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| **World Radiocommunication Conference (WRC-15) Geneva, 2–27 November 2015** |  |
| **INTERNATIONAL TELECOMMUNICATION UNION** |  |
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| PLENARY MEETING | **Addendum 3 to Document 107-E** |
|  | **19 October 2015** |
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| India (Republic of) | |
| Proposals for the work of the conference | |
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| Agenda item 1.3 | |

1.3 to review and revise Resolution **646** **(Rev.WRC‑12)** for broadband public protection and disaster relief (PPDR), in accordance with Resolution **648 (WRC‑12)**;

Introduction

Under this Agenda Item Resolution 646 (Rev.WRC-12) to be reviewed and revised for broadband public protection and disaster relief (PPDR), in accordance with Resolution 648 (WRC‑12). Resolution 648 (WRC-12) resolves to invite WRC-15 to consider the studies in invites ITU-R on broadband PPDR and take appropriate action with regard to revision of Resolution 646 (Rev.WRC‑12).

The different amounts of available spectrum may be considered within bands included in Resolution 646 (WRC-12) by Administrations or Regions depending on their national/regional circumstances. As per the AI 1.3 Resolution 646 to be reviewed and revised for broadband (BB) PPDR, and the bands for BB PPDR to be identified from the bands indicated in the existing Resolution 646 (WRC‑12) only.

Telecommunication Requirement of Public Protection telecommunication are different and unique to the telecommunication requirement of disaster relief.

ITU has considered the telecommunication requirement of public protection and disaster relief agencies under the Public Protection and Disaster Relied (PPDR). The telecommunication requirement of the public protection and disaster relief agencies are distinct and mutually exclusive.

The Telecommunication of Public Protection (PP) agencies and organizations dealing with maintenance of law and order, protection of life and property, and emergency situations. While, the telecommunication of Disaster Relief agencies and organizations dealing with a disruption of the functioning of society, posing a significant, widespread threat to human life, health, property or the environment, whether caused by accident, nature or human activity, and whether developing suddenly or as a result of complex, long-term processes.

It is seen that during the emergency situations such as fire, earthquake etc. which requires immediate response and actions, the Public Network get overloaded due to excessive calling by public during this short span of time. The initial response for such emergency situations by PP agencies is very critical and any delay in response may lead to greater loss of life and property. In the event of common networks, shared network resources between the PP Agencies and the commercial network it is likely that the network of PP agencies get affected/ hampered due to the excessive loading in the commercial network.

Moreover the network of PP agencies is to provide security, including end-to-end encryption, and secure terminal/network authentication. Efficient and reliable communications within a Public Protection organization also needs to be secured by use of appropriate encryption techniques to meet their own security requirement.

The public protection agencies have installed telecommunication infrastructure within their geographical boundaries to meet their day to day requirements and also to cater for the disaster activities. In an event of any disaster both the existing Public Protection communications systems and special on-scene communications equipment brought by Disaster Relief organizations are employed.

Co-existing in the same Geographic Areas is the Police & Public Protection (PP) Agencies Trunking Mobile Radio Networks

Geographic Areas of City/State/Country is covered by Commercial Mobile Cellular Networks

***Disaster Site***

Disaster Relief (DR) Radio communication is restricted to disaster site and for a limited time till normal communication networks restore.

The disaster management uses different mode of communication during each phase of disaster. The telecommunication used during pre-disaster phase is entirely dependent on commercial networks while post disaster phase ad hoc telecommunication is established at disaster site.

Since the public protection telecommunication are wide spread, their communication requirement are secured and reliable communication as compared to disaster relief telecommunication which are concerned with the specific zone of disaster only. Moreover there is no stringent requirement of secure communication for disaster relief activities.

So, the telecommunication requirement of public protection agencies are paramount and encompass the communication requirement of disaster relief agencies so the requirement of PP and DR must be looked in isolation. Further the network of PP agencies envisages to be of secure, reliable, temper proof and very low cost. For radio network for PP agencies of developing countries should comprise of very low cost equipment, low cost and easy for deployment and maintenance.

It is being envisaged that the equipment and products are to be developed in 800 MHz band would provide economies of scale. However, consideration of equipment and products in 400 MHz band with their extended area coverage can very well offset such advantage of economies of scale accrued in 800 MHz band. This would be a great benefit for developing courtiers where generally the public safety networks are more sensitive towards cost parameters.

