

UNITED STATES OF AMERICA
PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda Item 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)**;

Background Information: Resolution **646 (Rev.WRC-12)** encourages administrations, for the purpose of achieving regionally harmonized frequency bands/ranges for PPDR, to consider certain frequency bands when undertaking their national planning. Under agenda item 1.3, Resolution **648 (WRC-12)** calls for the ITU-R to study technical and operational issues relating to broadband PPDR and its further development, taking into account:

- technical requirements for PPDR services and applications;
- the evolution of broadband PPDR through advances in technology, and
- the needs of developing countries.

In its studies under this agenda item, ITU-R Working Party 5A is proposing to suppress Report ITU-R M.2033, “Radiocommunication objectives and requirements for public protection and disaster relief”, as it is producing a new Report ITU-R M.[PPDR]. This new Report will address the three bullets above. Therefore, the changes to Resolution **646 (Rev.WRC-12)** should reflect that work and focus on improving interoperability and cross-border coordination.

The benefits resulting from the use of regionally or internationally harmonized frequency bands have been well-documented in the Resolution 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. In emergency and disaster relief situations, the benefits of harmonization also include enhanced cross-border circulation of equipment and increased potential for interoperability of communications when a country receives assistance from other nations.

From a U.S. perspective, the key objectives of any revision to Resolution **646 (Rev.WRC-12)** should accomplish the following:

- Promote harmonization through the establishment of “core” common ranges for PPDR
- Enable flexibility by facilitating the smooth adoption of advanced technologies for PPDR.

Since the adoption of Resolution **646** in 2003, there have been many changes in the public safety environment, often as a result of major disasters. Administrations have introduced new technologies (e.g. LTE in the U.S.) and they have adopted new band plans (e.g., the U.S. 700 MHz band plan for public safety). However, no changes could be reflected in the guiding Resolution without WRC action. This is increasingly viewed as a cumbersome mechanism.

Therefore, it would be advisable to institute a mechanism that would allow administrations to more easily provide updated information on their band plans and the technologies they intend to use. This would facilitate harmonization of both frequency arrangements and technologies.

It is equally important for economies of scale and cross-border circulation that a limited number of bands are used for public safety operations. Therefore, it would be helpful to maintain a list of core common frequency ranges in the Resolution. This would encourage the adoption of regionally harmonized bands that would provide beneficial implications for economies of scale.

The specific information regarding which Regions or administrations were employing which part(s) of the bands could be detailed in a revision of Recommendation ITU-R M.2015, “Frequency arrangements for public protection and disaster relief radiocommunication systems in UHF bands in accordance with Resolution **646 (Rev.WRC-12)**” (which would have to be consequentially appropriately modified to include all bands in Resolution **646**).

The benefit of this approach is that it would not require WRC action for an administration to include its PPDR usage. Furthermore, the inclusion of the bands in the Resolution, without specifying countries, would encourage wider use of globally harmonized bands, with its obvious benefits for economies of scale, cross-border coordination, and interoperability.

The proposal below accomplishes the objectives above by:

- 1) Encouraging the use of globally and regionally harmonized bands by including the core ranges in Resolution 646 without specific designations for administrations;
- 2) Promoting the adoption of common band plans and technologies through incorporation in Recommendation ITU-R M.2015.

PROPOSAL:

MOD **USA/1.3/1**

RESOLUTION 646 (REV.WRC-~~12~~15)

Public protection and disaster relief

The World Radiocommunication Conference (Geneva, ~~2012~~2015),

considering

~~a)~~ that Report ITU-R M. [PPDR] provides comprehensive details of systems and applications supporting PPDR operations in narrow-, wide- and broadband use, including but not limited to

~~– the generic technical and operational requirements relating to PPDR;~~

~~– spectrum needs;~~

~~– mobile broadband PPDR services and applications including further developments and the evolution of PPDR through advances in technology;~~

~~– promotion of interoperability and interworking; and~~

~~– the needs of developing countries;~~

~~b)~~ that Report ITU-R M.2291 provides details of the capabilities of IMT technologies to meet the requirements of applications supporting broadband PPDR operations;

~~a)c)~~ 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)d)~~ 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;~~

~~ee)~~ 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;

~~ef)~~ that ~~legacy~~current public protection and disaster relief ~~applications systems~~ are mostly narrow-band supporting voice and low data-rate applications, ~~typically in channel bandwidths of 25 kHz or less;~~

~~f)~~ that, although there will continue to be narrow-band requirements, many future applications will be wideband (indicative data rates in the order of 384–500 kbit/s) and/or broadband

~~(indicative data rates in the order of 1–100 Mbit/s) with 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, e.g. IMT technologies supporting higher data rates and higher capacity in comparison to traditional PPDR networks[†];
- h) that the 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 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;

