



Square Kilometre Array (SKA) SA

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Mr Manyapelo Richard Makgotlho
The Independent Communications
Authority of South Africa (ICASA)
Private Bag XI0002
Sandton 2146

Attention:
Mr Manyapelo Richard Makgotlho
E-mail: rmakgotlho@icasa.org.za

Date: 03rd February 2017

Dear Mr. Makgotlho,

RE: NOTICE INVITING COMMENTS ON THE DRAFT NATIONAL RADIO FREQUENCY PLAN 2017

This submission is made by the Square Kilometre Array South Africa (**SKA SA**), a business unit of the National Research Foundation (**NRF**) established in terms of the National Research Foundation Act, Act 23 of 1998, in response to the invitation by the Authority to submit written representations on the Draft Update of the National Radio Frequency Plan 2017 in the Government Gazette number 40480 under notice number 861 of 2016.

The South African SKA Project is a project of the Department of Science and Technology (**DST**), administered by the NRF. SKA SA is responsible for coordinating Africa's involvement in the design and construction of the SKA Radio Telescope, the design and construction of the Karoo Array Radio Telescope (MeerKAT), and the African VLBI Network (AVN).

- 1 **Page 2-19 (203)**, comment regarding the changes implemented in the NRFP 2017, third bulleted list.
 - a. **Observation:** The Karoo Central Astronomy Advantage Areas were recognised and the Core Astronomy Advantage Area was not acknowledged.
 - i. **Proposed changes:** The regulation promulgated in terms of section 22, 23 and 50 of the Astronomy Geographic Advantage Act (AGA Act No. 21 of 2007), apply to the core astronomy advantage area declared in terms of section 7(1) and (2), and central astronomy advantage area declared in terms of section 9 (1) and (2). The protection levels is applied in terms of section 37 and 50 of the AGA Act, promulgated in the Government Gazette number 31157, Volume 516, under notice number 666 on the 17th June 2008.
- 2 **Page 3-66 and Page 3-67 (250 – 251)**, comment on the National Table of Frequency Allocation, secondary radio communications service allocation to the Mobile except aeronautical mobile in the radio frequency spectrum from 137 MHz to 138 MHz:
 - a. **Noted:**
 - 137-137,025 MHz allocation to the Mobile except aeronautical mobile (R) 5.208,
 - 137.025-137.175 MHz allocation to the Mobile except aeronautical mobile (R) 5.208,
 - 137.175-137.825 MHz allocation to the Mobile except aeronautical mobile (R) 5.208,
 - 137.825-138 MHz allocation to the Mobile except aeronautical mobile (R) 5.208.
 - i. **Proposed “Astronomy Friendly” alternative communications.**
 - As part of the SKA South Africa, “Astronomy Friendly” alternative communications strategy in the Karoo Astronomy Advantage Area; a Digital Mobile Trunked radio network will be deployed in the radio frequency spectrum from 137 MHz to 138 MHz to provide a means of communications to the: SKA South Africa, local public, rural safety, emergency and municipal services on a non-for-profit basis.

