

NOTICE 118 OF 2009**NOTICE OF INTENTION TO MAKE REGULATIONS REGARDING THE KAROO RADIO ASTRONOMY ADVANTAGE AREA FOR SQUARE KILOMETRE ARRAY RADIO TELESCOPE**

The Minister of Science and Technology hereby gives notice of intention to make regulations in the schedule in terms of section 50 read with sections 7,9 and 11 of the Astronomy Geographic Advantage Act, 2007 (Act No.21 of 2007), which are hereby published for public comment under section 42 of the said Act.

Interested persons are hereby invited to submit written comments or written representations with regard to the proposed regulations not later than 16h30 on the 6th of March 2009. For the attention of:

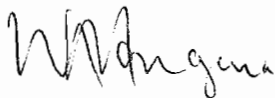
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MINISTER OF SCIENCE AND TECHNOLOGY

SCHEDULE**ARRANGEMENT OF REGULATIONS****Subject**

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Definitions

In these regulations any word or expression to which a meaning has been assigned in the Act shall have the meaning so assigned and, unless the context otherwise indicates

“Act” means the Astronomy Geographic Advantage Act, 2007 (Act No. 21 of 2007).

“Detrimental radio interference” means a radio frequency interference which endangers or obstructs the functioning of the radio astronomy devices and impacts negatively on the related scientific endeavours.

“Saturation” means a phenomenon that occurs in radio receivers by which they cease operation when a high level electromagnetic energy reaches the receiver, independent of the frequency.

Purpose of regulations**1.**

- (1) To provide for the protection of the Karoo radio astronomy advantage areas in the context of their use for the Square Kilometre Array (SKA) radio telescope.
- (2) For effective protection purpose these regulations must be read together with other regulations of astronomy advantage areas.

Scope of regulation**2.**

These regulations apply to the Karoo radio astronomy advantage areas which will be used for the Square Kilometre Array radio telescope.

Commencement of regulations**3.**

- (1) These regulations will commence and become effective on the date the Square Kilometre Array radio telescope becomes operational.
- (2) The commencement date will be published by a notice in the Gazette
- (3) On commencement date these regulations shall become effective.

Specific protection requirements**4.**

- (1) Protection for the Karoo radio astronomy advantage areas in the Northern Cape against detrimental radio frequency interference is based on specified protection levels at the reference point, within the Karoo core radio astronomy advantage area located at geographical coordinates 21.388000 degrees East and 30,71480 degrees South.

- (2) The designated frequency spectrum within which radio astronomy observations will be carried out and which needs protection is the continuous spectrum from 100 MHz to 25.5 GHz.
- (3) Observations will also be carried out in the spectrum from 70 to 100 MHz.
- (4) Existing transmitters operating in the frequency band between 87.5 and 100 MHz will not be subject to the protection requirement needed for radio astronomy observations in this band.
- (5) In the event of saturation in the radio astronomy receiving equipment causing malfunctioning of the equipment due to the received signals within 87.5 and 100 MHz band exceeding -120 dBm/Hz, the transmitting installation involved will have to be relocated or its transmission characteristics changed to reduce the signals causing the saturation to below -120 dBm/Hz.
- (6) The requirement referred to in subsection (5) will take precedence over any other requirement with respect to protection which may imply a concession on the need to avoid saturation.
- (7) The protection levels to be applied in connection with all the Karoo radio astronomy advantage areas, to which these regulations are applicable, are as follows:
 - (a) The protection levels are derived using the methodology described in ITU Recommendation ITU-R RA.769-2.
 - (b) The technical assumptions made in the derivation are that receiver and sky temperatures are linearly interpolated from those values found in ITU-R RA.769-2, and that receiver bandwidth is assumed to be 10% of the observing frequency.
 - (c) Derived protection levels, which are equivalent to threshold levels of interference for new generation radio astronomy observatories and based on the methodology outlined in ITU-R RA.769-2, are specified in Figure 1.