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| **World Radiocommunication Conference (WRC-15)Geneva, 2–27 November 2015** |  |
| **INTERNATIONAL TELECOMMUNICATION UNION** |  |
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| PLENARY MEETING | **Addendum 1 toDocument 35-E** |
|  | **30 September 2015** |
|  | **Original: French** |
|  |
| Cameroon (Republic of) |
| Proposals for the work of the conference |
|  |
| Agenda item 1.1 |

1.1 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)**;

Introduction

The timely availability of adequate spectrum, with appropriate regulatory provisions, as well as improvements to the technologies concerned, are crucial to supporting future growth of IMT and other mobile broadband systems. At the same time, harmonized spectrum for such systems at the global level is highly desirable as a means of facilitating global roaming and promoting economies of scale.

Bearing in mind that:

• mobile broadband communications contribute positively to the economic and social development of developed and developing countries;

• many administrations consider that IMT and other broadband land mobile applications contribute significantly to reducing the digital divide;

• high-speed mobile on smartphones and tablets has become the most dynamic sector of the global ICT market and is now more affordable than fixed broadband;

• the frequency bands reserved for mobile services (GSM 900 MHz, DCS 1 800 MHz, UMTS 2 100 MHz, and so on) are almost saturated in most countries;

• since WRC-07, demand for mobile broadband applications has grown rapidly (see ITU‑R Report M.2243, which gives detailed information on global mobile broadband deployments and IMT forecasts),

it is essential to identify additional spectrum for IMT with a view to developing broadband mobile service applications, taking into account the results of ITU-R sharing and compatibility studies in order to protect existing services.

Proposals

Cameroon puts forward the following proposals for some of the frequency bands envisaged by the ITU-R studies:

1. Frequency bands 1 518‑1 525 MHz, 2 700‑2 900 MHz and 4 800‑4 990 MHz: no change to the Radio Regulations (NOC).

2. Frequency bands 1 695‑1 710 MHz, 4 400‑4 500 MHz, 5 925‑6 425 MHz: identification for IMT.

3. Frequency band 3 300‑3 400 MHz: allocation to the mobile service and identification for IMT.

The following modifications to the Radio Regulations are accordingly proposed.

Frequency band 1 518–1 525 MHz

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. 2.1)

NOC CME/35A1/1

1 300-1 525 MHz

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| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 1 518-1 525FIXEDMOBILE except aeronauticalmobileMOBILE-SATELLITE(space-to-Earth) 5.348 5.348A5.348B 5.351A5.341 5.342 | 1 518-1 525FIXEDMOBILE 5.343MOBILE-SATELLITE(space-to-Earth) 5.348 5.348A5.348B 5.351A5.341 5.344 | 1 518-1 525FIXEDMOBILEMOBILE-SATELLITE(space-to-Earth) 5.348 5.348A5.348B 5.351A5.341 |

**Reasons:** The band 1 518‑1 527 MHz is widely used by mobile earth stations (MES) of the mobile maritime service (MMS) in the space-to-Earth direction for a range of aeronautical, maritime and land applications (in particular, ensuring coverage of rural and isolated areas). Compatibility and sharing studies between terrestrial IMT-Advanced systems and the MMS have not been completed.

Frequency band 1 695‑1 710 MHz

MOD CME/35A1/2

1 660-1 710 MHz

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| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 1 690-1 695METEOROLOGICAL AIDSMETEOROLOGICAL-SATELLITE (space-to-Earth)FixedMobile except aeronautical mobile | 1 690-1 695 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) |
| 5.289 5.341 5.382 |  5.289 5.341 5.381 |
| 1 695-1 700METEOROLOGICAL AIDSMETEOROLOGICAL-SATELLITE (space-to-Earth)MOBILEFixed | 1 695-1 700 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE |
| 5.289 5.341 5.382 ADD 5.A11 |  5.289 5.341 5.381 ADD 5.A11 |
| 1 700-1 710FIXEDMETEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile | 1 700-1 710FIXEDMETEOROLOGICAL-SATELLITE (space-to-Earth)MOBILE except aeronautical mobile |
|  5.289 5.341 ADD 5.A11 | 5.289 5.341 5.384 ADD 5.A11 |

