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## Chairman, Study Group 5

### INTERIM REPORT ON THE STUDY GROUP 5 ACTIVITY

#### 1. Introduction

The 2007 Radiocommunication Assembly (RA-07) restructured the ITU-R Study Groups, creating a new Study Group 5 “Terrestrial Services” under the scope of systems and networks for the fixed, mobile, radiodetermination, amateur and amateur-satellite services. The former Study Groups 8 and 9 were merged, transferring the studies relating to the mobile-satellite and the radiodetermination-satellite services to a newly transformed Study Group 4. The Chairman and Vice-Chairmen of Study Group 5 appointed by the RA-07 are provided in Attachment 1. Under the new scope, the redistribution of Questions and Recommendations/Reports between Study Groups 4 and 5 was done by the relevant Chairmen and the Counselors immediately after the RA-07.

The first meeting of Study Group 5 was held during 10-11 February 2008 preceded by the Working Party meetings, which were established on an interim basis at that time. Study Group 5 spent a lot of time discussing the Working Party (WP) structure as elaborated in section 2, and, at its second meeting in November 2008, the current four WP structure was finally approved.

As of the third meeting in May 2009, all the assigned work is actively underway, including those for the CPM preparation, under the four Working Parties. This document provides an interim Report on the activities of Study Group 5, expecting more efficient and fruitful outcomes to be developed by the Working Parties and the Study Group during the latter half of this study period.

The latest results of the Working Party meetings in October to December 2009 will be provided in the executive Reports of the Working Party Chairmen to be submitted to the 4<sup>th</sup> Study Group 5 meeting.

#### 2. Study Group structure

Following 2.2 in Resolution ITU-R 1-5, the Chairman collected the views of Vice-Chairmen and acting WP Chairmen before preparing his proposal on the Study Group structure. At the first Study Group 5 meeting in February 2008, the following four-WP structure was presented (Document 5/5).

- Working Party 5A: Land mobile service except IMT, amateur and amateur-satellite services;

- Working Party 5B: Maritime mobile and aeronautical mobile services, radiodetermination service;
- Working Party 5C: Fixed wireless systems and HF systems in the fixed and land mobile services (Note 1);
- Working Party 5D: IMT systems.

Note 1: At the third Study Group 5 meeting in May 2009, the title of Working Party 5C was slightly changed to “Fixed wireless systems, and HF and other systems below 30 MHz in the fixed and land mobile services” to cover MF, LF and VLF systems in both services.

In addition to the Chairman’s document, the Study Group received a number of contributions on the structure issue. Although the majority of the contributions were agreeable to the Chairman’s proposal, another view to merge Working Parties 5A and 5D also received fair support. There was significant discussion on whether a single WP should handle all issues relating to the land mobile service or whether two Working Parties (one for non-IMT issues and the other specifically for IMT) should be established. The meeting did not reach a conclusion (except for the formal establishment of Working Party 5B with the above scope and its Chairmanship) and decided to publish a Circular Letter to invite further views from the ITU membership on the Study Group structure.

In response to the Circular Letter (5/LCCE/3), more than 30 inputs were submitted to the second Study Group meeting in November 2008. The original proposal to retain the four WPs, which provisionally continued as an interim basis at that time, was supported by an overwhelming majority. Accepting this result, the meeting got agreement to adopt the four-WP structure and approved the Chairmanship of the three remaining Working Parties (i.e. Working Parties 5A, 5C and 5D) as given in Table 1 in Attachment 1.

### **3 Results of the Study Group 5 meetings**

#### **3.1 Meetings**

Study Group 5 has held 3 meetings as follows:

#1 meeting: 18-19 February 2008.

#2 meeting: 10-11 November 2008.

#3 meeting: 29 May 2009.

The fourth meeting is to be held during 7-8 December 2009.

#### **3.2 Review of work assignment**

The Study Group 5 considered the possibility of transferring studies on Fixed Wireless Access (FWA) systems from Working Party 5C (the fixed group) to Working Party 5A (the land mobile group).

