



African Spectrum Working Group (AfriSWoG)

Annex 9

13-November-2013

Compilation

A compilation of all the views submitted as of 13-November-2013

Agenda Item 1.1

Description

to consider additional spectrum allocations to the mobile service on a primary basis and identification of additional frequency bands for International Mobile Telecommunications (IMT) and related regulatory provisions, to facilitate the development of terrestrial mobile broadband applications, in accordance with Resolution **233 (WRC-12)**.

Key Elements – the notables

ITSO input:

This agenda item seeks to identify new frequency bands for identification for IMT and new frequency bands for other terrestrial mobile broadband applications, in particular RLANS.

The responsible group in the ITU-R is JTG 4-5-6-7.

Specific frequency bands are not defined in the agenda item. However, as of August 2013, initial proposals from some members of JTG 4-5-6-7 show frequency bands where studies have been called for by those members.

These are: 470-694/698 MHz, 1 300-1 350 MHz, 1 350-1 375 MHz, 1 375-1 400 MHz, 1 427-1 452 MHz, 1 452-1 492 MHz, 1 492-1 518 MHz, 1 518-1 525/1 527 MHz, 1 695-1 700 MHz, 2 025-2 110 MHz, 2 200-2 290 MHz, 2 700-2 900 MHz, 2 900-3 100 MHz, 3 300-3 400 MHz, 3 400-3 600 MHz, 3 600-3 800 MHz, 3 800-4 200 MHz, 4 400-4 500 MHz, 4 400-4 900 MHz, 4 800-5 000 MHz, 5 350-5 470 MHz, 5 725-5 850 MHz, 5 850-5 925 MHz and 5 925-6 425 MHz. This list is open and subject to further contributions from the membership.

The bands 5 350-5 470 MHz, 5 725-5 850 MHz and 5 850-5 925 MHz are considered as possible bands for RLANS. Other bands above are considered as possible bands for terrestrial IMT-Advanced systems.

For some of the above bands, studies have been conducted prior to WRC-07. For some bands, studies are currently in progress within the JTG.

Current Status of Band

ITSO input:

From the list of bands above, the following summarizes the status of the bands:

- **1518-1527 MHz.** This band is allocated to the MSS for downlinks, and is used by Inmarsat and other MSS operators. The band supports MSS services for ships, aircraft and land based users, providing a range of services including low data rate, voice and mobile broadband, and including safety related applications. The bands are identified and used for the satellite component of IMT. Studies conducted by JTG 4-5-6-7 have concluded that sharing this band with terrestrial IMT applications is not feasible.
- **3400-4200 MHz.** This band is allocated to the FSS (space-to-Earth) and is used by around 180 FSS networks. The sub-band 3400-3600 MHz was identified for IMT at WRC-07 in a number of countries (see No. 5.430A), including a number of African countries. The band 3400-4200 MHz is used by thousands of earth stations throughout Africa. Some examples of services delivered through C-band satellite networks in addition to the traditional telecommunications services are: distance learning, telemedicine, universal Internet access through low-cost VSAT equipment, TV transmissions to homes, video transmissions to cable head-ends for distribution to homes, backhaul for linking terrestrial mobile base stations to the core network, and communications in support of aviation air traffic management. Sharing studies related to this band are contained in Report ITU-R M.2109, and further studies are underway within the JTG. Separation distances required to protect FSS earth stations from interference from IMT-Advanced systems are at least tens of km and sometimes hundreds of km. The results of new sharing studies based on new IMT-Advanced system characteristics are not significantly different to the results determined before WRC-07.
- **4500-4800 MHz.** This band forms part of the downlink bands for the planned FSS, for use under the conditions of App 30B. As part of the App 30B plan the band has a special regulatory status, being intended to guarantee, for all countries, equitable access to the geostationary-satellite orbit. Consequently, the band is not suitable for use by terrestrial IMT systems.
- **5725-5925 MHz.** The band 5725-5850 MHz is allocated to the FSS (Earth-to-space) in Region 1. The band 5850-5925 MHz is allocated to the FSS (Earth-to-space) in all three Regions. The band is used for the uplinks of a large number of FSS satellites. Sharing studies related to the possible use of this band by RLAN systems are required. The use of this band by IMT systems might constrain the deployment of FSS earth stations, which transmit in this band.
- **5925-6425 MHz.** This band is allocated to the FSS (Earth-to-space) and is very heavily used by FSS networks for uplinks. It is used to provide the same services as those identified for the band 3400-4200 MHz above. Sharing studies related to this band are underway within the JTG. Initial studies show that IMT systems would need to be limited in power and restricted to indoor-only use. Such restrictions could not practically be assured, placing FSS satellites at risk of interference. The use of this band by IMT systems might also constrain the deployment of FSS earth stations, which transmit in this band.

