

SKA - Report on Africa's New Spectrum Frontiers

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IUCAF 4th School on Spectrum management for Radio Astronomy

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science and technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA



National
Research
Foundation



Scope



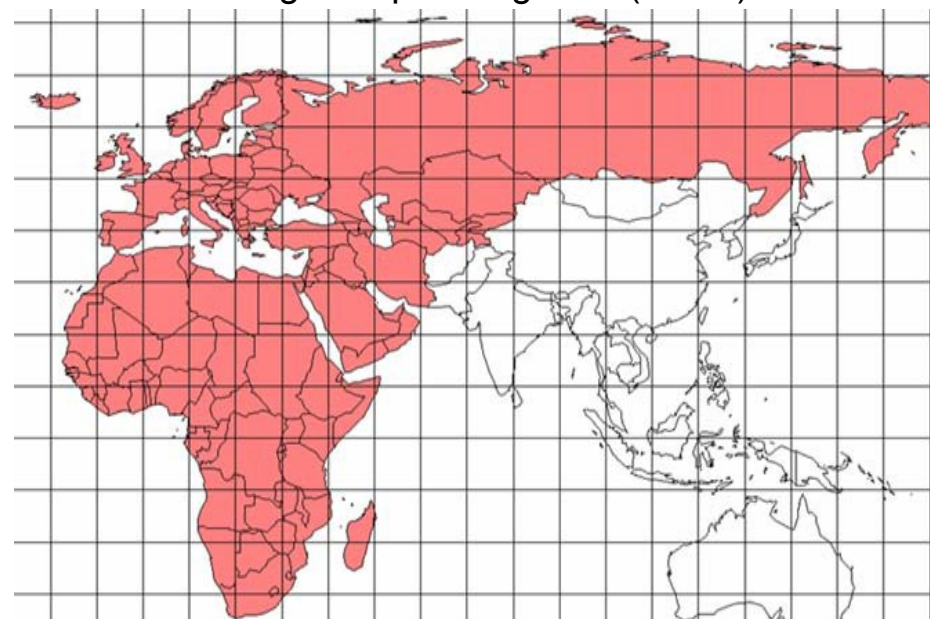
- Broadcasting Services
 - Digital Terrestrial Television (DTT) Migration
 - Digital Dividend
- Broadband Services
 - Broadband Policy
- Radio Astronomy in South Africa
 - AGA Act
 - Radio Quiet Zone for SKA
- Radio Frequency Migration
 - “Astronomy Friendly” Communications
 - Frequency Migration hierarchy

Broadcasting Services



- Analogue TV to Digital TV Migration
 - Digital Terrestrial Television (DTT) adopted DVB-T2
 - Terrestrial Digital Audio Broadcasting (T-DAB) post-DTT migration
- Africa
 - DTT launched in 10 countries (2.5% TV household)
 - Migration Completion doubtful by 2015 (2020 likely)
- South Africa
 - DTT cover >80% population
 - RSA subsidising 70% STB costs
 - “set-top box control” 10 African countries
 - encryption impact unclear

Region 1 planning area (GE06)



Broadcasting Services



- Digital Dividend
 - Southern African Development Community (SADC)
 - Post-DTT Spectrum allocations being considered

Frequency band	SADC proposal	Status
214 – 230 MHz	T-DAB	DAB+ trial to augment AM & FM
470 – 694 MHz	DTT	Television white space trials
694 – 790 MHz	DVB-H	Mobile TV trial extended
790 – 862 MHz	IMT	WRC 15 Agenda item 1.1 - IMT

- South Africa
 - Compliance with legislated radio astronomy protection requirements in identified astronomy advantage areas (see later)