This rearrangement of the work was supported by many members as an advantageous aspect of creating a single terrestrial Study Group. Based on this agreed direction, Working Parties 5A and 5C got agreement during their second meetings that the FWA studies to be transferred are the work on public access systems for potentially large deployment coverage. As a result of this work reassignment, 15 Recommendations and 2 Reports on FWA systems have been transferred to Working Party 5A, and 24 Recommendations including the FWA elements have become under joint responsibility of both Working Parties. The Study Group 5 meeting in November 2008 approved this conclusion addressed in Doc.5/116.

In order to facilitate the studies on certain topics and to avoid unnecessary duplication between WP 5A and WP 5D both dealing with the land mobile service, Study Group 5 has appointed Working Party 5A as a lead group for the studies on IP applications, software defined radio and cognitive

radio under Questions ITU-R 223/5, 230/5 and 241/5, respectively, while allowing WP 5D to contribute to these studies specifically on the IMT aspect. The same approach has been adopted for some of the WRC-12 agenda items, as mentioned later.

### **3.3 Assignment of the CPM-related work within Study Group 5**

The CPM11-1 meeting held in November 2007 organized the preparatory studies for the WRC-12 agenda items. For certain agenda items, concerned groups (Working Parties) were not identified but the names of Study Group were indicated. The first Study Group 5 meeting provisionally decided the concerned (contributing or interested) groups within Study Group 5 for these agenda items including, as required, the lead contributing group (focal point) within Study Group 5 (see Table 2 in Attachment 1). This result was formally approved at the 2<sup>nd</sup> Study Group meeting when the entire Working Party structure was confirmed, and was reported to the CPM-11 Steering Committee meeting in late November 2008.

### **3.4 Development of new/revised Recommendations**

Study Group 5 has adopted 14 draft Recommendations (2 new and 12 revised) through its 3 meetings as given in Table 3 in Attachment 2. Further draft Recommendations are expected to be developed in relation to the CPM-11 preparatory work. Also, a number of preliminary draft new/revised Recommendations on other topics are under consideration by the Working Parties (see sections 4.1-4.4 for detailed information).

### **3.5 Development of new/revised Reports**

Study Group 5 has approved 11 draft Reports (9 new and 2 revised) through its 3 meetings as given in Table 4 in Attachment 2.

Further draft new/revised Reports are expected to be developed by the Working Parties in relation to the CPM-11 preparatory work or other topics.

### **3.6 Updating of the maintained Recommendations**

As specified in section 11 in Resolution ITU-R 1-5, Study Groups are encouraged to review the maintained Recommendations. Based on this request, all the Working Parties have editorially updated 38 Recommendations (see Table 5 in Attachment 2). In many cases this included the addition of a scope.

At the November 2008 meeting of Study Group 5, a request was raised that Recommendations should not duplicate nor be inconsistent with the relevant provisions of the Radio Regulations. On this basis further reviewing work is going on, in particular for a number of the Recommendations under the responsibility of Working party 5C.

### **3.7 Suppression of Recommendations/Reports**

Through the 3 meetings, Study Group 5 agreed to suppress 13 Recommendations and 4 Reports that were found to be no longer necessary or obsolete (see Tables 6 and 7 in Attachment 2).

### **3.8 Review of the Questions**

Study Group 5 initially inherited 67 Questions from the former Study Groups 8 and 9. During the first block meeting of the Working Parties, Working party 5C attempted to reorganize a number of the former Study Group 9 Questions, resulting in the suppression of 14 Questions and adoption of 2 new Questions (merging or restructuring more than one existing Question). Also, three former Study Group 8 Questions were suppressed through the proposals from Working Parties 5A and 5B. Thus, the number of Questions within Study Group 5 was reduced down to 52 (Note 2). The list of

the new/revised Questions and the suppressed Questions are provided in Tables 8 and 9 in Attachment 2, respectively.

Note 2: Since two new Questions have been recently approved, Study Group 5 is currently responsible for 54 Questions.

## **4 Activities of the Working Parties**

### **4.1 Working party 5A**

#### **(1) Meetings**

Working Party 5A has held 3 meetings as follows:

#1 meeting: 4-13 February 2008 (in Geneva).

#2 meeting: 28 October – 6 November 2008 (in Geneva).

#3 meeting: 18-27 May 2009 (in Geneva).

All the meetings were chaired by Mr. Jose Costa (Canada), Chairman of Working Party 5A, who was formally nominated by Study Group 5 immediately after the #2 WP 5A meeting.