[†] ~~For example, a joint standardization programme between the European Telecommunications Standards Institute (ETSI) and the Telecommunications Industry Association (TIA), known as Project MESA (Mobility for Emergency and Safety Applications) has commenced for broadband public protection and disaster relief. Also, the Working Group on Emergency Telecommunications (WGET), convened by the United Nations Office for Humanitarian Affairs (OCHA), is an open forum to facilitate the use of telecommunications in the service of humanitarian assistance comprising United Nations entities, major non-governmental organizations, the International Committee of the Red Cross (ICRC), ITU and experts from the private sector and academia. Another platform for coordination and to foster harmonized global Telecommunication for Disaster Relief (TDR) standards is the TDR Partnership Coordination Panel, which was established under the coordination of ITU with participation of international telecommunication service providers, related government departments, standards development organizations, and disaster relief organizations.~~

- 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 countries²¹, for low-cost-efficient communication equipment;
- f) that the adoption of IMT technologies for broadband PPDR should be encouraged because of the advantages and efficiencies that the standardisation of these technologies offer~~that the trend is to increase the use of technologies based on Internet Protocols;~~
- g) that Recommendation ITU-R M.2015 contains regionally harmonized frequency arrangements for public protection and disaster relief~~that currently some bands or parts thereof have been designated for existing public protection and disaster relief operations, as documented in Report ITU-R M.2033³;~~
- h) that in order to achieve spectrum harmonization, a solution based on regional frequency ranges² may enable administrations to benefit from harmonization while continuing to meet national planning requirements;~~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~~s 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;

²¹ Taking into account, for example, the ITU-D updated Handbook on disaster relief (Appendix 1 of the Report of Question 22-1/2).

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 CITELE designation of 821-824/866-869 MHz).

² 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.

~~k) that in order to achieve spectrum harmonization, a solution based on regional frequency ranges⁴ may enable administrations to benefit from harmonization while continuing to meet national planning requirements;~~

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

~~ml)~~ that the identification of a common frequency range within which equipment could operate 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;

~~n) 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;~~

noting

a) that many administrations are currently using frequency bands below 1 GHz for narrow-band ~~public protection and disaster relief systems and applications~~ supporting PPDR and may decide to use the same range for future broadband PPDR systems as well;

~~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;~~

~~eb)~~ 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[PPDR];

~~ec)~~ 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;

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

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

~~f)~~ that IMT technologies offer a high degree of flexibility for supporting broadband PPDR applications, and there are a number of different approaches for using IMT technologies to meet the broadband communications needs of PPDR agencies, which are outlined in Report ITU-R M.2291;

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.

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:
- ~~to determine, at national level,~~ how much spectrum to make available at a national level for public protection and disaster relief from the ~~bands/ranges~~ identified in this Resolution in order to meet their particular national requirements; as well as
 - ~~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 listed identified in this Resolution for ~~public protection and disaster relief~~ PPDR in order to meet specific regional or national situations⁵;
- c) that not all of the frequency bands listed in this Resolution may be suitable for every type of PPDR operation (narrowband, wideband or broadband).

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 core 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 in Region 1 which have given their agreement;~~
- 406.1-430 MHz and 440-470 MHz in Region 3;
- ~~in Region 25: 746-806 MHz in Region 2;~~
- ~~806-869 MHz in Region 2 and Region 3; 4 940-4 990 MHz;~~
- ~~in Region 36: 406.1-430 MHz, 440-470 MHz, 806-824/851-869 MHz, 4 940-4 990 MHz in Region 2 and Region 3 and 5-850-5-925 MHz;~~

⁵ ~~Venezuela has identified the band 380-400 MHz for public protection and disaster relief applications.~~

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.~~

3 that specific information on the frequency arrangements for public protection and disaster relief in these ranges, as well as the specific details of the Regions and/or administrations utilizing these ranges be contained in Recommendation ITU-R M.2015;

4 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;

45 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;

56 that administrations encourage public protection and disaster relief agencies and organizations to utilize both existing and new technologies/~~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 may encourage agencies and organizations to use advanced wireless solutions taking into account considering h) and i) 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 and Reports 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 and related ITU-R Recommendations and Reports 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;

2 to conduct further appropriate technical studies in support of possible additional ~~identification of other~~ frequency ranges arrangements; ~~to meet the particular needs of certain countries in Region 1 which have given their agreement, especially in order~~ to meet the radiocommunication needs of public protection and disaster relief agencies.

Reasons: This approach preserves the harmonized PPDR frequency core ranges/bands within Resolution **646** while introducing greater flexibility by allowing new arrangements in these ranges/bands to be addressed through updates to Recommendation ITU-R M.2015 on PPDR frequency arrangements. Inclusion of common core frequency ranges in Resolution **646** will encourage the use of that spectrum for public safety, resulting in greater economies of scale and facilitated cross-border coordination and interoperability, which are beneficial to public protection and disaster relief operations. Moving the details of administration-specific implementations within the specified ranges in the resolution to a Recommendation will ease the revision process by no longer requiring WRC action to introduce revisions.
