

SECTION 4: SOUTH AFRICAN NATIONAL FOOTNOTES

NF 1 (Fixed Links) Suppressed

In the Republic of South Africa, fixed radio links are frequently used for various purposes within the telecommunications and broadcast networks, on either a permanent or temporary basis (exclusive or shared). Usually the justification for using a radio link instead of a wired or optical fibre link relates to active national regulations, policies, geography or economics. They are used to provide fixed communication links between stations in a network supporting a different service (e.g. such as mobile telephony), whereas such an application is known as 'infrastructure' or 'backhaul'. The fixed radio links applications are also frequently referred to as Fixed Wireless Systems (FWS), a term recently adopted by ITU-R SG 9.

NF 2 (Relevant to the Northern Cape Province)

Chapter 2 of the Astronomy Advantage Act, 2007 (Act No. 21 of 2007) (AGA Act) provides for the Minister responsible for Science and Technology to declare any area or part of an area in the Province of the Northern Cape as an astronomy advantage area. Any existing and planned radio astronomy requires protection from harmful interference which may be caused by radio communication services. The protection requirements for the radio astronomy services are determined by the threshold levels specified in Recommendation ITU-R RA.769-2. The only planned radio astronomy observatory in the Republic of South Africa, at this stage is the Square Kilometre Array where the core antenna array station and the remote array stations may be placed at locations yet to be determined in the Northern Cape Province.

Radiocommunications with transmitters located within the radio astronomy advantage areas which operate within the radio frequency spectrum bands allocated for radio astronomy will be subjected to the provision of the AGA Act. All transmitters located or to be located within the astronomy advantage areas will be subject to section 25 of the AGA Act which talks to authorisations and submission of impact assessment report(s). Where authorization has been granted in line with the AGA Act, a prospective licensee is still required to submit a spectrum application form for consideration by ICASA.

Where a licensee is required to move its electronic communications facility or migrate to another radio frequency band, ICASA will consult and agree with the licensee regarding the reasonable period within which the licensee must cease to operate its electronic communications facility and migrate to an alternative band.

NF 3 (29.7 - 30 MHz)

This portion of the spectrum is allocated to the amateur service on a secondary basis for use during disaster exercises and emergency situations. This is in

addition to the existing exclusive amateur band 28 - 29.7 MHz, which retains its primary status. The additional spectrum is used for single frequency mobile applications.

NF 4 (70 - 70.3 MHz)

This sub-band is allocated to the amateur service on a secondary basis in order to undertake experimental work on propagation. The channels 70.025 – 70.150 MHz are used for civil defence purposes.

NF 5 (138 - 174 MHz) Suppressed

The land mobile sub-bands within the VHF High band are now in line with the rest of ITU Region 1.

NF 6 (140.5 - 141 // 152.05 - 152.5 MHz) Suppressed

These frequency bands are allocated for use by alarm systems.

NF 7 (148 - 149.9 MHz)

This band was allocated internationally at WARC 92 for the mobile satellite systems (MSS). This band is allocated for the Earth-to-space direction, and is extended up to 150.05 MHz. The space-to-Earth link is generally provided at either 137 - 138 MHz or 400.15 - 401 MHz, depending on the system. MSS cannot cause or claim interference from other stations in this band in accordance with ITU-R Footnote 5.221 (WRC 03).

NF 8 (150.05 - 151 MHz)

This band is no longer allocated to paging systems. Since there is a decline in the use of paging, the band is now allocated to load shedding and burglar alarm systems. The channels 150.550 MHz and 150.5625 MHz are used for load shedding countrywide.

NF 9 (161.875 - 173.875 MHz)

The band is used for sonobuoy by maritime. Assignments were previously not allowed within a distance of 200 km from the coast. It is generally agreed that there is scope for increased sharing even near the coast. However, there is still a need for further sharing studies to be conducted. Care will be taken in making assignments near the coast in this band.

NF 10 (216 - 246 MHz) Suppressed

T-DAB is temporarily allocated in order to allow field testing of Eureka 147 (the GE06 broadcast plan should be consulted) standard. The use of wireless

microphones for services ancillary to Broadcasting (SAB) and services ancillary to programme (SAP) making will continue. Users of wireless microphones will have to approach the Authority for co-ordination and licensing.