Options and Associated Implications

ITSO/GVF input:

For the band **1,518-1,559 MHz, 1,626.5-1,660.5 MHz, and 1,668-1,675 MHz:**

Option 1: NOC. Would ensure that current and planned GSO MSS operations would continue to provide service within Africa and elsewhere, without significant risk of interference.

Option 2: Identification for terrestrial IMT systems. Would place current and planned MSS operations in and around Africa at risk of harmful interference.

For the band **3400-4200 MHz:**

Option 1: NOC. Would ensure that current and planned FSS operations in Africa and elsewhere would continue without significant risk of interference.

Option 2: Identification for terrestrial IMT systems. Would place current and planned FSS operations in and around Africa at risk of harmful interference.

For the band **4500-4800 MHz:**

Option 1: NOC. Would ensure that current and planned FSS operations in Africa would continue without significant risk of interference.

Option 2: Identification for terrestrial IMT systems. Would place current and planned FSS operations in and around Africa at risk of harmful interference.

For the band **5725-5925 MHz:**

[Options TBD, based on sharing studies]

For the band **5925-6425 MHz:**

Option 1: NOC. Would ensure that current and planned FSS operations in Africa would continue without significant risk of interference.

Option 2: Identification for terrestrial IMT systems. Would place current and planned FSS operations in and around Africa at risk of harmful interference and would constrain the deployment of new earth stations.

African Common View

ECCAS view:

Bands below 1 GHz could be the ones to be proposed for IMT [Les bandes en dessous de 1 GHz pourraient être celles à proposer]

SADC view:

The use of mobile services, in particular IMT systems, is very important for SADC for the delivery of voice and broadband data services.

The identification of new frequency bands will be supported provided that existing services are protected. Spectrum estimates should be based on ITU-R studies and additional frequency bands identified for IMT should take into consideration:

- The needs of developing nations should be taken into account, including the need for cost

effective services for a wide range of user densities and coverage areas (such as rural).

- International harmonization.
- The use of the 470 – 694 MHz band as television white space for broadband services.

GSMA view:

Some of the most attractive bands for coverage and capacity for GSMA are;

- UHF/TV: 470-698 MHz (being considered by USA and Canada)
- L-Band: 1300-1527 MHz (being considered in part by France, Finland, Denmark)
- Aeronautical: 2.7-2.9 GHz (being considered by Finland, Australia, Sweden) as band is adjacent to IMT extension band
- Satellite band; 3.6-3.8 GHz, 3.8-4.2GHz

GSMA also noted adoption of stringent OOB limits may impact on the cost and availability of devices.

ASECNA view:

The C-Band operated by the aeronautical VSAT networks for both Ground/Ground and Air/Ground communication within and across the continent was reported to be interfered by IMT devices in some countries leading to aeronautical service short come.

ASECNA is of the view that the outcome of ITU studies reported in M.2109 and S.2199 concluded on the incompatibility of sharing the 3400- 4200 MHz and 4500-4800 MHz bands between FSS and IMT.

ASECNA is of the view that a long-term VSAT spectrum availability and protection from interference needs to be guaranteed across the entire African continent and other parts of the world as recommended by the ICAO 12th Air Navigation Conference held in November 2012 in Montreal.

ICAO position:

To oppose any new allocation to the mobile service in or adjacent to:

- frequency bands allocated to aeronautical safety services (ARNS, AM(R)S, AMS(R)S); or
- frequency bands used by fixed satellite service (FSS) systems for aeronautical purposes as part of the ground infrastructure for transmission of aeronautical and meteorological information or for AMS(R)S feeder links,

unless it has been demonstrated through agreed studies that there will be no impact on aeronautical services.

The [ATU] meeting [in March 2013 in Dakar] [...] recommended the following:

[...]

3. To support the existing and future FSS earth stations in the 3600-4200 MHz band used for satellite communications related to safe operation of civil aviation and reliable distribution of meteorological information by participating in the studies for possible technical and regulatory measures called upon by Resolution 154 (WRC-12).

ITSO/GVF/Inmarsat/Intelsat/SES view:

For the bands **1,518-1,559 MHz, 1,626.5-1,660.5 MHz, and 1,668-1,675 MHz:** NOC

For the band **3400-4200 MHz:** NOC

For the band **4500-4800 MHz:** NOC

For the band **5725-5925 MHz:** TBD

For the band **5925-6425 MHz:** NOC

No studies conducted to date on the bands **18.1-18.6 GHz** and **27-29.5 GHz** but FSS use must be

protected

Recommendations and Way Forward

AfriSWoG preliminary recommendations are contained in **Annex 10** to the report of the 1st meeting of the group.