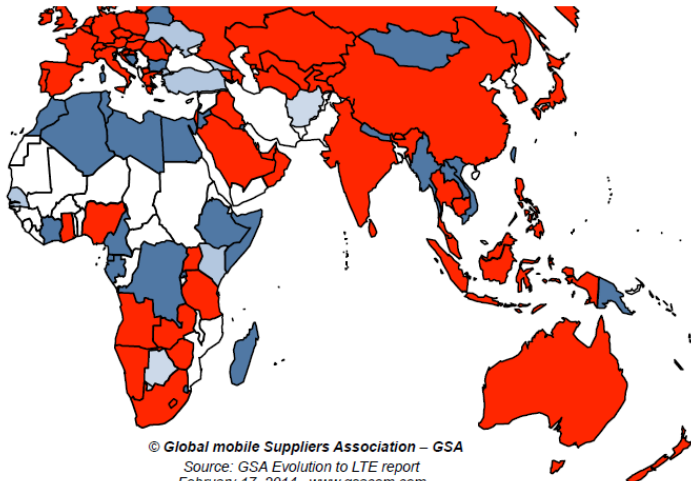
Broadband Services



- National Broadband Policy (RSA)
 - To improve quality of life for citizens
 - Support dynamic and connected information society
 - Ensure universal service and access to reliable, affordable and secure broadband
- Broadband Policy is technology neutral

	LTE	IMT
Download	100 Mbit/s	1 Gbit/s

- Countries with commercial LTE service
- Countries with LTE commercial network deployments on-going or planned
- Countries with LTE trial systems (pre-commitment)



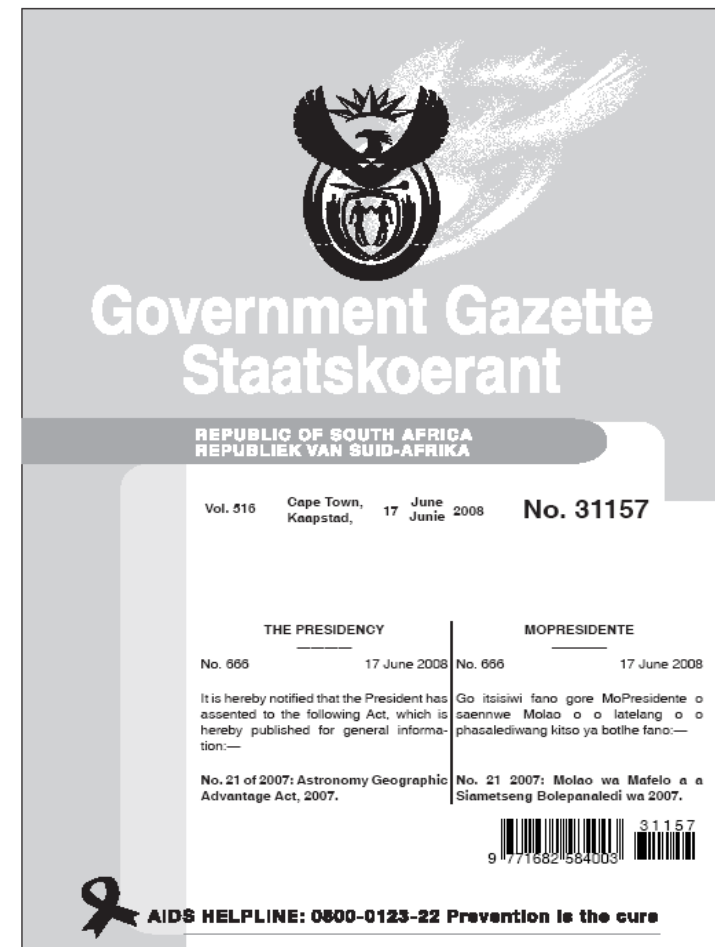
RSA Broadband Target	By 2016	By 2030
Broadband access in Mbps user experience	50% at 5Mbps	80% at 100Mbps
Schools	50% at 10 Mbps	100% at 1Gbps
Health facilities	50% at 10Mbps	100% at 1Gbps
Public sector facilities	50% at 5Mbps	100% at 100Mbps

Radio Astronomy in South Africa



•Astronomy Geographic Advantage Act

- Empowers the Minister for Science and Technology to declare protected areas around strategic astronomy sites by publication in the [Government Gazette](#).
- The Act covers both radio and optical astronomy
- Three tiers of protected areas:
 - Core area
 - Central area
 - Coordination area
- Protected areas apply to existing and new activities
- RFI/EMI sources
 - subject to restrictions and/or conditions