ADD CME/35A1/3

5.A11 The frequency band 1 695-1 710 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) for transmissions by user equipment. Transmissions by IMT base stations are prohibited. This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.     (WRC‑15)

**Reasons:** This identification will allow implementation of IMT in this band, in particular in countries that have not deployed a significant number of meteorological-satellite stations. ITU-R will be able to develop guidelines for administrations for the protection of stations in the meteorological-satellite service.

Frequency band 2 700‑2 900 MHz

NOC CME/35A1/4

2 700-4 800 MHz

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| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 2 700-2 900 AERONAUTICAL RADIONAVIGATION 5.337 Radiolocation 5.423 5.424 |

**Reasons:** This frequency range is widely used for radar systems. The results of ITU-R studies show that within a given geographical area, operation of mobile broadband systems and radar systems on the same frequency is not feasible.

Frequency band 3 300‑3 400 MHz

MOD CME/35A1/5

2 700-4 800 MHz

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| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 3 300-3 400MOBILERADIOLOCATION | 3 300-3 400RADIOLOCATIONAmateurFixedMobile | 3 300-3 400RADIOLOCATIONAmateur |
| 5.149 MOD 5.429 5.430ADD 5.B11 ADD 5.C11 | 5.149 | 5.149 5.429 |

MOD CME/35A1/6

5.429 *Additional allocation:*Bangladesh, Korea (Rep. of), India, Indonesia, Iran (Islamic Republic of), Japan, Malaysia, Pakistan, and the Dem. People’s Rep. of Korea, the band 3 300-3 400 MHz is also allocated to the fixed and mobile services on a primary basis. The countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service.    (WRC‑15)

ADD CME/35A1/7

5.B11 *Additional allocation:*  in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Congo (Rep. of the), Côte d'Ivoire, Egypt, United Arab Emirates, Iraq, Israel, Jordan, Kenya, Kuwait, Lebanon, Libya, Oman, Uganda, Qatar, Syrian Arab Republic, Dem. Rep. of the Congo and Yemen, the band 3 300-3 400 MHz is also allocated to the fixed service on a primary basis. The countries bordering the Mediterranean shall not claim protection for their fixed service from the radiolocation service.     (WRC‑15)

ADD CME/35A1/8

5.C11 In Region 1, the band 3 300-3 400 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC‑15)**. This identification does not preclude the use of these frequency bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Mobile service stations operating in the frequency band 3 300-3 400 MHz shall not cause harmful interference to or claim protection from systems in the radiolocation service.     (WRC‑15)

**Reasons:** The aim is to allow administrations that so wish to deploy IMT in the band 3 300-3 400 MHz. Provision is made to protect existing services.

Frequency band 4 400‑4 500 MHz

MOD CME/35A1/9

2 700-4 800 MHz

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| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 4 400-4 500FIXED MOBILE 5.440A ADD 5.D11 |

ADD CME/35A1/10

5.D11 The band 4 400‑4 500 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with Resolution **223 (Rev.WRC‑15)**. This identification does not preclude the use of this band by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.     (WRC‑15)

**Reasons:** This is to allow administrations that so wish to deploy IMT in this frequency band. Provision is made to protect existing services.