NF 11 (336 - 366 MHz)

Within this frequency range the band 336-344 MHz paired with 356-364 MHz is allocated to fixed services on a primary basis. This spectrum is potentially very useful for providing electronic communications services considering its excellent propagation conditions. The bands 344-346 MHz and 364-366 MHz are allocated to Alarm monitoring and tracking services

NF 12 (380 - 399.9 MHz)

This band has been designated for use by digital trunked mobile radio for emergency services in line withCEPT T/R 22-05. The frequency bands 380-385 MHz paired with 390-395 MHz are allocated to Public Protection and Disaster Relief (PPDR) applications in line with ITU Resolution 646 (WRC-03). The frequency bands 387-390 MHz paired with 397-399.9 MHz are allocated to digital trunking systems.

NF 13 (407.625 - 413 / 417.625 - 423 MHz)

The frequency bands 407.625 - 410 MHz // 417.625 - 420 MHz are currently used by Government for public safety.

NF 14 (430 - 440 MHz)

This band is allocated to the amateur service in South Africa, as elsewhere in ITU Region 1. The sub-band 433.05 - 434.79 MHz, however, is also designated as an ISM band in Region 1, subject to the special authorisation of the administration concerned (see RR S5.138). It has effectively been treated as an ISM band in South Africa for a number of years. Furthermore, the regulation is in terms of Section 31(6) of the ECA which specifies the use of the band for non specific short range devices on an unlicensed basis, subject to obligatory type approval. The consequence of this is that the amateur service may not claim protection from (in-band) emissions from ISM equipment operating in the band, nor can ISM equipment and low power devices claim protection from amateur users in the band.

NF 15 (440 - 450 MHz) Suppressed

This band was used primarily for fixed links. The aim in the medium term is to use this band primarily for mobile services (PMR in particular). A 5 MHz TX/RX separation is to be used, in accordance with the European DSL Repeater systems and a significant number of fixed links have been migrated out of this

band. The band (440 - 441 / 445 - 446 MHz) is allocated to fixed point-to-multipoint data services such as scanning telemetry and dual frequency alarm systems. The band (446 - 446.100 MHz) is now allocated to the PMR446 service. The band (441 - 441.100 MHz) is now used for simplex mobile systems.

NF 16 (450 - 470 MHz)

The band 450 - 470 MHz was allocated for IMT on a primary basis by WRC 07 in Region 1 through ITU-R footnote 5.286A. South Africa's position was opposed to this allocation prior to the conference. A separate consultative process will be undertaken to determine the viability of the decision post the conference. In case where the WRC 07 decision prevails, existing services in this band will continue to be protected. New non-IMT assignments in the band will be done subject to being assigned on a secondary basis should the WRC 07 decision prevails. This is one of the bands in the ultra high frequency bands which are suitable to cover long distances and sparsely populated areas due to the propagation characteristics of the UHF bands.

NF 17 (790 - 862 MHz)

The band 790 - 862 MHz is allocated for IMT on primary basis in line with WRC 07 through ITU-R footnote 5.316A, 5.317A, 5.317B, 5.317C. Due to the complexity of planning for the dual illumination period which was initially preferred for 1 November 2008 to 1 November 2011, the Authority has opted for worst case scenario planning. Therefore, the allocation will become effective after the dual illumination period. The process for the actual assignment will take place prior to the end of the dual illumination period. Government Gazette 29345 of the 31 October 2006, which allocates channels 65 and 66 (bands 822 - 830 MHz and 830 - 838 MHz) to non-broadcasting assignments, still applies.

NF 18 (872 - 905 // 917 - 950 MHz)

This band is allocated on a shared basis between Wireless Access Service and mobile (primarily GSM and private mobile radio). There are a number of different WAs that could operate in this band, including systems based on TACS, GSM and CDMA.

NF 19 (876 - 880 // 921 - 925 MHz)

In South Africa, this band offers the possibility to use systems such as GSM-R; GSM-based PMR; IMT; TETRA etc. The Authority has decided to allocate this band to digital trunking systems on national basis. This does not preclude the use of other systems such as those listed in certain projects where it might be feasible.

NF 20 (880 - 890 / 925 - 935 MHz) Suppressed

This band is allocated to extend GSM (E-GSM). Assignments have been made to mobile cellular operators.

