Video Production

SACIA's membership consists of multiple stakeholders, all of which use short-range devices, particularly wireless microphones in the traditional UHF-TV bands.

Our membership consists of large-scale users of audio-visual technology, as well as organisations involved in the supply, design, installation, integration and maintenance of AV systems. We have approx. 250 corporate members, including broadcasters (SABC, M-Net, eTV), government departments (SA Parliament audio-visual unit; Government Communication & Information Service), Universities (UNISA, Tshwane University of Technology, University of KwaZulu Natal, University of Johannesburg), and corporate users of advanced AV technology.

We also have 93 individual members who hold one of our SAQA-recognised professional designations. These individuals are involved primarily in the design, installation, integration and maintenance of advanced audio-visual systems used in both permanent and temporary installations.

To cater for the diversity of our sector, the Association includes three special interest groups:

- SACIA's **Broadcast Industry Group** (BIG) covers all aspects of broadcast and communications technology, including content creation, management and distribution.
- SACIA's **ProAV Forum** focusses on the use of audio-visual technology in a diverse range of environments, including education, healthcare, government, corporate communications, houses of worship, digital signage and public information displays.
- The **Technical Production & Services Association** (TPSA) focusses on technology used to produce live events such as musical concerts, theatrical works, product launches, exhibitions and conferences.

Through TPSA we are actively involved in the development of standards, being members of various standards committees of the South African Bureau of Standards.

We work extensively with other organisations involved in the trade, distribution and use of wireless microphones. Within South Africa we currently maintain affiliate agreements with:

- **Exhibitions & Events Association of South Africa (EXSA)** – a non-profit organisation dedicated to growing the events industry in Southern Africa;
- **SA Society of Cinematographers** – a society of professional cinematographers promoting excellence in film and video production;
- **South African Association for the Conference Industry (SAACI)** – a national organization of companies and individuals involved in the conference industry throughout Southern Africa;
- **Commercial Producers Association** - a professional trade association of film companies specializing in the production of television commercials;
- **Christian Media Association** – an Association that inspires, serves, and supports Christian media in Southern Africa.

These organisations have endorsed this submission and mandated SACIA to engage with ICASA on issues related to the allocation of radio frequencies.

Internationally we work with a number of bodies to embed international standards into the local industry. These include:

- **InfoComm International** – a global trade association for the audio-visual industry;
- **IABM** – a global trade association for suppliers of broadcast and media technology;
- **Production Services Association** – a UK-based trade association for the theatre and live events industry in the United Kingdom;
- **Society of Broadcast Engineers** – a US-based society that acts as an advocate with regulators and legislators on issues that affect broadcast engineers and broadcast engineering.

2. Why is the NRFP 2017 important to SACIA

The wireless microphone is one of the core devices used in our industry. Changes in available radio frequency spectrum will have an impact on the ability for end-users to use wireless devices, particularly wireless microphones. In this section we outline:

- Who uses wireless microphones and;
- Current radio frequency spectrum used by devices in the South African market.

2.1. Users of wireless microphones

The wireless microphone is a device that you come across in daily life. A wireless microphone system is installed in almost every House of Worship, school, sports club, community centre, conference centre, shopping centre, boardroom, hotel and exhibition facility. Large users such as the broadcasters and major staging and rental companies hold millions of Rand's worth of rental stock. Thousands of small and medium enterprises assisting in staging events all hold their own number of wireless microphones, whilst there are tens of thousands of entities that physically own their own stock of wireless microphones.

The number of wireless microphones operating at any one time also varies significantly, based on the type of use and user. Schools and boardrooms may only be operating two or three microphones at any one time whilst other users such as Houses of Worship often require ten to twenty wireless microphones operating seamlessly at any one time. Large events (State Visits, music concerts etc.) often have demands that require up to and over 100 wireless microphones all operating seamlessly without interference at any one time at any specific location.¹

Table 1: Different user groups of Wireless Microphones

Sector	Application of wireless microphones	Estimated no. of devices used at any one event/location
Corporate	Boardrooms, conference systems	5-10
Rental/ staging	Music industry, theatre, staging, live-events	30-100
Government	Boardrooms, conference systems	5-10
Venues	Events, conference systems	5-30
Education	Sound reinforcement	5-30 (Universities hold more)
Broadcast and content creation	Studio & production communications – music production & recording	5-100
Houses of Worship	Public Address and Sound reinforcement	5-50
Retail	Public address and emergency evacuation	5-10
Other		