Another major advantage would be in choosing a frequency band space for PPDR agencies is that which does not have stakes for commercial mobile services. With even the per MHz reserve price for spectrum for commercial mobile services is skyrocketing, the frequency chunk for the PPDR agencies in the same spectrum space would only lead to conflict of interest. And, the economic value placed on spectrum would be very high and normally would not be affordable for the Law & Order enforcement and security agencies.

The PPDR network of developing countries should be such of very low cost equipment, low cost and easy for deployment and maintenance. Thus, the 400 MHz band would be a better option for PPDR agencies.

Proposal

The proposal is being submitted on the following lines:

• 400 MHz band should be harmonized band for broadband PPDR.

• The wireless network of the PP agencies needs to be separate from the Public commercial network.

• The frequency tuning range from 698-894 MHz for PPDR agencies is not acceptable.

Modify Resolution 646 (Rev.WRC-12) to include spectrum for broadband PPDR and frequency bands/ranges to facilitate harmonization.

MOD IND/107A3/1

RESOLUTION 646 (Rev.WRC‑15)

Public protection and disaster relief

The World Radiocommunication Conference (Geneva, 2015),

considering

*a)* that the term “public protection radiocommunication” refers to radiocommunications used by responsible agencies and organizations dealing with maintenance of law and order, protection of life and property and emergency situations;

*b)* that the term “disaster relief radiocommunication” refers to radiocommunications used by agencies and organizations dealing with a serious disruption of the functioning of society, posing a significant widespread threat to human life, health, property or the environment, whether caused by accident, natural phenomena or human activity, and whether developing suddenly or as a result of complex, long-term processes;

*c)* the growing telecommunication and radiocommunication needs of public protection agencies and organizations, including those dealing with emergency situations and disaster relief, that are vital to the maintenance of law and order, protection of life and property, disaster relief and emergency response;

*d)* that many administrations wish to promote interoperability and interworking between systems used for public protection and disaster relief, both nationally and for cross-border operations in emergency situations and for disaster relief;

*e)* that current public protection and disaster relief applications are mostly narrow-band supporting voice and low data-rate applications or wideband with data rates below 1 Mbit/s, typically for systems with a channel bandwidth between 25 to 100 kHz or less;

*f)* that, although narrow-band and wideband systems continue to be used for meeting PPDR requirements, many PPDR agencies in developed countries would need for broadband applications (with data rates in the order of 1‑100 Mbit/s) for systems requiring larger channel bandwidths dependent on the use of spectrally efficient technologies;

*g)* that new technologies for wideband and broadband public protection and disaster relief applications are being developed in various standards organizations;

*h)* that continuing development of new technologies and systems, such as International Mobile Telecommunications (IMT) and Intelligent Transportation Systems (ITS), may be able to support or supplement advanced public protection and disaster relief applications;

*i)* that some commercial terrestrial and satellite systems are complementing the dedicated systems in support of public protection and disaster relief, that the use of commercial solutions will be in response to technology development and market demands and that this may affect the spectrum required for those applications and for commercial networks;

*j)* that Resolution 36 (Rev. Guadalajara, 2010) of the Plenipotentiary Conference urges Member States Parties to the Tampere Convention to take all practical steps for the application of the Tampere Convention and to work closely with the operational coordinator as provided for therein;

*k)* that Recommendation ITU‑R M.1637 offers guidance to facilitate the global circulation of radiocommunication equipment in emergency and disaster relief situations;

*l)* that some administrations may have different operational needs and spectrum requirements for public protection and disaster relief applications depending on the circumstances;

*m)* that regionally harmonized spectrum will enhance economies of scale, enable efficient deployment, ease coordination and harmonization between different PPDR agencies, and advance international aid during disasters and major events;

*n)* that, in addition to the benefits of scale production, regional harmonization will improve interoperability among first responders and will drive suitable devices and standards dedicated to broadband PPDR;

*o)* that the Tampere Convention on the Provision of Telecommunications Resources for Disaster Mitigation and Relief Operations (Tampere, 1998), an international treaty deposited with the United Nations Secretary-General and related United Nations General Assembly Resolutions and Reports are also relevant in this regard,

recognizing

*a)* the benefits of spectrum harmonization such as:

– increased potential for interoperability;

– a broader manufacturing base and increased volume of equipment resulting in economies of scale and expanded equipment availability;

– improved spectrum management and planning; and

– enhanced cross-border coordination and circulation of equipment;

*b)* that the organizational distinction between public protection activities and disaster relief activities are matters for administrations to determine at the national level;

*c)* that national spectrum planning for public protection and disaster relief needs to have regard to cooperation and bilateral consultation with other concerned administrations, which should be facilitated by greater levels of spectrum harmonization;