#### **(2) Structure of work**

Working Party 5A has usually established several Working Groups to carry out its assigned tasks. Recently, taking into account a request to reduce the number of the WGs, the following Working Group structure has been adopted:

- WG 5A1: Amateur services;
- WG 5A2: Wireless Access including RLANs;
- WG 5A3: Public protection and trunking;
- WG 5A4: Interference and sharing;
- WG 5A5: New technology and systems.

In addition to the above WGs, Ad hoc groups have been created, as required, to deal with specific topics (e.g. Land Mobile Handbook development).

#### **(3) Specific outputs**

Working Party 5A has developed the following 3 revised Recommendations, all of which are now under the approval process:

- Rec. ITU-R M.1452-1 “Millimetre wave radiocommunication systems for ITS applications”;
- Rec. ITU-R M.1677-1 “International Morse code”.

Working Party 5A has also developed one new Report ITU-R [M.2141](#) which was approved at the third Study Group 5 meeting. Furthermore, one existing Question (Q.ITU-R 215-1/5) was revised and one new Question (Q.ITU-R[LMS.SAC]/5) was adopted.

#### **(4) The work relating to the CPM-11 preparation**

Working Party 5A has been nominated as the responsible group for agenda item 1.23. The preliminary outputs for this agenda item are contained in the Working Party Chairman’s Report (Document 5A/305).

Also Working Party 5A is contributing to a number of other agenda items as one of the concerned groups. In particular, the following output is playing an important role for the technical study on the agenda item 1.19:

- Working document towards a preliminary draft new Report ITU-R [LMS.CRS] - Cognitive radio systems in the land mobile service (Annex 15 to Doc.5A/305).

## **(5) Other issues**

Working Party 5A held a Seminar on SDR (Software Defined Radio) and CRS (Cognitive Radio Systems) on 4<sup>th</sup> February 2008 using a part of the first day of its first meeting. This seminar was very successful and provided an opportunity for an open discussion of issues and ideas on SDR and CRS as well as a high level view of the radiocommunication issues that might be improved through the use of these technologies ([Doc. 5A/INFO/3](#)).

## **(6) Future work**

In addition to the work on CPM-11 preparation, Working Party 5A is tackling a number of the studies based on the ITU-R Questions, which include:

- Preliminary draft revision of Recommendation ITU-R M.1310, “Intelligent transport systems (ITS) - Objectives and requirements”;
- Working document towards a preliminary draft new Recommendation or Report, “Mobile wireless access systems providing communications to a large number of ubiquitous sensors and/or actuators scattered over wide areas in the land mobile service”;
- Preliminary draft new Recommendation ITU-R M. [LMS.PPDR.UHF], “Harmonized frequency arrangements for public protection and disaster relief (PPDR) radiocommunication systems in UHF bands”;
- Working document towards a preliminary draft new Recommendation ITU-R M.[WAS.QoS], “Performance and availability requirements and objectives for wireless access systems”;
- Preliminary draft revision of Recommendation ITU-R M.1801, “Radio interface standards for broadband wireless access systems, including mobile and nomadic applications, in the mobile service operating below 6 GHz”.

All the preliminary texts above are contained in the Annexes to Working Party Chairman’s Report (Document 5A/305) for further consideration.

## **4.2 Working party 5B**

### **(1) Meetings**

Working Party 5B has held 3 meetings as follows:

#1 meeting: 6-14 February 2008 (in Geneva).

#2 meeting: 29 October – 7 November 2008 (in Geneva).

#3 meeting: 19-28 May 2009 (in Geneva).

The #1 meeting was chaired by Mr. Thomas Ewers, Vice Chairman of Study Group 5, and the #2 and the #3 meetings were chaired by Mr. John Mettrop (United Kingdom), Chairman of Working Party 5B, who was formally nominated by Study Group 5 immediately after the #1 WP 5B meeting.

### **(2) Structure of work**

Working Party 5B has established the following 3 Working Groups each having a clear scope to carry out its assigned tasks:

- WG 5B1: Radiodetermination service;
- WG 5B2: Aeronautical mobile service;
- WG 5B3: Maritime mobile service;

In addition to the above WGs, an Ad hoc group has been created to deal with specific topics (e.g. Software defined radios & cognitive radio systems).

