

**NOTICE 116 OF 2009****NOTICE OF INTENTION TO MAKE REGULATIONS REGARDING THE ASTRONOMY ADVANTAGE AREAS.**

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 5,7,9 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 6<sup>th</sup> of March 2009. For the attention of:

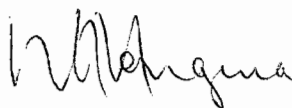
Ms Lipuo Mothae  
Dept of Science and Technology  
Building 53,CSIR Campus  
Meiring Naude Road  
Brummeria  
Pretoria

Or

Dept of Science and Technology  
Private Bag X894  
Pretoria  
0001  
Or

E mail address [lipuo.mothae@dst.gov.za](mailto:lipuo.mothae@dst.gov.za)

Enquiries can be made at telephone number 012 843 6463



**M MANGENA**

**MINISTER OF SCIENCE AND TECHNOLOGY**

## SCHEDULE

### ARRANGEMENT OF REGULATIONS

#### Subject

Definitions	1
<b>CHAPTER 1 : Administration</b>	
Scope of regulation	2
<b>CHAPTER 2 : Astronomy advantage areas</b>	
Optical astronomy advantage	3
Radio astronomy advantage area	4
<b>CHAPTER 3 : Procedure and criteria for declaration</b>	
<b>CHAPTER 4: Protection of astronomy advantage areas</b>	5
Optical astronomy	6
Core optical astronomy advantage area	7
Central optical astronomy advantage area	8
Coordinated optical astronomy advantage area	9
Radio astronomy protection requirements	10
Core radio astronomy advantage area	11
Central radio astronomy advantage area	12
Authorisation of radio communication transmissions in the central radio astronomy advantage area	13
Authorisation process of frequency bands to be used for radio communications	14
Coordinated radio astronomy advantage area	15
Coordination process	16
<b>CHAPTER 5 : Access to core astronomy advantage areas</b>	
Optical astronomy	17
Radio astronomy	18

**CHAPTER 6: Offences and penalties**

General offences and penalties 19

**CHAPTER 7: General**

Review of the regulations 20

Short title 21

## 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 indicates otherwise –

“Act” means the Astronomy Geographic Advantage Act 21 of 2007

“Cut-off” means luminaires emit no more than 1% of their total light output above 90 degrees, and no more than 3% above 80 degrees.

“Declaration” means declaring of an area as astronomy advantage area by notice in the Gazette

“Detrimental optical interference” means phenomena that endanger or obstruct the functioning of optical astronomy devices and impacts negatively on the related scientific endeavours in the optical astronomy advantage areas.

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

“Efficient lighting” means an output of at least 95% of that achieved by standard high-pressure sodium lamps (9500 lumens for a 100W lamp, for example).

“Essential radio communications services” means electronic radio communications required in the central astronomy advantage area which include:

- a) Broadcasting signal distribution for licensed terrestrial broadcasting services;
- b) Public fixed line radio communications;
- c) Public mobile radio communications;
- d) Eskom radio communications to operate and maintain electrical power line systems;

- e) Transnet radio communications to operate and maintain rail transport; and
- f) Radiocommunication services operated by the safety and security cluster, as defined in the Constitution, local authorities, health services and emergency services.
- g) Satellite communications including South African broadcasting services

“Full cut-off lighting” means luminaires emit no light above the horizontal (above 90 degrees), and no more than 3% of the total light above 80 degrees.

“ICASA” means Independent Communications Authority of South Africa established by section 3 of the Independent Communications Authority of South Africa Act of 2000 (Act.No.13 of 2000)

“ITU” means International Telecommunications Union

“ITU RAS protection levels” means threshold levels of interference detrimental to radio astronomy observations in terms of input power, (dBW), power flux density(pfd) (dB(W/m<sup>2</sup>)) and spectral power flux density(spfd) (dB(W/(m<sup>2</sup>/Hz))) as specified in the latest version of the International Telecommunications Union Recommendation ITU-R RA.769.

“Luminaire” means an apparatus that distributes the light emitted by a lamp or lamps.

“Operating institution” means an entity which is responsible for the optical and radio astronomy research activities

“Optical” refers to wavelengths between 350 and 50 000 nanometres.