*d)* the benefits of cooperation between countries for the provision of effective and appropriate humanitarian assistance in case of disasters, particularly in view of the special operational requirements of such activities involving multinational response;

*e)* the needs of countries, particularly the developing countries[[1]](#footnote-2)2, for low-cost communication equipment;

*f)* that the trend is to increase the use of technologies based on Internet Protocols;

*g)* that currently some bands or parts thereof have been designated for existing public protection and disaster relief operations, as documented in Recommendation ITU‑R M.2015[[2]](#footnote-3)3;

*h)* that for solving future bandwidth requirements, there are several emerging technology developments such as software-defined radio, advanced compression and networking techniques that may reduce the amount of new spectrum required to support some public protection and disaster relief applications;

*i)* that in times of disasters, if most terrestrial-based networks are destroyed or impaired, amateur, satellite and other non‑ground-based networks may be available to provide communication services to assist in public protection and disaster relief efforts;

*j)* that the amount of spectrum needed for public protection on a daily basis can differ significantly between countries, that certain amounts of spectrum are already in use in various countries for narrow-band applications, and that in response to a disaster, access to additional spectrum on a temporary basis may be required;

*k)* that certain amounts of spectrum are already in use in various countries for narrow-band applications, and that in response to a disaster, access to additional spectrum may be required for narrow-band PPDR operations;

*l)* that in order to achieve spectrum harmonization, an approach based on regional frequency ranges[[3]](#footnote-4)4 may enable administrations to benefit from harmonization while continuing to meet national planning requirements;

*m)* that not all frequencies within an identified common frequency range will be available within each country;

*n)* that the identification of a common frequency range within which equipment couldoperate may ease the interoperability and/or inter-working, with mutual cooperation and consultation, especially in national, regional and cross-border emergency situations and disaster relief activities;

*o)* that when a disaster occurs, the public protection and disaster relief agencies are usually the first on the scene using their day-to-day communication systems, but that in most cases other agencies and organizations may also be involved in disaster relief operations;

*p)* that the network of PP agencies are envisaged to be of secure, reliable, temper proof and low cost and the radio network for PP agencies of developing countries should comprise of very low cost equipment, low cost and easy for deployment and maintenance;

*q)* that during the emergency/disaster events networks that provide PPDR applications may be required to provide immediate response and actions, and to be able to handle excessive usage;

*r)* that during the emergency/disaster events which require immediate response and actions, commercial wireless communication networks, depending on their design, may be more susceptible to overload due to excessive usage during a short span of time;

*s)* that there are issues for delivery, reliability, and security of PPDR applications through use of commercial wireless communications networks;

*t)* that the initial response for emergency situations by Public Protection agencies is very critical and any delay in response may lead to greater loss of life and property,

noting

*a)* that many administrations currently use certain frequency bands below 1 GHz for narrow-band and some for broadband public protection and disaster relief applications and some administrations also use certain frequency bands above 1 GHz for broadband PPDR applications;

*b)* that applications requiring large coverage areas and providing good signal availability would generally be accommodated in lower frequency bands and that applications requiring wider bandwidths would generally be accommodated in progressively higher bands;

*c)* that it would be efficient and low cost to use the lower frequency bands, e.g. around 400 MHz, in some countries in Region 3;

*d)* that public protection and disaster relief agencies and organizations have an initial set of requirements, including but not limited to interoperability, secure and reliable communications, sufficient capacity to respond to emergencies, priority access in the use of non-dedicated systems, fast response times, ability to handle multiple group calls and the ability to cover large areas as described in Report ITU‑R M.2033;

*e)* that, while harmonization may be one method of realizing the desired benefits, in some countries, the use of multiple frequency bands can contribute to meeting the communication needs in disaster situations;

*f)* that many administrations have made significant investments in public protection and disaster relief systems;

*g)* that flexibility must be afforded to disaster relief agencies and organizations to use current and future radiocommunications, so as to facilitate their humanitarian operations;

*h)* that many of administrations are of the view the common/shared network resources with the commercial network by PP agencies is not appropriate and the issue of intermingling of commercial public network with the PP Network need a cautious approach,

emphasizing

*a)* that the frequency bands identified in this Resolution are allocated to a variety of services in accordance with the relevant provisions of the Radio Regulations and are currently used intensively by the fixed, mobile, mobile satellite and broadcasting services;

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

– to determine, at national level, how much spectrum to make available for public protection and disaster relief from the bands identified in this Resolution in order to meet their particular national requirements;

