



SOUTH AFRICAN RADIO LEAGUE

The National Body for Amateur Radio in South Africa

A Member of the International Amateur Radio Union

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DRAFT UPDATE OF THE NATIONAL RADIO FREQUENCY PLAN

South African Radio League representation and response to the request for comments on the Draft National Radio Frequency Plan published in the Government Gazette number 40480 dated 9 December 2016

The South African Radio League reviewed the Draft National Radio Frequency Plan and would like to highlight the following divergences from the the 2015 Radio frequency Regulations including motivations for requested inclusions / updated to the current draft National Radio Frequency Plan as follows:

1. Amateur Frequency Band 472 - 479 kHz

Amateur 5.80A - the SARL requests that the maximum power of 5 W eirp be retained as in annexure I of the 2015 Radio Frequency Regulations.

2. Amateur Frequency Band 1810 - 1850 kHz

The SARL request that the band 1810 – 2000 kHz be retained as in annexure I of the 2015 Radio frequency Regulations. The increase in the band was agreed during various workshops and discussions between the SARL and ICASA.

Motivation submitted to ICASA which resulted in the expansion to 2000 kHz in the 2015 Radio Frequency Regulation frequency table.

Currently radio amateurs in South Africa have a frequency allocation in the 160 metre band of 1 810 – 1 850 kHz, however in many countries the amateur allocation covers 1 800 – 2 000 kHz. The ITU allocated 1 810 – 2 000 kHz to the amateur service in Region 1.

The SARL requests ICASA to consider increasing the current frequency allocation to 2 000 kHz in line with international practice. This will provide more international communication opportunities and create a platform to study the unique propagation properties of this part of the radio spectrum.

In 1942 high power LORAN radio navigation stations began operating in the

1 800 – 2 000 kHz frequency band. However LORAN was phased out by the military in North America on December 31, 1980 and most of the world by 1985.

Councillors of the South African Radio League

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The band experienced a rebirth with the demise of LORAN in the United States in December, 1980 and the removal of power restrictions below 1900 kHz soon thereafter. Power restrictions above 1900 kHz were removed in March 1984. 160 meters was then no longer regarded as the "orphan" band as it had been for more than half a century.

Much about ionospheric and propagation on 160 meters is still not completely understood. Phenomena such as "chordal hop" propagation are frequently observed, as well as other unexplained long-distance propagation mechanisms. Inexplicable radio blackouts — sometimes encountered on the AM broadcast band — also occur on 160 metres. Many of these phenomena have been investigated in the scientific community, while radio amateurs continue to be in a unique position to further investigate such fascinating mysteries. The original "magic of radio" is very much alive and well on 160 metres, South Africans should be part of this.

3. Amateur Frequency Band 5351.5 – 5366.5 kHz

The SARL request that ICASA allocate 5350 – 5450 kHz to radio amateurs in South Africa on a secondary basis and to encourage SADC countries to do the same and to maintain the allocation 5290 kHz for Propagation research beacons.

3.1 Back ground

SARL Propagation Research Project on 5 MHz

SARL Proposal to ICASA

3.2. Introduction

The Independent Communications Authority of South Africa (ICASA) awarded two licences to the South African Radio League (SARL) to carry out propagation research on the 5 MHz band in preparation for the agenda item to grant radio amateurs spectrum in the 5 MHz band at the World Radio Conference held in November 2015 (WRC15).

The 5 MHz band, which falls between the 7 MHz and 3,5 MHz amateur bands, has long been under consideration. Early results have shown that when propagation on 7 MHz or 3,5 MHz, is not possible, the 5 MHz performs very well. Some very interesting results have already emerged during the two year of the study, both in terms of short and long distance communication.