NF 21 (915 - 921 MHz)

In South Africa this band is allocated as follows:

- Vehicle location systems in 915.025 -915.200 MHz band on licensed basis.
- Band 915.2 to 915.4 MHz is allocated to single fixed narrowband (25 kHz channel spacing) passive tag RFID systems with power output of the reader not exceeding 4W EIRP.
- Band 915.4 to 919.7 MHz is allocated to passive RFID systems employing Frequency Hopping Spread spectrum (FHSS) with 100 kHz guard band on either side with channels 200 kHz wide.

NF 22 (1452 - 1492 MHz)

This band has been allocated internationally for use for digital broadcasting (S-DAB and T-DAB). Draft ECC decision ECC/DEC/(03)AB is to implement the addition of seven T-DAB blocks, covering the range 1467.5-1479.5 MHz, as decided in June 2002 in Maastricht, in conjunction with the transfer of part of the Wiesbaden plan. The frequency band 1479.5-1492 MHz has been designated for use by satellite DAB systems according to draft decision ECC/DEC/(03)AB. The fixed links that were previously allocated to this band have been migrated to the 1452 - 1464 MHz (paired with 1517.5 - 1529.5 MHz) and some have been migrated to frequencies above 3 GHz.

NF 23 (1710 - 1785 / 1805 - 1880 MHz)

These are the frequencies on which the GSM-1800 system operates (CEPT Recommendation T/R 22-07 refers). Sharing of these frequencies by Wireless Access Services applications is also likely to be possible. This band was also identified for future IMT developments.

NF 24 (1880 – 1920 MHz) Suppressed

This band is allocated to wireless access services. No new fixed links assignments will be made within this band. The allocation of this band to wireless access systems is important to South Africa.

NF 25 (1885 - 2025 and 2110 - 2200 MHz)

These bands are used worldwide for the implementation of third generation systems. The bands 1980 - 2010 and 2170 - 2200 MHz are intended for the

The use of this band by MIMDS has been discontinued. Part of this band 2500 – 2690 MHz is allocated to Broadband Wireless Access services. The Authority

NF 30 (2500 - 2700 MHz) Suppressed

The band 2400 – 2500 is allocated to ISM (Industrial, Scientific and Medical) equipment on a primary basis. The sub-band 2483.5 – 2500 MHz is allocated for mobile-satellite systems in the space-to-Earth direction.

NF 29 (2400 - 2500 MHz)

The band 2300 - 2400 MHz is allocated for IMT on a primary basis in line with WRC 07 through ITU-R footnote 5.384A. Existing services in this band will continue to be protected until migration is completed.

NF 28 (2300 – 2400 MHz)

- 2025 – 2075 / 2200 - 2250 MHz to be used for Fixed Links
- 2075 - 2110 / 2250 - 2285 MHz to be used for Fixed Links
- 2285 - 2290 MHz to be used for WAS
- 2290 – 2300 to be used for Fixed Links.

The sub-division of the band is as follows:

Channel arrangements for the use of these bands for fixed services are described in both ITU-R Recommendation F.1098 and CEPT Recommendation T/R 13-01. These recommendations describe a channel plan in which the band is divided into dual-frequency channels with carrier spacing of 14 MHz and a Tx/RX separation of 175 MHz. Carrier spacing of 7 MHz, 3.5 MHz and 1.75 MHz are also possible by means of channel subdivision. This channel arrangement is adopted in these bands for fixed services, while a certain portion of the band could be used for Wireless Access Services.

NF 27 (2025 - 2110 and 2200 - 2290 MHz)

The Authority will no longer assign fixed links in this band as it has been reserved for the Satellite Component of IMT (WRC 07).

NF 26 (1920 – 2010 MHz)

satellite component of IMT. The frequency bands 1885-1980 MHz, 2010-2025 MHz and 2110-2170 MHz are generally referred to as the terrestrial components of the IMT core bands.

Frequency Range	Maximum Power	Modulation	Restrictions
5.725 - 5.850 GHz	1 watt peak eirp	Any modulation	No other restriction other than those related to the maximum power and the modulation scheme
5.725 - 5.850 GHz	4 watt peak eirp	Frequency hopping or digital modulation only	No other restriction other than those related to the maximum power and the modulation scheme

The band 5725 – 5850 MHz is designated as an ISM band through ITU-R footnote 5.150. In line with international trends and national objectives for rural development, the use of this band for non ISM applications is allowed on unlicensed or license-exempt basis provided there is adherence to provisions outlined below.