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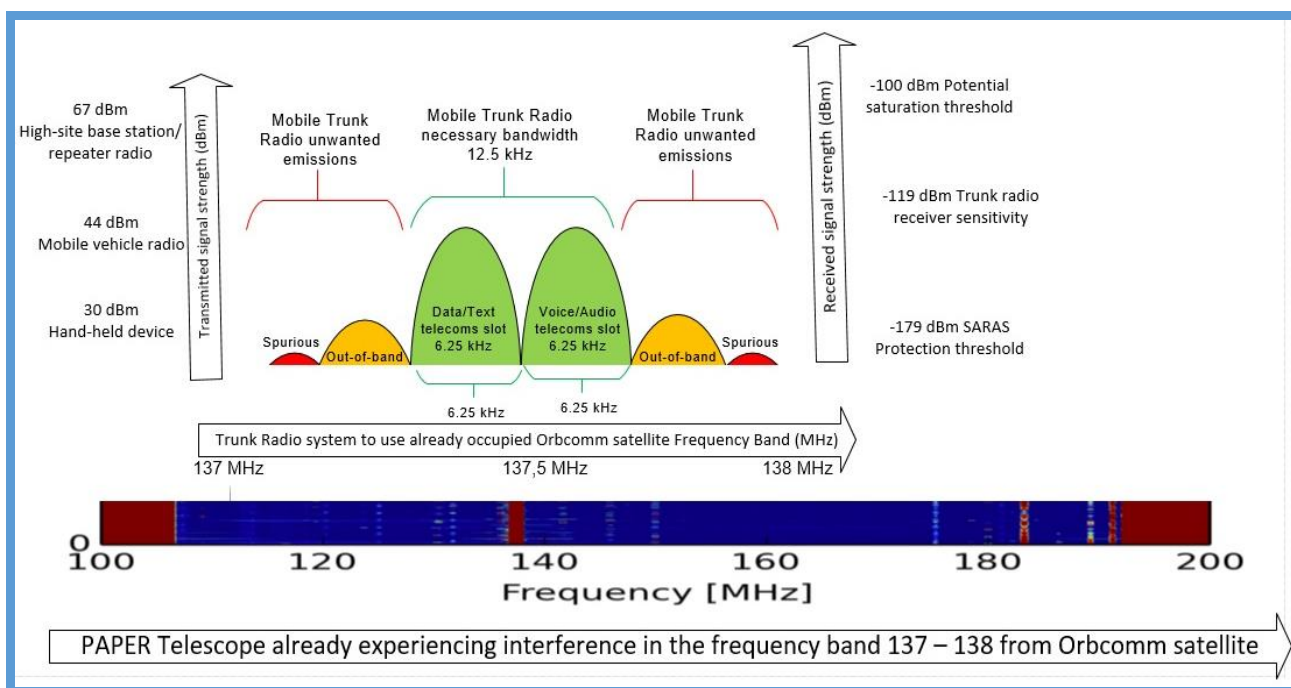


Figure 1. Mobile Trunk Radio spectrum occupancy

- 3 **Page 4-163 (349)**, comments on the Radio Astronomy section, regarding the first paragraph.
- a. **Observation:** Incorrect frequency band 100 MHz to 26.5 GHz identified.
 - i. **Correction:** The band 100 MHz to 25.5 GHz are earmarked for the SKA.
 - b. **Addition:**
 - i. The Northern Cape Province, excluding the Sol Plaatjie Municipality, was declared an Astronomy Advantage Area on the 5th of February 2009 in Government Gazette number 31855 under notice number 82 of 2009 in terms of Section 5(1)(a) of the AGA Act because it has features suitable for Astronomy and related scientific activities.
 - ii. The Core Astronomy Advantage Areas were declared in accordance with section 7(1) and 7(2) on the 20th of August 2010 in the Government Gazette number 33462 under notice number 723 of 2010.
 - iii. The Karoo Central Astronomy Advantage Areas (KCAAs) and Sutherland Central Astronomy Advantage Areas were declared in accordance with section 9(1) and (2) on the 12th of March 2014 in the Government Gazette number 37434 under notice number 198 of 2014.
 - iv. Map for the Core, Central and Coordinated Astronomy Advantage Areas attached.