“Radiocommunications” means electronic communications carried out making use of the radio frequency spectrum.

“SAAO” means South African Astronomical Observatory

“Safety-of-life radiocommunication services” means electronic radio communication services operating in aeronautical and maritime frequency spectrum allocations relating to the safety and regularity of flight and includes communication, radio navigation and surveillance systems

“SALT” means Southern African Large Telescope

“Saturation” means a phenomenon whereby a radio receiver no longer operates linearly within the specified operating frequency range.

“Semi cut-off” means luminaires emit no more than 5% of their total light output above 90 degrees, and no more than 10% above 80 degrees.

“Transmission site” means a location, structure, or object essentially comprising one or more radio transmitters, transposers or transponders.

**CHAPTER 1****Administration****Scope of regulation**

1.

These regulations apply to any declared astronomy advantage area.

**CHAPTER 2****Astronomy advantage areas****Core optical astronomy advantage area**

2.

An area declared as a core astronomy advantage area for the purposes of optical astronomy and related scientific endeavours, in terms of section 7(1) of the Act, cannot be used for any purpose other than optical astronomy and related scientific endeavours, unless such other activity is expressly permitted in terms of these regulations.

**Core radio astronomy advantage area**

3.

An area declared as a core astronomy advantage area for the purposes of radio astronomy and related scientific endeavours, in terms of section , 7(1) of the Act, cannot be used for any purpose other than radio astronomy and related scientific endeavours, unless such other activity is expressly permitted in terms of these regulations.

## CHAPTER 3

### Criteria for declaration

4.

- (1) The area to be declared must be suitable and required for the particular astronomical activities to be conducted.
- (2) The area must be suitable for conducting astronomical activities because of geographical advantage that the area provides, which would be adversely affected by any detrimental optical and radio interference if the interference is not constrained.
- (3) In the case of astronomical observations at ultraviolet, infrared and visible wavelengths, the site must satisfy the minimum standard for a dark optical astronomy site as specified by the International Dark Sky Association (IDSA), namely that, at an elevation of 45 degrees, there is no direction in which the night sky brightness exceeds that due to natural phenomena by more than 10%.
- (4) The area to be declared must:
  - (a) Be used for the advancement of astronomy for national purposes and not for recreational or commercial purposes.
  - (b) Be suitable and used to develop skills, capabilities and expertise of those engaged in astronomy and related scientific endeavours.
  - (c) Have the potential for measures to advance astronomy and related scientific endeavours.
  - (d) Be suitable for undertaking astronomy projects of national strategic importance.



## CHAPTER 4

### Protection of astronomy advantage areas

#### Optical astronomy

5.

Once an area has been declared an astronomy advantage area for the purposes of optical astronomy and related scientific endeavours, it will be protected from detrimental optical interference.

#### Core optical astronomy advantage area

6.

- (1) Astronomical activities on the site and adjacent areas within 3 kilometres radius are controlled by the operating institution, with the adjacent areas covered by cooperative agreements.
- (2) Activities of those admitted to the site will be under the control of the management authority in coordination with the operating institution, these activities shall include but not be limited to-
  - a) Light emission
  - b) Any activity that produces dust, smoke or equivalent pollution as may be determined by the management authority.
- (3) For the protection of optical astronomy, no additional outdoor lighting may be installed in the core astronomy advantage area without the permission of the management authority in coordination with the operating institution.
- (4) Monitoring of sky brightness and transparency will be carried out on the observing plateau of the site, using the 0.5m telescope and photometer and/or a standard telescope provided through the International Dark-sky Association.

## Central optical astronomy advantage area

7.