NF 34 (5725 – 5850 MHz)

The band 4400 – 5000 MHz is allocated to electronic news gathering (ENG)/outside broadcasting (OB) services under the FS and will be shared with Government Services.

NF 33 (4400 – 5000 MHz)

The band 3600 – 4200 MHz is used on a national basis for high capacity, core network telecommunication services under the fixed service using point to point (PTP) topologies over long hop lengths. The band 3625 – 4200 MHz, part of the C-band, is used extensively for FSS (space-to-Earth) applications. This band is shared between FS and FSS on a co-primary and strictly co-ordinated basis

NF 32 (3600 – 4200 MHz)

South Africa supported identification of the band 3 400 – 3 600 MHz for IMT developments at WRC 07. The Authority has undertaken a separate consultative process to determine the criteria to access this band.

NF 31 (3400 – 3600 MHz) Suppressed

undertook an enquiry to determine criteria to access this band. The results of this will be made available in due course in a separate process.

5.725 - 5.850 GHz	200 watt peak eirp with a max 1 watt peak transmitter power	Digital modulation only	- Fixed Radio Link Devices only - Peak power spectral density must not exceed 17dBm/MHz.
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The Authority reserves the right to require users to change the frequency, reduce the power, or cease operations, where harmful interference is established.

NF 35 (5850 – 6425 MHz)

The band 5850 – 6425 MHz, part of the C-band, is used extensively for FSS (Earth-to-space) applications. This band is also shared with FS.

The C-band is also used for satellite news gathering (SNG) operations, which will require frequency co-ordination on a case-by-case basis. As far as it is possible users are encouraged to use the Ku-band for SNG operations in South Africa in order to avoid the interference problems associated with C-band SNG operations.

For reasons of efficient spectrum use by all services in the C-band, deployment of large earth station antennae (greater than 2.4 metres diameter) should be concentrated at selected suitable sites in order to avoid interference between the services sharing the spectrum. This approach would additionally ensure increased reliability of these services.

NF 36 (5850 – 5925 MHz)

The band 5850 – 5925 MHz is used for FSS (Earth-to-space) and allocated for temporary deployments of (ENG/OB) under FS on a strictly coordinated basis.

NF 37 (5925 – 6425 MHz)

This band is used on a national basis for high capacity core network electronic communication services under the FS using a PTP topology over long hop lengths and shared with FSS (Earth-to-space).

NF 38 (6425 – 7110 MHz)

This band is used on a national basis for high capacity core network electronic communication services under the FS using a PTP topology over long hop lengths and shared between FS, NGSO MSS (space-to-Earth) feeder links and geo-stationary satellite orbit (GSO) FSS (Earth-to-space) systems under a strictly controlled and co-ordinated basis.

NF 39 (7110 – 7425 MHz)

This band is used on a national basis for medium to high capacity electronic communication services under the FS using a PTP topology over long hop lengths.

The existing analogue systems utilise the channelization arrangement according to International Radio Consultative Committee (CCIR) Report 934 Annex V. No new analogue systems will be assigned in this band.

NF 40 (7425 – 7750 MHz)

This band is used on a national basis for medium to high capacity electronic communication services under the FS using a PTP topology over long hop lengths.

Analogue systems utilise the channelization arrangement according to CCIR Report 934 Annex V. The channelization arrangement for new systems in this band is ITU-R Recommendation F.385 Annex 3.

NF 41 (7725 – 8275 MHz)

This band is used on a national basis for high capacity electronic communication services under the FS using a PTP topology, mainly for core networks over long hop lengths.

The channelization arrangement for this band is ITU-R Recommendation F.386 Annex 1.

NF 42 (8275 – 8500 MHz)

This band is used on a national basis for low to medium capacity electronic communication services under the FS using a PTP topology over long hop lengths. As other services are introduced into this band appropriate sharing and co-ordination procedures will be established.

The channelization arrangement for this band is ITU-R Recommendation F.386 Annex 3.

NF 43 (10.7 – 11.7 GHz)

The band 10.7 – 11.7 GHz is used on a national basis for high capacity core network and access network electronic communication services under the FS using a PTP topology over medium hop lengths.