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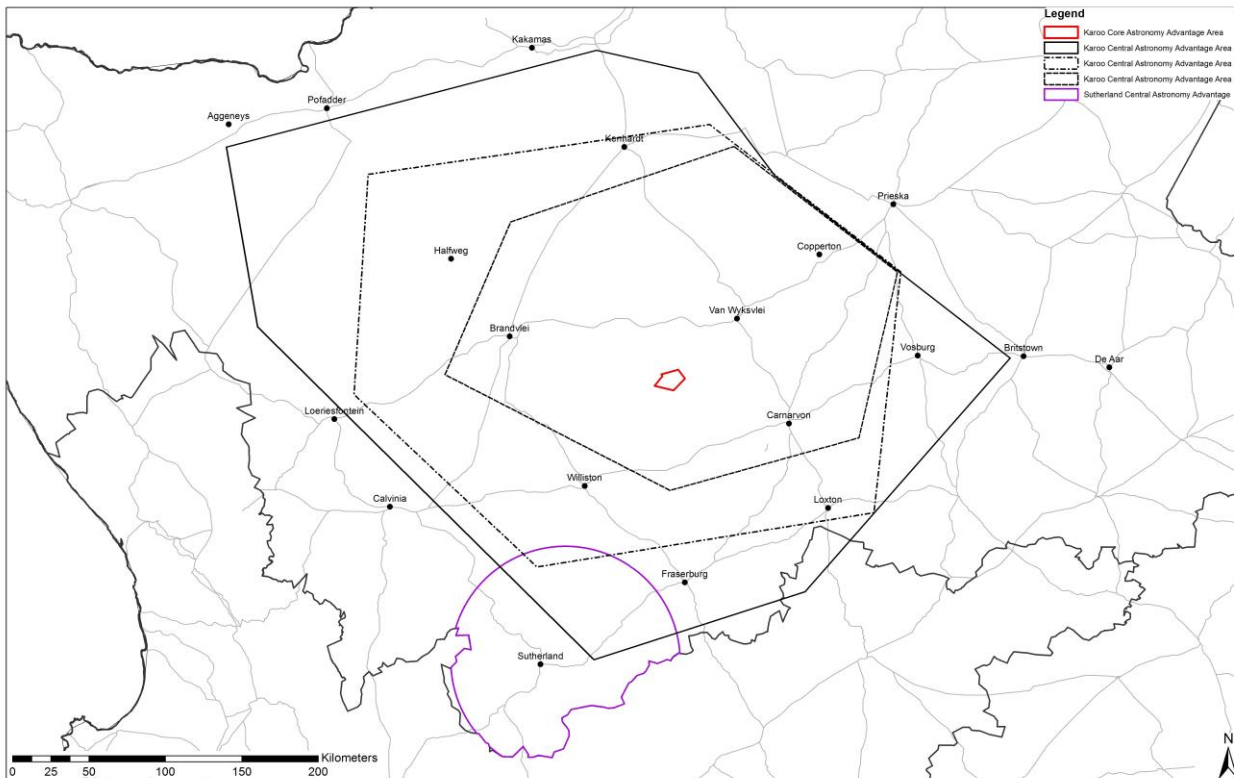


Figure 2. Karoo Core and Central Astronomy Advantage Areas

4 Page 5-165 (351), NR9 (IMT Frequency Bands – terrestrial).

- a. **Observation:** The SKA South Africa and radio astronomy community around the world are troubled by the identification of 1 427 MHz to 1 518 MHz as possible IMT frequency bands. There is high risk of unwanted emissions into the frequency band 1400 MHz to 1427 MHz, which is the most important passive band in astronomy. The ITU-R R.A 2332-0 was published in 2015 and although it indicates that compatibility between IMT base stations and radio telescopes can be achieved at 120 km separation distance such studies have not been discussed by interested parties nationally, ahead of WRC-15. The band 1400 – 1427 is regarded as the most important spectral line for neutral hydrogen distribution and is used to study the structure of our Galaxy and other galaxies. No 5.340 protects Radio Astronomy services in the band 1400 – 1427 MHz from harmful interference from other bands and the thresholds of their emissions should remain below detrimental interference margins as listed in the ITU-R R.A 769 and regulations on Radio Astronomy Protection Level, promulgated in the Government Gazette number 35007 on the 12th February 2012.
- b. **Proposed changes:** SKA SA submits that such studies have not been discussed in the Republic and the impact on the SKA radio telescope cannot be determined. The SKA SA proposes that a national footnote be included, which states that in South Africa, the inclusion of IMT services on a primary basis will be considered pending the analysis of compatibility studies with adjacent radio astronomy services in the frequency band 1400 MHz to 1427 MHz.

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Thank you for the opportunity to contribute to the Draft Update of the National Radio Frequency Plan 2017. In the event that the Authority decides to hold public hearings, SKA SA will welcome an opportunity to make oral representation. The oral representation will provide SKA SA with an opportunity to present additional information on radio telescope frequency bands, “astronomy friendly” alternative communication solutions and a status update on the AGA regulations for the Karoo Astronomy Advantage Areas.

Kind Regards,

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