MOD CME/35A1/11

RESOLUTION 223 (rev.WRC‑15)

Additional frequency bands identified for IMT

The World Radiocommunication Conference (Geneva, -2015),

considering

*a)* that International Mobile Telecommunications (IMT), including IMT-2000 and IMT‑Advanced, is the ITU vision of global mobile access;

*b)* that IMT systems provide telecommunication services on a worldwide scale regardless of location, network or terminal used;

*c)* that IMT provides access to a wide range of telecommunication services supported by fixed telecommunication networks (e.g. PSTN/ISDN, high bit rate Internet access), and to other services which are specific to mobile users;

*d)* that the technical characteristics of IMT are specified in ITU‑R and ITU‑T Recommendations, including Recommendations ITU‑R M.1457 and ITU‑R M.2012, which contain the detailed specifications of the terrestrial radio interfaces of IMT;

*e)* that the evolution of IMT is being studied within ITU‑R;

*f)* that the review of IMT-2000 spectrum requirements at WRC‑2000 concentrated on the bands below 3 GHz;

*g)* that at WARC-92, 230 MHz of spectrum was identified for IMT-2000 in the bands 1 885-2 025 MHz and 2 110-2 200 MHz, including the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the satellite component of IMT-2000, in No. **5.388** and under the provisions of Resolution **212 (Rev.WRC‑07)**;

*h)* that since WARC‑92 there has been a tremendous growth in mobile communications including an increasing demand for broadband multimedia capability;

*i)* that the bands identified for IMT are currently used by mobile systems or applications of other radiocommunication services;

*j)* that Recommendation ITU‑R M.1308 addresses the evolution of existing mobile communication systems to IMT-2000, that Recommendation ITU‑R M.1645 addresses the evolution of the IMT systems and maps out their future development, and that Recommendation ITU‑R M.2083 describes in detail the vision and framework for the future development of IMT up to 2020 and beyond, including a broad variety of capabilities associated with the usage scenarios envisaged;

*k)* that harmonized worldwide bands for IMT are desirable in order to achieve global roaming and the benefits of economies of scale;

*l)* that the bands 1 710-1 885 MHz, 2 500-2 690 MHz, 1 695-1 710 MHz, 3 300-3 400 MHz and 4 400-4 500 MHz are allocated to a variety of services in accordance with the relevant provisions of the Radio Regulations;

*m)* that the band 2 300-2 400 MHz is allocated to the mobile service on a co‑primary basis in the three ITU Regions;

*n)* that the band 2 300-2 400 MHz, or portions thereof, is used extensively in a number of administrations by other services including the aeronautical mobile service for telemetry in accordance with the relevant provisions in the Radio Regulations;

*o)* that IMT has already been deployed or is being considered for deployment in some countries in the band 1 710-1 885 MHz, 2 300-2 400 MHz and 2 500-2 690 MHz and equipment is readily available;

*p)* that the bands, or parts of the bands, 1 710-1 885 MHz, 2 300-2 400 MHz, 2 500-2 690 MHz, 1 695- 1 710 MHz, 3 300-3 400 MHz and 4 400-4 500 MHz are identified for use by administrations wishing to implement IMT;

*q)* that technological advancement and user needs will promote innovation and accelerate the delivery of advanced communication applications to consumers;

*r)* that changes in technology may lead to the further development of communication applications, including IMT;

*s)* that timely availability of spectrum is important to support future applications;

*t)* that IMT systems are envisaged to provide increased peak data rates and capacity that will require an ever larger bandwidth;

*u)* that ITU‑R studies forecasted that additional spectrum may be required to support the future services of IMT and to accommodate future user requirements and network deployments,

emphasizing

*a)* that flexibility must be afforded to administrations:

– to determine, at a national level, how much spectrum to make available for IMT from within the identified bands;

– to develop their own transition plans, if necessary, tailored to meet their specific deployment of existing systems;

– to have the ability for the identified bands to be used by all services having allocations in those bands;

– to determine the timing of availability and use of the bands identified for IMT, in order to meet particular user demand and other national considerations;

*b)* that the particular needs of developing countries must be met;

*c)* that Recommendation ITU‑R M.819 describes the objectives to be met by IMT‑2000 in order to meet the needs of developing countries,

noting

*a)* Resolutions **224 (Rev.WRC‑12)** and **225 (Rev.WRC‑12)**, which also relate to IMT;