- (1) All developments including industrial, domestic, sporting, cultural and tourism shall be subject to standards determined by the management authority to assess potential impact on the observing conditions at the core site.
- (2) All new outdoor lighting fittings and fixtures to be converted to lower power, full cut-off devices so as to minimise night sky pollution.
- (3) The lighting should not permit more than 0.8% of the total flux to be emitted in the upper hemisphere for illuminations less than 15000 lumens.
- (4) Outdoor light fixtures, or arrays of light fixtures, emitting more than 800 lumens should not emit more than 0.8% of the total flux in the upper hemisphere.
- (5) Lighting should be low pressure sodium.
- (6) Conversion of existing outdoor lighting facilities will be coordinated with the management authority through the relevant municipalities.
- (7) Open cast mining is prohibited.
- (8) Other mining and construction activities shall be agreed to with the management authority after the receipt of assessment.
- (9) All outdoor light fittings and fixtures to be converted to full cut off devices conforming in the case of street lighting to illumination levels no higher than those specified by SANS 10998-1, so as to minimise night sky pollution.
- (10) Activities which detrimentally interfere with optical astronomy by affecting the sky brightness and/or sky transparency as measured at the Sutherland observing site as described in 6(4) must be mitigated immediately as agreed with the management authority so as to end the detrimental interference.

**Coordinated optical astronomy advantage area****8.**

- (1) Municipalities shall develop plans to reduce external lightning by moving to lower power, high efficiency public lighting with lower impact on sky brightness. In the case of street lighting, roads should be no more brightly lit than specified by SANS 10998-1 (at the end of the recommended replacement cycle for lamps). In new projects, full cut-off or cut-off luminaires should be used at zero rake angle. Existing lighting should be replaced with high-efficiency luminaires (cut-off where practical, semi cut-off where expense and pole spacing make cut-off luminaires impractical).
- (2) Municipalities shall develop plans to minimise external sporting, cultural and advertising lighting by using the full cut off fixtures and/or cut-off fixtures. Billboards and structures may not be lit from below if more than 5% of the light will reach the sky.
- (3) The management authority and Municipalities shall develop regulations requiring commercial and security lighting to use cut-off fixtures, in cooperation with the management authority.
- (4) The management authority and Municipalities shall develop plans to minimise large scale dust and smoke pollution that might reach the Sutherland core optical astronomy advantage area.
- (5) Pursuant to sections (1)(2)(3), and (4) the municipalities will concur with the management authority.

## **Radio Astronomy protection requirements**

9.

- (1) Once an area has been declared an astronomy advantage area for the purposes of radio astronomy and related scientific endeavours, measures for protection from detrimental radio interference will be applied as provided for in regulations applicable to the specific areas.
- (2) Protection levels shall be enforced on any new radio frequency services operating within the specified frequency ranges for the particular areas and on the existing radio frequency services operating within the specified frequency ranges for the particular areas with the proviso that concessions may be granted as prescribed in these regulations.
- (3) The implementation of protection for radio astronomy observations and assessment of existing or planned transmissions will be carried out in two phases
  - (a) Initial period in which all existing transmissions need to be authorised or coordinated by the management authority including any existing new requirements for transmission or upgrading.
  - (b) An ongoing process to deal with new requirements and upgrading which involves increased radiation levels towards the specified centre of core astronomy advantage area.

## **Core radio astronomy advantage areas**

10.

- (1) Radiocommunications with transmitters located within the core radio astronomy advantage areas which operate within specified frequency bands are declared activities that may only be undertaken as prescribed in any Astronomy Geographic Advantage Act regulations.

- (2) No fixed transmitting stations operating within the specified frequency spectrum may be located in the core radio astronomy advantage area.
- (3) Any existing transmitter stations operating within the specified frequency spectrum within the core radio astronomy advantage area will have to be relocated to a location outside the core radio astronomy advantage area.
- (4) No terrestrial mobile or portable transmitting devices may be brought into the core radio astronomy advantage area unless it has been authorised by the management authority or by a person delegated by the management authority.
- (5) All electrical and electronic equipment brought into the core radio astronomy advantage area must comply with electromagnetic compatibility requirements and on site usage policies and guidelines as determined by the management authority or by a person delegated by the management authority.

#### **Central radio astronomy advantage areas**

##### **11.**

- (1) Radiocommunications with transmitters located within the central radio astronomy advantage areas which operate within specified frequency bands are declared activities that may only be undertaken as prescribed in any Astronomy Geographic Advantage Act regulations;
- (2) All transmitters located or to be located within central radio astronomy advantage areas shall be subject to authorisation by the management authority on an individual basis and in accordance with the following:
  - (a) Only transmissions within frequency bands authorised for radio communication within the central radio astronomy advantage



area will be considered for authorisation of the individual transmissions by the management authority.