Table 1 above illustrates the different requirements for different types of events. The amount of radio frequency spectrum required is dependent on the number of wireless microphones. The bandwidth required increases disproportionately with the number of channels (see Figure 1 overleaf)

¹ SACIA Industry survey, 2017

Figure 1: Large systems require large bandwidth

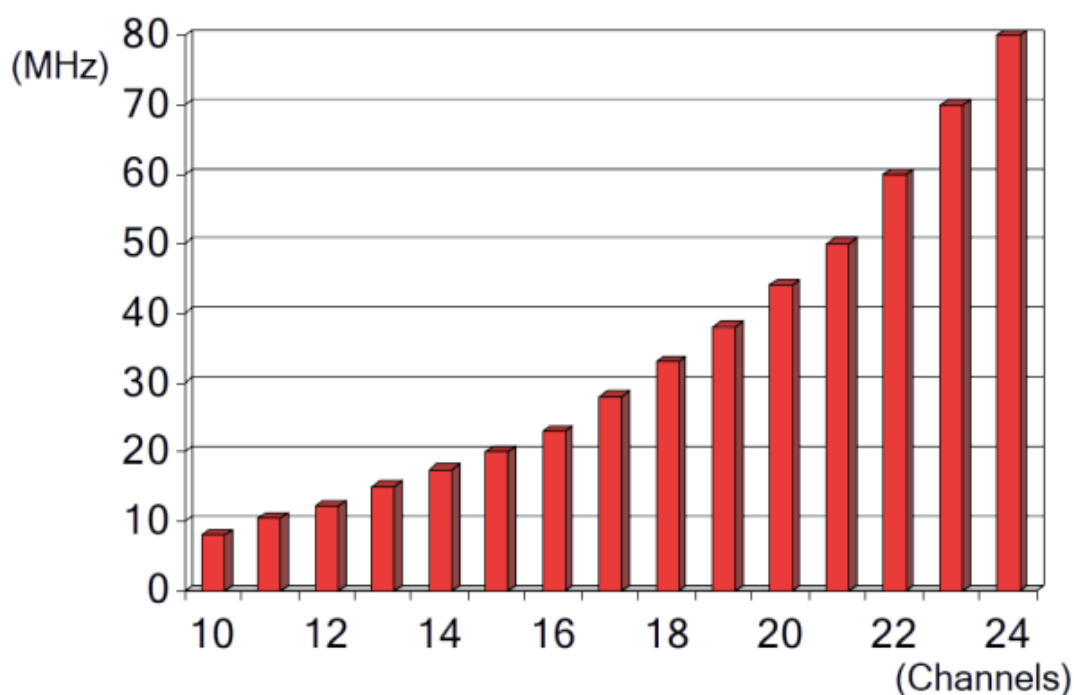


Figure 2 below provides information on the channelling for a stage show currently being performed.

Figure 2: The Frequency channel arrangement for an existing music show

Mike #	MHz
1	629.375
2	656.375
3	666.525
4	671.550
5	679.375
6	782.425
7	783.375
8	786.575
9	793.575
10	794.775
11	798.550
12	803.475
13	805.650
14	807.275
15	808.950
16	810.450
17	816.276
18	817.025
19	818.875
20	821.275

Co-ordination with spectrum licence holders and other licence-exempt users typically requires on-site coordination

Therefore no one event has the same demand for radio frequency spectrum. However, what is critical is that insufficient radio frequency spectrum will make the provision of large scale events all but impossible.

2.2. Frequencies we currently use for wireless microphones in South Africa

The figure below illustrates the current frequencies used by SACIA members in relation to the historic and proposed NRFP. Wireless microphone systems in South Africa are currently using frequencies over and above that catered for in the NRFP 2017.

Figure 3: Radio Frequencies in use by wireless microphones in South Africa

MHz	NRFP 2004	NRFP 2013	NRFP 2017 draft	Actual Use
40.65 - 40.7	Licence exempt			
53-54	Licence exempt			
173.7-175.1	Licence exempt			
470	Broadcasting - SAB/SAP	Broadcasting - SAB/SAP	Broadcasting - SAB/SAP	
694				
790				
854				
863-865	Licence exempt			
952				