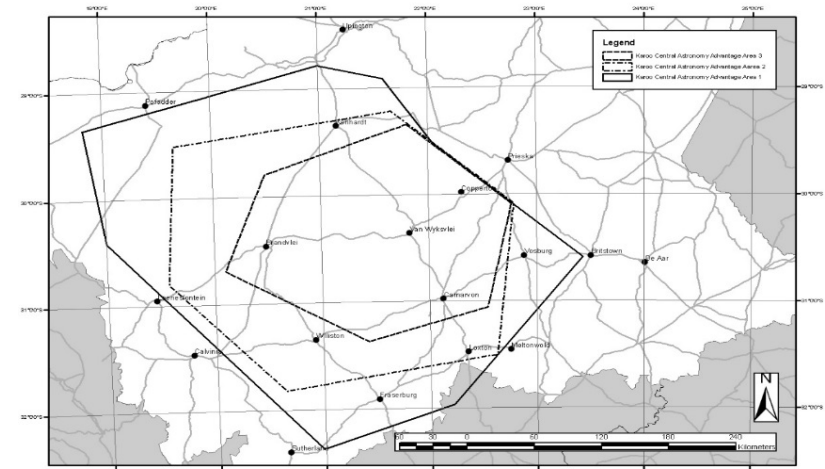
Radio Astronomy in South Africa



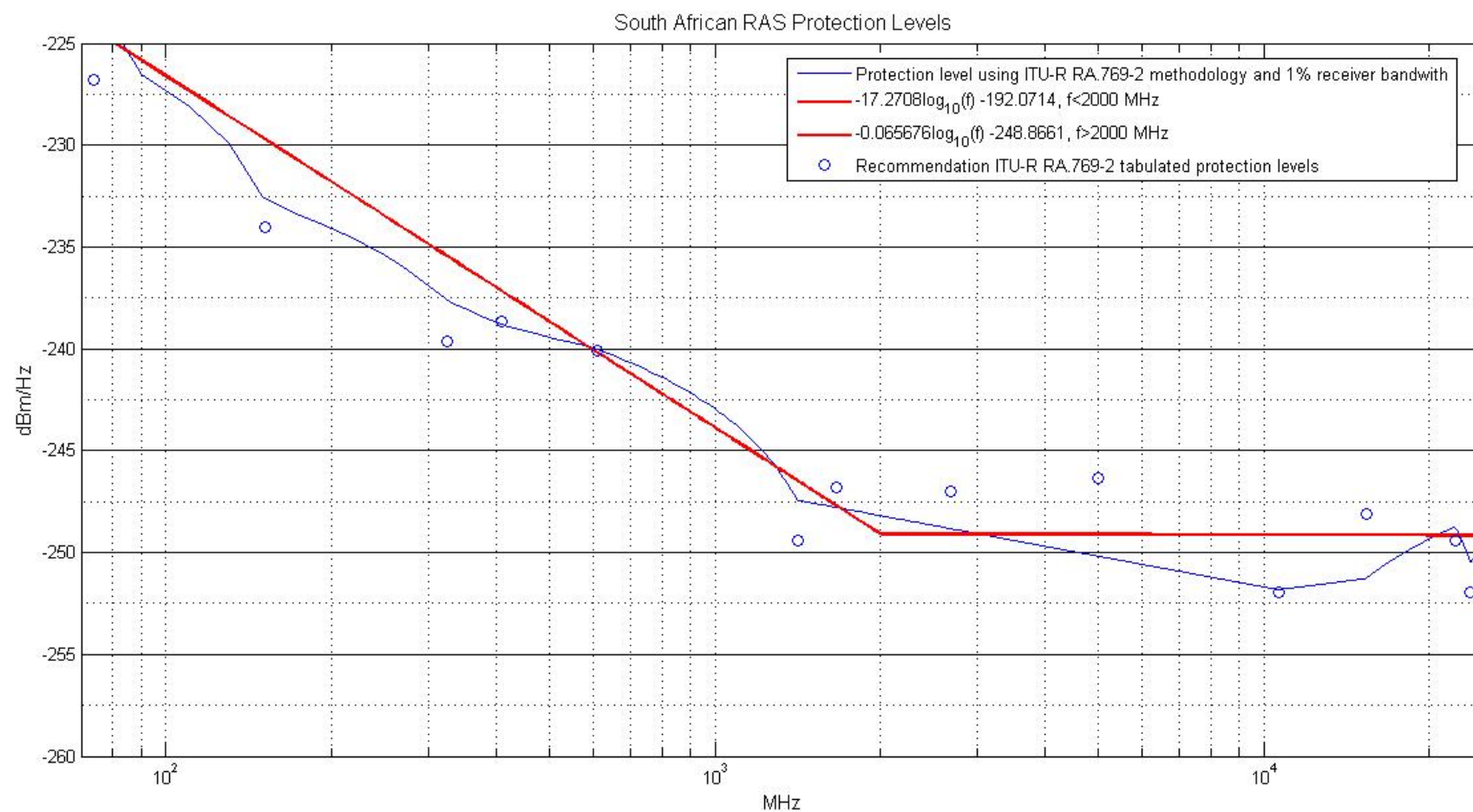
- Karoo Central AAAs
 - Approximately 500km in extent
 - Radio spectrum allocated to radio astronomy
 - All sources of interference subject to authorisation process
 - Transmitters
 - Electrical infrastructure
 - Class licenced devices