- (b) The impact of spurious emissions such as harmonic and intermodulation products will be taken into account during the authorisation process.
- (c) The radio frequency interference impact at the specified reference point of a core radio astronomy advantage area from any transmission must not exceed a specific threshold level prescribed unless exemption has been granted, in which case a concessionary level will be determined.
- (d) No transmission causing interference which saturates radio astronomy receiving equipment located within a core radio astronomy advantage area will be authorised.
- (e) In the event that an essential or safety-of-life radio communication service transmission within the central radio astronomy advantage area is involved and the transmission design has been optimised to minimise the radio frequency interference impact to the maximum extent feasible exemption will be granted and the transmission and its characteristics will be authorised.
- (f) Essential and safety-of-life radio communication services within a central radio astronomy advantage area will be determined by the management authority in consultation with the relevant entities and in accordance with the procedures prescribed in section 14 of the regulations.

## **Authorisation process for radio communications transmissions in central radio astronomy advantage areas**

### **12.**

- (1) The authorisation process, including assessments will be done by the management authority in concurrence with ICASA where required by the Act
- (2) The authorisation process will be conducted in two stages-
  - a) The once off stage which will deal with all existing transmissions and existing requirements for new transmissions and upgrades.
  - b) The ongoing process which will deal with the need for new transmissions and upgrading when required.
- (3) In conducting the once off stage which deals with all existing transmissions and existing requirements for new transmissions, the management authority will –
  - (a) Require the submission of specified data for all existing transmissions at stations located within the central radio astronomy advantage area.
  - (b) If there are plans for the transmissions or changes at the time of making submissions to existing submissions to increase radiated power in the direction of the core astronomy advantage area, this data must be submitted at the same time but must be listed and identified separately.
  - (c) The management authority may decide to allocate different dates on which submissions are to be made by different licensed operators involved in the central radio astronomy advantage area.
  - (d) The management authority must publish the submission schedule 30 days in advance of the first submission.
  - (e) The submissions need to be made within 30 working days after the publication of the schedule or on a date determined for a particular entity.

- (f) The schedule must be published in the form of a notice in the gazette.
- (g) The required data must be submitted in comma delimited ascii file format.
- (h) The data required is specified in the following sub items–
  - I. The carrier frequency for the signal to be assessed in MHz to 4 decimals.
  - II. A unique reference number, not exceeding ten characters or numerals or a mix thereof, for each comprehensive signal transmitted on the particular carrier frequency.
  - III. The entity or person licensed or exempted to transmit the signal.
  - IV. The station name where the transmission takes place.
  - V. The geographical coordinates for the mast or structure on which the transmitting antenna is located at the station in degrees up to six decimals.
  - VI. The height above sea level of the mast or structure base (ground level) in metres.
  - VII. The height of the transmitting antenna above ground level referred to in subsection VI, in metres
  - VIII. The effective isotropic radiated power (eirp) level in the direction of the specified reference point in the core astronomy advantage area in dBm.
  - IX. The polarisation of the transmitted signal.
  - X. The bandwidth of the transmitted signal.
- (i) The submissions of similar radio communication services using common transmission sites will be dealt with concurrently.
- (4) The assessment of submissions will be carried out by the management authority as follows:
  - (a) The assessment will be carried out by means of a computerised system which uses scientific methods recommended by the ITU



and which calculates the signal level at the specified reference point in the core radio astronomy advantage area.

(b) Any options provided for in the ITU recommendations will be agreed upon in advance by the management authority and the relevant entities.

(c) The calculated signal will be compared to the prescribed protection level, and the licensed operator or licence exempt operator of the transmitter which produces the signal will be informed in writing of the outcome of the assessment by the management authority.

(d) If the calculated signal level does not exceed the prescribed protection level, the management authority will authorise the transmission in writing within a period of 90 working days from the date on which the submission was made, and provide the licensed operator or licence exempt operator with the authorisation reference number and authorisation date.

(e) If the calculated radio frequency interference signal exceeds the prescribed protection level, the management authority will inform the licensed operator or licence exempt operator in writing within a period of 90 working days from the date on which the submission was made.

(f) The operator must investigate and consider methods to reduce the signal level to the prescribed protection levels and inform the management authority within a period of 30 working days from the date on which the notice in subsection (e) was given of the outcome of the study and the new transmission data that will be applied.