3. Specific Comment on the draft NRFP 2017

3.1. Power limits for wireless microphones

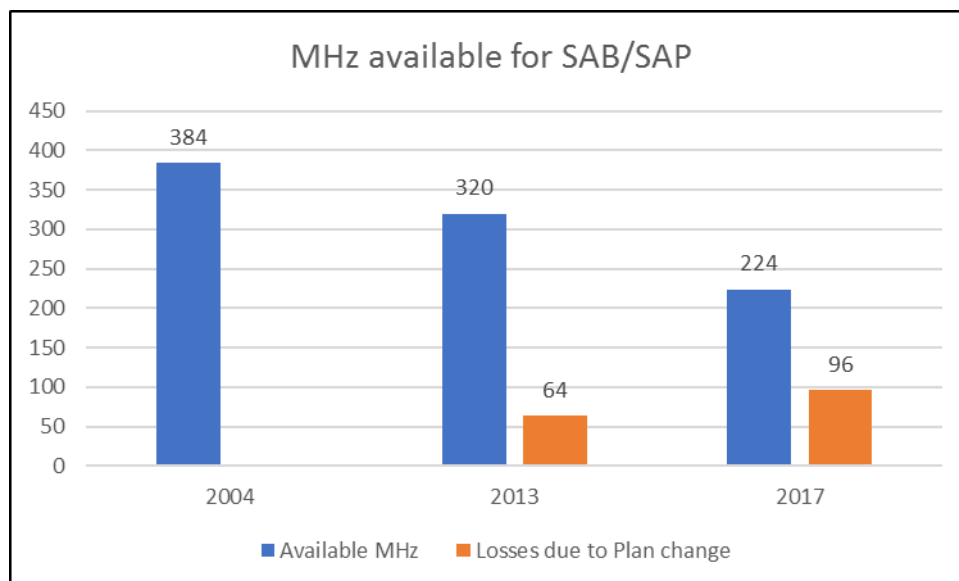
The draft NRFP 2017 indicates a maximum power output level for wireless microphones and SAB/SAP application of 50 mW ERP. We request ICASA to amend this power limitation to 100mW up to 250mW for body-worn microphones. The 100 mW ERP request is based on our experience in South Africa, where wireless microphones may be operating some distance from the radio receiver (without causing interference with other licenced services).

The request to increase the power output to 250 mw ERP for body-worn equipment is due to the fact that the body absorbs a significant amount of the actual radio signal, thus weakening the signal towards the receiver. Australia allows this power threshold for exactly these reasons.²

3.2. Potential for a wireless microphone migration plan

The International Telecommunications Union states that the “UHF band below 1 GHz is the best band for Audio SAB/SAP due to the combination of antenna size, propagation, low body loss absorption and ambient noise floor, especially for body worn equipment.”³ Yet, as Figure 3 shows, the SAB/SAP community is losing 96 MHz under the NRFP 2017.

Figure 2: Reduction in MHz available for SAB/SAP, 2004-2017



SACIA acknowledges that the re-allocation of radio frequency to IMT services will occur. However, wireless microphones only need to be migrated out of 694 MHz to 864 MHz bands when analogue television broadcasting in that spectrum band has been switched off AND the frequency has been licensed and in use by another operator.

² Spectrum options for short range devices. Available at: <http://acma.gov.au/Industry/Spectrum/Radiocomms-licensing/Class-licences/spectrum-opportunities-for-short-range-devices>

³ ITU-R BT.2344-0, 02/2015, page 12

There is also a substantial stock of microphones that would have to be replaced in order to comply with the draft NRFP 2017. SACIA requests ICASA to consider the development of a migration process and timeline that considers consumers interests whilst also ensures that these microphones will be removed from the South African market over a period of time.

In our view this migration plan may include the following:

- Only granting type approval to wireless microphones that operate within the updated bands as soon as the NRFP becomes enforceable;
- An ICASA/SACIA partnership to create awareness amongst customers and end-users of the type of devices that they should purchase;
- Establishing a time period after which devices operating in specific bands may be deemed illegal.

A further point we wish to raise with ICASA is that it is possible for SAB/SAP applications and therefore wireless microphones to continue being used in the affected UHF-TV bands (up to 864 MHz) as long as the Digital Switchover remains delayed.

3.3. International experiences

SACIA carried out a review of the regulation of wireless microphones in other jurisdictions and found that almost all jurisdictions follow both a licence-exempt and a licensed approach to the use of wireless microphones.

The licence-exempt approach is well-established in South Africa. However, the licensed approach, which is typically applicable to the use of UHF-TV band spectrum, takes different shapes in different jurisdiction. Some jurisdictions grant special licences on a geographic, date and time of use basis and only to registered entities (such as in the UK). Other jurisdictions allow a more general use granting licences for up to ten years.

The table below provides examples of the licensing approaches in different countries for use in the UHF-TV bands.