– to have the ability for bands identified in this Resolution to be used by all services having allocations within those bands according to the provisions of the Radio Regulations, taking into account the existing applications and their evolution;

– to determine the need and timing of availability as well as the conditions of usage of the bands identified in this Resolution for public protection and disaster relief in order to meet specific national situations,

resolves

1 to strongly recommend administrations to use regionally harmonized bands for public protection and disaster relief to the maximum extent possible, taking into account the national and regional requirements and also having regard to any needed consultation and cooperation with other concerned countries;

2 to encourage administrations, for the purposes of achieving regionally harmonized frequency bands/ranges for advanced public protection and disaster relief solutions, to consider the following identified frequency bands/ranges or parts thereof when undertaking their national planning:

– in Region 1: 380-470 MHz as the frequency range within which the band 380‑385/ 390‑395 MHz is a preferred core harmonized band for permanent public protection activities within certain countries of Region 1;

– in Region 2[[4]](#footnote-5)5: 746-806 MHz, 806-869 MHz, 4 940-4 990 MHz;

– in Region 3[[5]](#footnote-6)6: 406.1-430 MHz, 440-470 MHz, 806-824/851-869 MHz and 4 940‑4 990 MHz and 5 850-5 925 MHz;

3 that the identification of the above frequency bands/ranges for public protection and disaster relief does not preclude the use of these bands/frequencies by any application within the services to which these bands/frequencies are allocated and does not preclude the use of nor establish priority over any other frequencies for public protection and disaster relief in accordance with the Radio Regulations;

4 to encourage administrations, in emergency and disaster relief situations, to satisfy temporary needs for frequencies in addition to what may be normally provided for in agreements with the concerned administrations;

5 that administrations encourage public protection and disaster relief agencies and organizations to utilize both existing and new technologies, systems and solutions (satellite and terrestrial), to the extent practicable, to satisfy interoperability requirements and to further the goals of public protection and disaster relief;

6 that administrations encourage agencies and organizations to use advanced wireless solutions taking into account *considering h)* and *j)* for providing complementary support to public protection and disaster relief;

7 to encourage administrations to facilitate cross-border circulation of radiocommunication equipment intended for use in emergency and disaster relief situations through mutual cooperation and consultation without hindering national legislation;

8 that administrations encourage public protection and disaster relief agencies and organizations to utilize relevant ITU‑R Recommendations in planning spectrum use and implementing technology and systems supporting public protection and disaster relief;

9 to encourage administrations to continue to work closely with their public protection and disaster relief community to further refine the operational requirements for public protection and disaster relief activities;

10 that manufacturers should be encouraged to take this Resolution into account in future equipment designs, including the need for administrations to operate within different parts of the identified bands,

invites ITU‑R

1 to continue its technical studies and to make recommendations concerning technical and operational implementation, as necessary, for advanced solutions to meet the needs of public protection and disaster relief radiocommunication applications, taking into account the capabilities, evolution and any resulting transition requirements of the existing systems, particularly those of many developing countries, for national and international operations.

**Reasons:** The benefits of regionally harmonized frequency bands have been documented in Resolution **646** and in many studies and reports. These benefits include, among others, achieving economies of scale and expanded equipment availability, possibly increasing competition and improved spectrum management and planning. Since the initial adoption of Resolution **646** in 2003, major technological developments have taken place in mobile broadband technologies. The network of PP agencies are envisages to be of secure, reliable, temper proof and low cost and the radio network for PP agencies of developing countries should comprise of very low cost equipment, low cost and easy for deployment and maintenance. There are issues for delivery, reliably, and security of PPDR applications through use of commercial public wireless communications networks.

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1. 2 Taking into account, for example, the ITU‑D Handbook on disaster relief. [↑](#footnote-ref-2)
2. 3 3-30, 68-88, 138-144, 148-174, 380-400 MHz (including CEPT designation of 380-385/390-395 MHz), 400-430, 440-470, 764-776, 794-806 and 806-869 MHz (including CITEL designation of 821-824/866-869 MHz). [↑](#footnote-ref-3)
3. 4 In the context of this Resolution, the term “frequency range” means a range of frequencies over which a radio equipment is envisaged to be capable of operating but limited to specific frequency band(s) according to national conditions and requirements. [↑](#footnote-ref-4)
4. 5 Venezuela has identified the band 380-400 MHz for public protection and disaster relief applications. [↑](#footnote-ref-5)
5. 6 Some countries in Region 3 have also identified the bands 380-400 MHz and 746-806 MHz for public protection and disaster relief applications. [↑](#footnote-ref-6)