(g) The new transmission characteristics must be implemented within 90 working days of acceptance thereof by the management authority or as otherwise mutually agreed if only changes to an existing transmitting installation are required.

- (h) If the transmitter needs to be relocated or shut down it must be done within a period of 9 months or as otherwise mutually agreed.
- (i) If a signal exceeding the prescribed protection level relates to an essential service and cannot be reduced without negatively affecting service delivery, the licensed operator or licence exempt operator must submit to the management authority the motivation and technical arguments as to why the signal level cannot be reduced and request that a minimum required level of transmission which causes an excessive signal be authorised.
- (j) The management authority will deal with the request referred to in subsection (i) as follows:
  - I. Give due consideration to the request, consult with ICASA, and provide its decision within a period of 30 working days.
  - II. If the request to authorise transmission for an essential service which exceeds the prescribed protection level is turned down, the management authority will inform the operator in writing of its decision and the reasons thereof within a period of 30 working days after the request was submitted.
- (5) In conducting an ongoing process which deals with the need for new transmissions and upgrading when required, the management authority requires that –
  - (a) A request for authorisation is made when the planning is carried out by the licensed operator or licence exempt operator and before any implementation takes place.
  - (b) The data must be submitted in comma delimited ascii file format
  - (c) The data must include the following –
    - i. The carrier frequency for the signal to be assessed in MHz to 4 decimals.

- ii. A reference number, not exceeding ten characters or numerals or a mix thereof, for each comprehensive signal transmitted on the particular carrier frequency.
  - iii. The entity or a person licensed or exempted to transmit the signal.
  - iv. The station name where the transmission takes place.
  - v. The geographical coordinates for the mast or structure on which the transmitting antenna is located in degrees up to six decimals.
  - vi. The height above sea level of the mast or structure base (ground level) in metres.
  - vii. The height of the transmitting antenna above the ground level referred to subsection 6 in metres.
  - viii. The effective isotropic radiated power level in the direction of the specified reference point in the core astronomy advantage area in dBm.
  - ix. The polarisation of the transmitted signal.
  - x. The bandwidth of the transmitted signal.
- (6) The assessment of the submissions will be carried out by the management authority as follows:
- (a) The assessment will be carried out by the means of a computerised system which uses scientific methods recommended by the ITU and calculates the signal level at the specified reference point in the core radio astronomy advantage area.
  - (b) Any options provided for in the ITU recommendations will be agreed upon in advance by the management authority and the relevant entities.
  - (c) The calculated signal level will be compared to the prescribed protection level, and the licensed operator or licence exempt operator of the transmitter which produces

signal will be informed in writing of the decision of the management authority.

(d) If the calculated signal level does not exceed the prescribed protection level, the management authority will authorise the transmission in writing within a period of 90 days after the date on which the submission was made.

(e) The management authority will provide the licensed operator or licence exempt operator with an authorisation reference number and the authorisation date.

(f) If the calculated signal level exceeds the prescribed protection level, the management authority will inform the licensed operator or licence exempt operator in writing within a period of 90 working days from the date on which the submission was made.

(g) The licensed operator or licence exempt operator will be afforded an opportunity to review the planned transmission and resubmit the request with the revised data which is meant to result in a transmission complying with the prescribed protection level.

(h) If the signal exceeding the prescribed protection level relates to an essential or a safety-for-life service, and cannot be sufficiently reduced without negatively affecting service delivery, the licensed operator or licence exempt operator must submit a motivation and technical arguments as to why the signal level cannot be reduced and request that the minimum required level of transmission which causes an excessive signal level be authorised.

(i) In dealing with the request referred to in subsection (h) the management authority will give due consideration to the request, consult with ICASA and provide its decision within a period of 30 working days after the request was made.

(j) If the request referred to in subsection (h) is turned down, the management authority will inform the operator of its decision and the reasons thereof within 30 working days after the request was made.

- (7) Authorised transmitters and their transmission characteristics will be entered into a database for the central radio astronomy advantage area.
- (8) The detailed information to be accommodated in the database will be in accordance with the information required for the assessment process.