Table 2: Licensing approach in different jurisdictions

Country	Radio Frequency
USA	<ul style="list-style-type: none"> • May operate between 470-698 MHz (max EIRP of between 50 mW and 250 mW depending on type of licence)⁴ • Licenced and licence-exempt use, determined by availability of channels using one of the FCC approved databases • USA introduced the phasing out of wireless microphones that operate in the 700 MHz frequencies in 2012. • USA will phase out use in all UHF TV Bands IV and V by 2020
UK	<ul style="list-style-type: none"> • May operate between 470 – 790 MHz (max ERP 50 mW)⁵

⁴FCC Wireless Microphones Second Report and Order. Amendment of Parts 15, 74 and 90 of the Commission's Rules Regarding Low Power Auxiliary Stations, including Wireless Microphones 2014 Available at: https://apps.fcc.gov/edocs_public/attachmatch/FCC-14-62A1.pdf

⁵ OFCOM UK Interface Requirement 2038 Programme making and special events (PMSE). Available at: https://www.ofcom.org.uk/data/assets/pdf_file/0017/10781/ir2038.pdf ; OFCOM PMSE licence information

	<ul style="list-style-type: none"> • Licensed use for specific geographic uses (Programme making and Special Events or PMSE) • The UK is currently addressing migration issues based on the Digital Dividend spectrum being allocated to Land Mobile use.
Australia	<ul style="list-style-type: none"> • Licenced as Low Interference Potential Devices (LIPD) • May operate between 520 - 694 MHz, (max EIRP. 100 mW)⁶ • Use in 694-820 prohibited from 1 January 2015
Republic of Korea (South Korea)	<ul style="list-style-type: none"> • May operate between 470 - 698 MHz, 50 mW, ERP⁷ • Licenced for broadcasting and fixed locations only
Japan ⁸	<ul style="list-style-type: none"> • May operate in the following bands: <ul style="list-style-type: none"> ○ 322-322.425 ○ 470-710 ○ 710-714 ○ 770-806 (limited to 31 March 2019)

4. Other regulatory matters

We have not covered the following aspects in our submission:

- The impact these changes may have on cinematography and portable video recording devices. This amendment in NRFP 2017 is likely to have the same or similar impact on these services
- Co-existence of wireless microphones and LTE services in the 800 MHz duplex gap
- Other detailed technical considerations

We would like to engage in more detail with ICASA on these matters, possibly with a specific workshop of industry stakeholders related to using the UHF frequency bands for short range devices.

SACIA would also like to engage ICASA on the implementation requirements of the Radio Frequency Spectrum Regulations (2015) as to how best to implement the various requirements of radio frequency spectrum coordination and the issuing and receiving of permits.

Available at: <https://www.ofcom.org.uk/manage-your-licence/radiocommunication-licences/pmse/pmse-licence-info> ; OFCOM Wireless microphones and monitors Available at: <https://www.ofcom.org.uk/manage-your-licence/radiocommunication-licences/pmse/pmse-technical-info/mics-monitors>

⁶Spectrum options for short range devices. Available at: <http://acma.gov.au/Industry/Spectrum/Radiocomms-licensing/Class-licences/spectrum-opportunities-for-short-range-devices>

⁷ EIRP = ERP + 2.15 dB

⁸ Ministry of Internal Affairs and Communications. Frequency Assignment Plan (May 2015). Available at: <http://www.tele.soumu.go.jp/e/adm/freq/search/share/plan.htm>

5. Conclusion

SACIA would like to thank ICASA for this opportunity to share our experiences with you. We understand that there is no likely change to be made to the draft NRFP regarding the “shrinking” of the UHF-TV bands.

However, we request ICASA to take on board the existence of many thousands of wireless microphones in the market that are likely not to be compliant with the existing NRFP 2013, let alone the NRFP 2017. Furthermore, we ask ICASA to take note of the vast range of stakeholders, from Houses of Worship to conference venues and the thousands of small and medium enterprises in the events management industry that will be affected were any changes to be implemented.

SACIA requests ICASA to consider developing a wireless microphone migration strategy and we offer our technical and commercial knowledge to ICASA.

In summary, we ask ICASA to consider:

- Increasing the 50 mW ERP limitation on wireless microphones to 100 mW ERP throughout all bands
- Developing a wireless migration strategy that includes the use of wireless microphones from 470 MHz to 854 MHz, to be in line with the national project plan for the Analogue to Digital Switchover
- An opportunity to engage with ICASA directly on matters related to the Radio Frequency Spectrum Regulations of 2015

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