The channelization arrangement for the band 10.7 – 11.7 GHz is ITU-R Recommendation F.387.

The bands 10.95 – 11.2 GHz and 11.45 – 11.7 GHz are also shared with FSS (space-to-Earth)

The Authority shall undertake a consultative process to determine the feasibility of coexistence of services and upgrading DTH to a primary status within 24 months of coming into force of this plan.

NF 44 (12.75 – 13.25 GHz)

The band 12.75 – 13.25 GHz is used on a national basis for low, medium and high capacity access and core electronic communications networks under the FS using a PTP topology over medium hop lengths.

The channelization arrangement for the band 12.75 – 13.25 GHz is ITU-R Recommendation F.497.

NF 45 (14.0 – 14.5 GHz)

The band 14.0 – 14.5 GHz, part of the Ku-band is used extensively for FSS (Earth-to-space) applications.

The bands 10.95 – 11.2 GHz, 11.45 – 11.7 GHz and 12.5 – 12.75 GHz, part of the Ku-band are also used extensively for FSS (space-to-Earth) applications. The bands 10.95 – 11.2 GHz and 11.45 – 11.7 GHz are also shared with FS. The Ku-band is the preferred band for SNG operations.

For reasons of efficient spectrum use by all services in the Ku-band, the deployment of large earth station antennae greater than 2.4 metres diameter should be concentrated at selected suitable sites in order to avoid interference between the services sharing the spectrum. This approach would additionally ensure increased reliability of these services.

NF 46 (14.5 – 15.35 GHz)

The band 14.5 – 15.35 GHz is used on a national basis for low and medium capacity access electronic communication networks under the FS using a PTP topology over medium hop lengths.

The channelization arrangement for the band 14.5 – 15.35 GHz is ITU-R Recommendation F.636.

NF 47 (17.7 – 19.7 GHz)

The band 17.7 – 19.7 GHz is used on a national basis for low, medium and high capacity access electronic communications networks under the FS using a PTP topology over short hop lengths. The feasibility study referred to in NF 43 applies.

The channelization arrangement for the band 17.7 – 19.7 GHz is ITU-R Recommendation F.595 Annex 1.

NF 48 (21.2 – 23.6 GHz)

The band 21.2 – 23.6 GHz is used on a national basis for low, medium and high capacity access networks under the FS using a PTP topology over short hop lengths.

The current channelization arrangement for the band 21.2 – 23.6 GHz is ITU-R Recommendation F.637 Annex 1. As part of ITU-R Recommendation F.637 Annex 1 the band 21.2 – 23.6 GHz is subdivided into ten sub-bands.

NF 49 (24.5 – 26.5 GHz)

The band 24.5 – 26.5 GHz is allocated to low, medium and high capacities core electronic communication networks under the FS using PTP and PTMP topologies over short hop lengths.

The channelization arrangement for the band 24.5 – 26.5 GHz is in accordance withCEPT Recommendation T/R 13-02 Annex B.

An unmanned receive only earth station, forming part of the National Polar-Orbiting Operational Environmental Satellite System (NPOESS) is located in South Africa, and this system operates within the 25.5 to 27 GHz frequency range in the Earth Exploration Satellite (space-to-earth) service.

NF 50 (27.5 – 28.35 GHz)

The bands 27.5 – 28.35 GHz (base station to subscriber) and 29.1 – 29.25 GHz (subscriber to base station) are allocated to broadband service - local multipoint distribution services (LMDS) under the FS using a PTMP topology over short hop lengths.

NF 51 (37.0 – 39.5 GHz)

The band 37.0 – 39.5 GHz is allocated to low, medium and high capacity PTP electronic communications network systems under the FS over very short hop lengths.

The channelization arrangement for the band 37.0 – 39.5 GHz is in accordance with ITU-R Recommendation F.749 Annex 1.

NF 52 (71 – 76 GHz)

The bands 71 – 76 GHz & 81 – 86 GHz are allocated to very high capacity Broadband Fixed Wireless Systems in the higher millimetre wave bands, with 1 –

2 km hop lengths (line-of-sight conditions). Radio frequency channel arrangements for fixed service systems operating in the bands 71-76 GHz and 81-86 GHz are according to CEPT Rec. (05)07). Maximum power levels are also specified with an EIRP limit of 55dBW and a transmit power limit (at the antenna port) of +30dBm.