*b)* that the sharing implications between services sharing the bands identified for IMT in Nos. **5.384A**, **5.C11** and **5.D11**, as relevant, will need further study in ITU‑R;

*c)* that studies regarding the availability of the bands 3 300-3 400 MHz and 4 400-4 500 MHz for IMT are being conducted in many countries, the results of which could have implications for the use of those bands in those countries;

*d)* that, due to differing requirements, not all administrations may need all of the IMT bands identified at WRC‑07 and WRC-15, or, due to the usage by and investment in existing services, may not be able to implement IMT in all of those bands;

*e)* that the spectrum for IMT identified by WRC‑07 may not completely satisfy the expected requirements of some administrations;

*f)* that currently operating mobile communication systems may evolve to IMT in their existing bands;

*g)* that services such as fixed, mobile (second-generation systems), space operations, space research and aeronautical mobile are in operation or planned in the band 1 710-1 885 MHz, or in portions of that band;

*h)* that in the band3 300-3 400 MHz, there are services such as the fixed, mobile, amateur and radiolocation service which are currently in operation or planned to be in operation in the future;

*i)* that services such as broadcasting-satellite, broadcasting-satellite (sound), mobile-satellite (in Region 3) and fixed (including multipoint distribution/communication systems) are in operation or planned in the band 2 500-2 690 MHz, or in portions of that band;

*j)* that the identification of several bands for IMT allows administrations to choose the best band or parts of bands for their circumstances;

*k)* that ITU‑R has identified additional work to address further developments in IMT;

*l)* that the IMT terrestrial radio interfaces as defined in Recommendations ITU‑R M.1457 and ITU‑R M.2012 are expected to evolve within the framework of ITU‑R beyond those initially specified, to provide enhanced services and services beyond those envisaged in the initial implementation, and that there are plans to develop new detailed specifications for radio interfaces intended to support new applications of the IMT-2020 terrestrial component;

*m)* that the identification of a band for IMT does not establish priority in the Radio Regulations and does not preclude the use of the band for any application of the services to which they are allocated;

*n)* that the provisions of Nos. **5.317A**, **5.384A** and **5.388** do not prevent administrations from having the choice to implement other technologies in the frequency bands identified for IMT, based on national requirements,

recognizing

that for some administrations the only way of implementing IMT would be spectrum refarming, requiring significant financial investment,

resolves

1 to invite administrations implementing IMT or planning to implement IMT to make available, based on user demand and other national considerations, additional bands or portions of the bands above 1 GHz identified in Nos. **5.384A, 5.C11** and **5.D11** for the terrestrial component of IMT; due consideration should be given to the benefits of harmonized utilization of the spectrum for the terrestrial component of IMT, taking into account the services to which the frequency band is currently allocated;

2 to acknowledge that the differences in the texts of Nos. **5.384A** and **5.388** do not confer differences in regulatory status,

invites ITU‑R

1 to study the implications of sharing of IMT with other applications and services in the band3 300-3 400 MHz and the implementation, sharing and frequency arrangements of IMT in the band3 300-3 400 MHz;

2 to develop harmonized frequency arrangements for the 1 695-1 710 MHz, 3 300-3 400 MHz and 4 400-4 500 MHz bands for operation of the terrestrial component of IMT, taking into account the results of the sharing studies;

3 to continue its studies on further enhancements of IMT, including the provision of Internet Protocol (IP)-based applications that may require unbalanced radio resources between the mobile and base stations;

4 to continue providing guidance to ensure that IMT can meet the telecommunication needs of the developing countries and rural areas in the context of the studies referred to above;

5 to include these frequency arrangements and the results of these studies in one or more ITU‑R Recommendations.