### **(3) Specific outputs**

Through its 3 meetings, Working Party 5B has developed the 4 revised Recommendations and 2

new Recommendations (underlined) as follows:

- Rec. ITU-R M.1842-1 “Characteristics of VHF radio systems and equipment for the exchange of data and electronic mail in the maritime mobile service RR Appendix 18 channels”;
- Rec. ITU-R M.1849 “Technical and operational aspects of ground-based meteorological radars”;
- Rec. ITU-R M.1851 “Mathematical models for radiodetermination radar systems antenna patterns for use in interference analyses”;
- Rec. ITU-R M.493-13 “Digital selective-calling system for use in the maritime mobile service”;
- Rec. ITU-R M.585-5 “Assignment and use of maritime mobile service identities”;
- Rec. ITU-R M.1730-1 “Characteristics of and protection criteria for the radiolocation service in the frequency band 15.4-17.3 GHz”.

The first 3 Recommendations, i.e. M.1842-1, M.1849 and M.1851, have been already approved, and the latter 3 Recommendations are now under the approval process.

Working Party 5B has also developed 4 new Reports, i.e. Reports ITU-R M.2127, M.2128, M.2136 and M.2147. Furthermore, one new Question (Q.ITU-R 249/5) was adopted.

#### **(4) The work relating to the CPM-11 preparation**

Working Party 5B has been nominated as the responsible group for 7 agenda items, i.e. 1.3, 1.4, 1.9, 1.10, 1.14, 1.15 and 1.21. Therefore, the workload of this WP for the CPM-11 preparation is very significant. The preliminary outputs for these agenda items are contained in the Working Party Chairman’s Reports (Documents 5B/175 or 5B/296).

#### **(5) Future work**

In addition to the work on CPM-11 preparation, Working Party 5B is also tackling the studies based on the ITU-R Questions, which include:

- Working document towards a preliminary draft revision of Recommendation ITU-R M.1371-3, “Technical characteristics for an automatic identification system using time division multiple access in the VHF maritime mobile band”;
- Preliminary draft revision of Recommendation ITU-R M.1802, “Characteristics and protection criteria for radars operating in the radiolocation service in the frequency band 30-300 MHz”;
- Working document toward a preliminary draft new Report ITU-R M.[WAIC], “Technical characteristics and operational objectives for installed wireless avionics intra-communications (WAIC)”.

All the preliminary texts above are contained in the Annexes to Working Party Chairman’s Report (Document 5B/296) for further consideration.

### **4.3 Working party 5C**

#### **(1) Meetings**

Working Party 5C has held 3 meetings as follows:

- #1 meeting: 5-14 February 2008 (in Geneva).
- #2 meeting: 27 October – 3 November 2008 (in Geneva).
- #3 meeting: 18-27 May 2009 (in Geneva).

The #1 and the #2 meetings were chaired by Mr. Charles Glass (USA), Chairman of Working Party 5C, who was formally nominated by Study Group 5 immediately after the #2 WP 5C meeting. The #3 meeting was chaired by Mr. Paul Najarian (USA) as Acting Chairman on behalf of Mr. Glass who was absent from that meeting.

#### **(2) Structure of work**

Working Party 5C has established the following 3 Working Groups each having a clear scope to carry out its assigned tasks:

- WG 5C1: Issues relating to spectrum at or below 30 MHz;
- WG 5C2: Issues relating to spectrum above 30 MHz and up to 18 GHz;
- WG 5C3: Issues relating to spectrum above 18 GHz;

In addition to the above WGs, Ad hoc groups have been created to deal with specific topics (e.g. review of the existing Recommendations).

### **(3) Specific outputs**

Working Party 5C has developed the following 3 revised Recommendations:

- Rec. ITU-R F.1247-2 “Technical and operational characteristics of systems in the FS to facilitate sharing with the SR, SO and EES services operating in the bands 2 025-2 110 MHz and 2 200-2 290 MHz”;
- Rec. ITU-R F.1249-2 “Technical and operational requirements that facilitate sharing between P-P systems in the FS and the inter-satellite service in the band 25.25-27.5 GHz”;
- Rec. ITU-R F.1509-1 “Technical and operational requirements that facilitate sharing between P-MP systems in the FS and the inter-satellite service in the band 25.25-27.5 GHz”.