**Authorisation process for frequency bands to be used for radio communication in the central radio astronomy advantage area**

**13.**

- (1) The authorisation process will be carried out in two phases-
  - (a) The first phase will be a once off process where the frequency bands required at that particular time will be determined.
  - (b) The second phase will be an ongoing process where the requirement for the use of additional frequency bands can be requested.
- (2) In conducting the once off process referred to in subsection (1)(a), the management authority will publish a list of frequency bands that are in current use.
- (3) The request will be made for written representations on the frequency bands list and proposals included in the publication which must be made within a period of 30 working days.
- (4) The list will be compiled with the existing licensed operators or licence exempt operators who have transmitters in the central radio astronomy advantage area.



- (5) The published list may include proposals for the consolidation of small fragments of spectrum being used in the central astronomy advantage area.
- (6) The management authority will consult ICASA on the frequency bands included in the list.
- (7) The management authority will consider the representations received and may request additional information.
- (8) After consideration, the management authority will authorise the frequency bands that may be used for transmitters located within the central astronomy advantage area.
- (9) The management authority will publish the list of authorised frequency bands in the gazette within 90 working days from the closing date for representations.
- (10) The ongoing process referred to in subsection (1)(b) will resume by requests being made to the management authority at any time after a period of 12 months after the conclusion of phase one referred to in subsection(1)(a).
- (11) The request may be for the extension of frequency bands being used which were previously authorised or new frequency bands within the prescribed radio astronomy frequency spectrum.
- (12) The management authority will consider the requests and publish them in the gazette for comment by interested parties within a period of 30 working days.
- (13) The management authority may request additional information when considering the representations.
- (14) Subsequent to this process the management authority will consult with ICASA on the frequency bands to be included in the list.
- (15) After consideration of the representations, the management authority will publish the amended frequency band list in the gazette within a period of 60 working days after the representations referred to in subsection 12.

**Determination of essential and safety-of-life radio communication services in the Central Radio Astronomy Advantage Area**

**14.**

- (1) The essential and safety-of-life radio communications services to be determined by the management authority are those that are operated from the electronic communications stations located within a central radio astronomy advantage area.
- (2) Radio communication services would be declared as essential or safety-of-life services within central radio astronomy advantage areas by notice in the Gazette.
- (3) An essential radio communication service is not an essential radio communication service if a functionally suitable alternative exists that complies with the radio astronomy protection requirements.
- (4) Transmitted electromagnetic energy and its coverage need to be minimised and focused on the communities or infrastructure being served.

**Coordinated radio astronomy advantage areas**

**15.**

- (1) Radio communications with transmitters located within coordinated radio astronomy advantage areas which operate within specified frequency bands and at radiated powers exceeding specified levels are identified activities which must be coordinated as prescribed in any Astronomy Geographic Advantage Act regulations.
- (2) All transmissions within coordinated astronomy advantage areas within the specified frequency bands and exceeding specified power levels must be coordinated to ensure that the radio

frequency interference caused is below the applicable specified protection level or alternatively is reduced to an agreed level.

## **Coordination Process**

### **16.**

- (1) The coordination process will be conducted in two phases-
  - (a) In phase 1 all existing transmissions and existing plans for new transmissions and upgrades will be attended to as a once off process.
  - (b) In phase 2 the needs for new transmissions and upgrades will be attended to when required as an ongoing process.
- (2) The first phase will take place as follows-
  - (a) The management authority will require the submission of specified data for all existing transmissions at stations located within the coordinated radio astronomy advantage areas.
  - (b) If there are plans for new transmissions or changes at the time of making the submissions to existing transmissions to increase radiated power in the direction of the specified reference point in a core astronomy advantage area, the data must be submitted at the same time but must be listed and identified separately.
  - (c) The management authority may decide to allocate different dates on which submissions are to be made by different licensed operators involved in the coordinated astronomy advantage area.
  - (d) The management authority must publish the submission schedule 30 working days in advance of the first submission.
  - (e) The required submissions must be made within 30 working days after the publication of the notice.
  - (f) The data must be submitted in comma delimited ascii file format
  - (g) The data required must include –
    - I. The carrier frequency for the signal being assessed in MHz to 4 decimals.