- Karoo Coordinated AAA
 - Northern Cape Province
 - Protection mechanism for high powered (>40dBm) transmissions



Radio Astronomy in South Africa

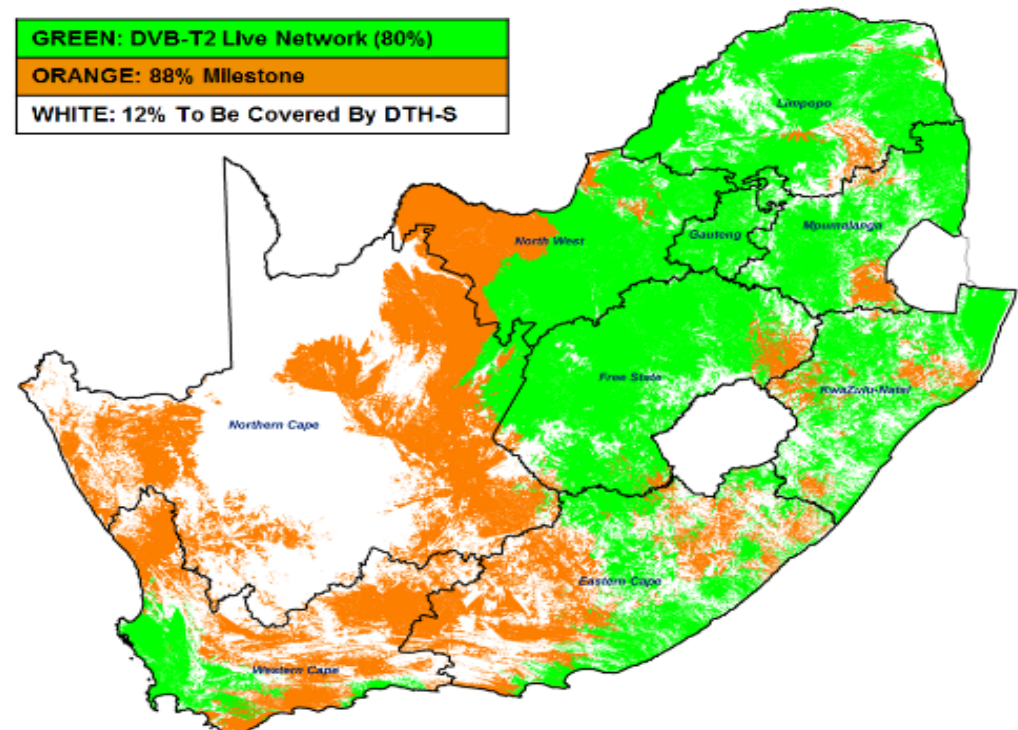


South African Radio Astronomy Service [Protection Levels](#)

Radio Frequency Migration



- ‘Astronomy friendly’ communications
 - To replace existing services with those that would comply with protection requirements
- DTT Broadcasting Case Study
 - National target of 88% population coverage (2% population in NC)
 - Direct-to-home (DTH) satellite reception for remainder
 - Milestone coverage in Northern Cape Province will likely be replaced by DTH



- Telecommunications Case Study
 - Data and voice services via
 - VSAT Satellite services
 - Low frequency trunked radio

Radio Frequency Migration



Frequency Migration hierarchy:

1. **First level** - To bring national plan into line with ITU's radio regulations
2. **Second level** – Regional Radio Conference requirements
3. **Third level** – SADC Frequency Allocation Plan to harmonise bands
4. **Fourth Level** – National level decision implemented
 - National Radio Frequency Plan
 - Astronomy Geographic Advantage Act, 2007 (AGA Act 21 of 2007)

Spectrum Management to meet regional demand for Broadcasting and Broadband services as well as Radio Astronomy in South Africa

Thank you



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