Frequency band 5 925‑6 425 MHz

ARTICLE 5

Frequency allocations

Section IV – Table of Frequency Allocations
(See No. 2.1)

MOD CME/35A1/12

5 570-7 250 MHz

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| Allocation to services |
| Region 1 | Region 2 | Region 3 |
| 5 925-6 700 FIXED 5.457 FIXED-SATELLITE (Earth-to-space) 5.457A 5.457B MOBILE 5.457C 5.149 5.440 5.458 ADD 5.E11 |

ADD CME/35A1/13

5.E11 The frequency band 5 925-6 425 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. Resolution **[CME-A11-5925to6425MHz]** **(WRC‑15)** applies.     (WRC‑15)

**Reasons:** The intention is to allow administrations that so wish to deploy IMT in this frequency band. Provision is made to protect existing services.

ADD CME/35A1/14

Draft New Resolution [CME-A11-5925to6425mhz] (wrc-15)

Use of the frequency band 5 925-6 425 MHz by the
mobile service for IMT systems

The World Radiocommunication Conference (Geneva, 2015),

considering

*a)* that this Conference has identified the frequency band 5 925-6 425 MHz for IMT;

*b)* that the frequency band 5 925-6 425 MHz is allocated worldwide on a primary basis to the fixed-satellite service (FSS) (Earth-to-space);

*с)* that the frequency band 5 925-6 425 MHz is also allocated to the mobile service on a primary basis;

*d)* that results of studies in ITU‑R indicate that sharing in the frequency band 5 925-6 425 MHz between IMT systems and the FSS satellites is feasible under specified conditions;

*e)* that there is a need to specify an appropriate e.i.r.p. limit and operational restrictions for IMT systems in the mobile service in the frequency band 5 925-6 425 MHz in order to protect FSS satellite receivers,

further considering

*a)* that the interference from a single IMT station, complying with the operational restrictions under *resolves* 2 will not on its own cause any unacceptable interference to FSS receivers on board satellites in the frequency band 5 925-6 425 MHz;

*b)* that such FSS satellite receivers may experience an unacceptable effect due to the aggregate interference from IMT stations, especially in the case of a prolific growth in the number of these systems;

*c)* that the aggregate effect on FSS satellite receivers will be due to the global deployment of IMT stations and it may not be possible for administrations to determine the location of the source of the interference and the number of IMT stations in operation simultaneously,

recognizing

*a)* that interference criteria of FSS satellite receivers based on Δ*T*/*T* ratio is given in Recommendation ITU‑R S.1432;

*b)* that some administrations have extensive deployments of fixed-service systems in the band 5 925-6 425 MHz;

*c)* that the use of the frequency band 5 925-6 425 MHz by IMT systems will provide substantial additional capacity to address additional spectrum requirements for IMT;

*d)* that there is a need for administrations to ensure that IMT stations meet the required mitigation techniques, for example through equipment or standards compliance procedures;

*e)* that no specific separation distance is required to protect IMT stations operating indoors from FSS transmitting stations,

resolves

1 that in the band 5 925-6 425 MHz, IMT stations shall be restricted to indoor use with a mean e.i.r.p.[[1]](#footnote-1)1 of not more than 15 dBm;

2 that if the frequency band made available for IMT systems by any administration is less than 500 MHz, the power level in *resolves* 1 shall be reduced by the following amount: reduction = 10 × log(500/*B*) in dB, where *B* is the available bandwidth for IMT systems, in MHz,

invites administrations

1 to adopt appropriate regulation if they intend to permit the operation of IMT stations in the frequency band 5 925-6 425 MHz;

2 to monitor whether the aggregate interference levels have exceeded, or will exceed in the future, the Δ*T*/*T* criteria at FSS satellite receivers given in Recommendation ITU‑R S.1432 in order to enable a future competent Conference to take appropriate action.

**Reasons:** This resolution enables the establishment of conditions for use of the frequency band 5 925‑6 425 MHz by IMT, use of which must be restricted to the interior of buildings.

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1. 1 In the context of this Resolution, “mean e.i.r.p.” refers to the e.i.r.p. during the transmission burst which corresponds to the highest power, if power control is implemented. [↑](#footnote-ref-1)