- II. A reference number, not exceeding ten characters or numerals or a mix thereof, for each comprehensive signal transmitted on the particular carrier frequency.
  - III. The entity or a person licensed or exempted to transmit the signal.
  - IV. The station name where the transmission takes place.
  - V. The geographical coordinates for the mast or structure on which the transmitting antenna is located at the station in degrees up to six decimals.
  - VI. The height above sea level of the mast or structure base (ground level) in metres.
  - VII. The height of the transmitting antenna above the ground level referred to in subsection (VI) in metres.
  - VIII. The effective isotropic radiated power level in the direction of the specified reference point in the core astronomy advantage area in dBm.
  - IX. The polarisation of the transmitted signal.
  - X. The bandwidth of the transmitted signal.
- (h) The management authority will assess the submissions as follows:
- I. The assessment will be carried out by means of a computerised system which uses scientific methods recommended by the ITU and calculates the signal level at the reference point in the core radio astronomy advantage area.
  - II. Any options provided for in the ITU recommendations will be agreed to in advance by the management authority with relevant entities.
  - III. The calculated signal level will be compared to the prescribed protection level and the licensed operator of the transmitter will be informed in writing of the results.

- (i) If the calculated signal level does not exceed the prescribed protection level, the licensed operator or licence exempt operator will be informed in writing within a period of 90 working days after the date on which the submission was made.
- (j) The management authority will provide the licensed operator or licence exempt operator with the coordination reference number and the coordination date.
- (k) If the calculated radio frequency interference signal exceeds the prescribed protection level, the management authority will inform the licensed operator or licence exempt operator in writing within a period of 90 working days from the date which the submission was made.
- (l) The licensed operator or licence exempt operator will investigate and consider the methods to reduce the signal level to the prescribed protection level and inform the management authority within a period of 30 working days after the date on which the response was requested, of the outcome of the study and the new transmission data that will be applied.
- (m) The new transmission characteristics must be implemented within 90 working days of acceptance thereof by the management authority or as otherwise mutually agreed if only changes at an existing transmitting installation are required.
- (n) If the transmitter is to be shut down or relocated, implementation must occur within a period of nine months after acceptance of the new transmission characteristics by the management authority, or within a time mutually agreed to.
- (o) If a signal exceeding the prescribed protection level cannot be reduced sufficiently without negatively affecting service delivery, the licensed operator or licence exempt operator must submit a motivation and technical arguments why the signal level cannot be reduced and request that the minimum required

level of transmission which causes an excessive signal be given coordinated status.

(p) In considering a request to give coordinated status to an excessive signal received, the management authority will deal with the matter as follows-

- I. Give due consideration to the request, consult ICASA, and provide its decision within a period of 90 working days after receipt of the request.
- II. If the motivation and technical arguments are acceptable, the licensed operator or licence exempt operator will be notified in writing that the coordination has been successful.
- III. Enter the applicable transmission data and the coordination reference number and date into the database within a period of 30 working days after the decision was taken.

(3) The second phase will take place as follows –

(a) The requests for coordination must be made when planning is carried out by the licensed operators or licence exempt operators before any implementation.

(b) The data must be submitted in a comma delimited ascii file format

(c) The data must include the following –

- I. The carrier frequency for the signal being assessed in MHz to 4 decimals.
- II. A unique reference number, not exceeding ten characters or numerals or a mix thereof for each comprehensive signal transmitted on the particular carrier frequency.
- III. The entity or person licensed or exempt to transmit the signal.

- IV. The station name where the transmission takes place.
- V. The geographical coordinates for the mast or structure on which the transmitting antenna is located in degrees up to six decimals.
- VI. The height above sea level of the mast or structures base (ground level) in metres.
- VII. The height of the transmitting antenna above ground level referred to in subsection (VI) in metres.
- VIII. The effective isotropic radiated power level in the direction of the specified reference point in the core astronomy advantage area in dBm.
- IX. The polarisation of the transmitted signal.
- X. The bandwidth of the transmitted signal.

(d) The management authority will assess the submissions as follows-

- I. The assessment will be carried out by means of computerised system which uses scientific methods recommended by the ITU and calculate the signal level at the reference point in the core radio astronomy advantage area.
- II. Any options provided for in the ITU recommendation will be agreed upon in advance by the management authority and the relevant entities.
- III. The calculated signal level will be compared to the prescribed protection level and the licensed operator or licence exempt operator of the transmitter will be informed in writing of the results.