The SARL propagation research project is based on a number of automated beacons using a program called "Weak Signal Propagation Reporter" (WSPR). The program was initially written by Joe Taylor, K1JT, but is now open source and is being developed by a small team. WSPR implements a protocol designed for probing potential propagation paths with low-power transmissions. Transmissions carry a station's callsign, Maidenhead grid locator (a geographic co-ordinate system used by radio amateurs to show their location), and transmitter power in dBm. The program can decode signals with S/N as low as -28 dB in a 2500 Hz bandwidth. Stations with internet access can automatically upload their reception reports to a central database called WSPRnet, which includes a mapping facility. (www.wsprnet.org.net).

Currently the beacon network consists of a number of automated unattended beacons while a number of radio amateurs will switch on their radios during times when they are available and then act as beacons. The aim is to have more permanent beacon stations and in this respects the SARL is working with local radio clubs to facilitate this.

3.3. WRC15 Outcome

At WRC15 radio amateurs were allocated a small segment in the 5 MHz band from 5351.5 – 5366.5 kHz on a secondary basis. The conference modified the table of allocations based in Article 5 of ITU Radio Regulation by introducing a 15 kHz secondary allocation for the amateur service. The new allocation is a far cry from what radio amateurs were canvassing for. CTEL, which is representing countries in the Americas had proposed 175 kHz and CEPT countries (Europe) 100 kHz which was the South African Radio League's proposal to ICASA which also found support in SADC and with countries in the African block.

The main opposition to give radio amateurs a segment in the 5 MHz band came from the Regional Commonwealth in the field of Communication (RCC), a group consisting of Russia and ten ex-Soviet Union countries. They were strongly opposed to a new 5 MHz allocation to radio amateurs as did some countries in the Middle East.

Another hurdle in the WRC15 negotiations was the power limit. The conference agreed on power levels between 15 and 25 watts EIRP. This limitation is another strange compromise as the use of power, in the order of 400 watts peak output power, would not have been a problem particularly as the amateur allocation is secondary and stations may not cause interference.

The 5MHz band is well suited for Near Vertical Incidence Sky wave (NVIS) propagation of HF radio waves over short distances without the intervention of the skip which is generally associated with HF communication. It however requires transmitting and receiving antennas that favour high angles of radiation.

Currently the beacon network operates on 5290 kHz a frequency licensed and sponsored by ICASA and consists of a number of automated unattended beacons while a number of radio amateurs will switch on their radios during times when they are available and then act as beacons.

The agreed WRC15 power limit does not present a problem for the propagation study beacon network but low power is not conducive for disaster communication which was the motivation for the 5 MHz allocation.

The early results from the propagation study confirms that a 5 MHz frequency will support communication over a 500 km path which during the late afternoon and early evening.

The SARL has a network of amateur radio stations in the HAMNET group that are available to support communications when other channels fail. Over the past few years it has been proven that mobile networks get quickly overloaded during an emergency or even a road race and often fall down during the critical first few hours of a disaster. The shooting during the Boston Marathon in the USA some year ago proved that to be the case.

3.4. Proposal

The SARL proposes to ICASA to maintain the frequency 5290 kHz so that the studies may be continued throughout the current solar cycle and the beginning of the next cycle to plot what effect the level of the sunspot count may have on propagation.

In addition the SARL requests ICASA to follow the example of the Netherlands to allocate 5350 – 5450 kHz to radio amateurs in South Africa on a secondary basis and to encourage SADC countries to do the same. The SARL has also proposed a power limit of 26 dBW which is the power level most amateur radio transceivers available on the South African market deliver.

4. Amateur Frequency Band 40.675 – 40.685 MHz

Current allocation as listed in Annexure I of the 2015 Radio Frequency Regulation. The SARL requests ICASA to keep this allocation as an Amateur allocation.

5. Amateur Frequency Band 75 500 – 76 000 GHz

Missed from the proposed table. Current allocated to amateur as in annexure I of the 2015 Radio Frequency Regulations. The SARL requests that this be added. (Retained)

General

The SARL is available for the public hearing and would welcome the opportunity to participate.

Submitted by the South African Radio League

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