(e) If the calculated signal level does not exceed the prescribed protection level, the management authority will notify the licensed operator or licence exempt operator in writing within a period of 90 working days after the date on which the submission was made.

- (f) The management authority will provide the licensed operator or licence exempt operator with a coordination reference number and the coordination date.
- (g) If the calculated signal level exceeds the prescribed protection level, the management authority will inform the licensed operator or licence exempt operator in writing within a period of 90 working days from the date on which the submission was made.
- (h) The licensed operator or licence exempt operator will be afforded an opportunity to review the planned transmission and resubmit the request with the revised data which is meant to result in a transmission complying with the prescribed protection level.
- (i) if a signal exceeding the prescribed protection level cannot be reduced sufficiently without negatively affecting service delivery, the licensed operator or licence exempt operator must submit a motivation and technical arguments why the signal level cannot be reduced, and request that the minimum required level of transmission which causes an excessive signal be given coordinated status.
- (j) In dealing with the request for coordinated status of an excessive signal, the management authority will –
  - I. Give due consideration to the request, consult ICASA and provide its decision within 90 working days after the request was received.
  - II. If the motivation and technical arguments are satisfactory, the licensed operator or licence exempt operator will be notified in writing that the coordination has been successful.
  - III. Enter the applicable transmission data and the coordination reference number and date into database within a period of 30 working days after the decision was made.
- (4) Coordination results for transmitters and their transmission characteristics will be entered into an electronic database for the coordinated radio astronomy advantage area.



- (5) The detailed information to be accommodated will be in accordance with the information required for the assessment process referred to in subsection (3).

## **CHAPTER 5**

### **Access to core astronomy advantage areas**

#### **Optical astronomy**

##### **17.**

- (1) When an area has been declared as a core astronomy advantage area for the purpose of optical astronomy and related scientific endeavours, access to such an area will be controlled by the management authority.
- (2) The management authority or person delegated by the management authority will determine and authorise personnel to access to the core optical astronomy advantage area for the purposes of optical astronomy and related scientific endeavours.
- (3) Access to the core optical astronomy advantage area will be in accordance with the management authority's internal rules.
- (4) No unauthorised persons will have access to the core optical astronomy advantage area designated for the purposes of optical astronomy and scientific related endeavours.
- (5) In granting authority to access the core optical astronomy advantage area, the management authority will impose conditions on persons entering the area.
- (6) No person entering the core optical astronomy advantage area will have in their possession any device, equipment or instrument which may cause detrimental optical interference.
- (7) Permissible time to access the core optical astronomy advantage area will be determined by the management authority.

**Radio astronomy****18.**

- (1) When an area has been declared as a core radio astronomy advantage area for the purpose of radio astronomy and related scientific endeavours, access to such an area will be controlled by the management authority or by a delegated person.
- (2) The management authority or a person delegated by the management authority will determine and authorise personnel to access the core radio astronomy advantage area for the purposes of radio astronomy and related scientific endeavours.
- (3) Access to the core radio astronomy advantage area will be in accordance with the management authority internal rules.
- (4) No unauthorised persons will have access to the core radio astronomy advantage area for the purposes of radio astronomy and related scientific endeavours.
- (5) In granting authority to access the core radio astronomy advantage area, the management authority will impose conditions on persons entering the area.
- (6) No person entering the core radio astronomy advantage area will have in their possession any device, equipment or instrument which may cause detrimental radio interference on radio astronomy and related scientific endeavours.
- (7) Permissible time to access the core radio astronomy advantage area will be determined by the management authority or a delegated person.

## CHAPTER 6

### Offences and Penalties

#### General offences and penalties

19.

- (1) Any person who contravenes these regulations maybe found guilty of an offence in terms of section 52(1) of the Act.
- (2) Any person found guilty of an offence in terms of subsection 1 shall be held liable in terms of section 52(2) of the Act.

## CHAPTER 7

### General

#### Review of the regulations

20.

These regulations may from time to time be reviewed.

#### Short title

21.

These regulations are called the Astronomy Advantage Areas Regulations.