The first Recommendation, i.e. F.1247-2, has been already approved, and the latter 2 Recommendations, i.e. F.1249-2 and F.1509-1, are now under the approval process.

As stated in 3.7, Working Party 5C has largely reorganized the Questions of the former Study Group 9 deleting 14 old Questions and producing two new and one revised Questions at its first meeting.

### **(4) The work relating to the CPM-11 preparation**

Working Party 5C has been nominated as the responsible group for 3 agenda items, i.e. 1.5, 1.8 and 1.20. The work on the CPM preparation is also going on for a number of the agenda items for which Working Party 5C has been nominated as a contributing group. The preliminary outputs for these agenda items are contained in the Working Party Chairman’s Report (Document 5C/217).

### **(5) Future work**

In addition to the work on CPM-11 preparation, Working Party 5C is tackling a number of the studies based on the ITU-R Questions, which include:

- Working document towards a preliminary draft revision of Recommendation ITU-R F.1245-1, “Mathematical model of average and related radiation patterns for Line-of-Sight Point-to-Point radio-relay system antennas for use in certain coordination studies”;
- Working document towards a preliminary draft revision to Recommendation ITU-R F.758-4, “System parameters and considerations in the development of criteria for sharing or compatibility between digital fixed wireless systems in the fixed service and systems in other services and other sources of interference”;
- Working document towards a preliminary draft revision of Recommendation ITU-R F.1336-2 - Reference radiation patterns of omnidirectional, sectoral and other antennas in point-to-multipoint systems for use in sharing studies in the frequency range from 1 GHz.

All the preliminary texts above are contained in the Annexes to Working Party Chairman’s Report (Document 5C/217) for further consideration.

## **4.4 Working party 5D**

### **(1) Meetings**

Working Party 5D has held 5 meetings as follows:

#1 meeting: 28 January -1 February 2008 (in Geneva);

#2 meeting: 24 June - 1 July 2008 (in Dubai);

#3 meeting: 8-15 October 2008 (in Seoul);

#4 meeting: 10 - 17 February 2009 (in Geneva);

#5 meeting: 10 - 17 June 2009 (in Geneva).

All the meetings were chaired by Mr. Stephen Blust (AT&T), Chairman of Working Party 5D, who was formally nominated by Study Group 5 after the #3 WP 5D meeting.

## **(2) Structure of work**

Working Party 5D has established the following 4 Working Groups each conducting its task under the agreed scope:

- WG Developing Aspects: Issues relating to developing aspects of IMT;
- WG General Aspects: Issues relating to general aspects of IMT;
- WG Spectrum Aspects; Issues relating to spectrum aspects of IMT;
- WG Technology Aspects: Issues relating to technology aspects of IMT.

In addition to the above WGs, Ad Hoc groups have been created to deal with specific topics (e.g. the work plan or vocabulary).

## **(3) Specific outputs and related activity**

The main work for Working Party 5D during this study period is to develop the specifications on radio interface technologies for IMT-Advanced. Based on the preparatory work conducted by the former Working Party 8F, Working Party 5D issued a Circular Letter (5/LCCE/2) to invite proposals for candidate radio interface technologies for terrestrial component of IMT-Advanced after its first meeting. The information of the CL has been supplemented and amplified through discussion at the later two meetings (Addenda to 5/LCCE/2). Thus, the entire process for submission and evaluation of candidate technologies for IMT-Advanced has been agreed, evaluation groups have been established and proposed candidate radio interfaces are now being received.

With receipt of the candidate submissions in the October 2009 Working Party 5D #6 meeting, WP 5D, in conjunction with the invited participation of external organizations, would complete the second major milestone towards IMT-Advanced. The first major milestone was the release of Circular Letter 5/LCCE/2 on 7 March 2008 as mentioned above.

From the October 2009 meeting until October 2010 WP 5D will be working, along with the invited external organizations, to complete the third milestone being the finalization of the evaluation process (Step 4 of the process), and in particular the fourth major milestone (Step 7 of the process) with the finalization of the deliverable ITU-R M.[ IMT.RADIO] containing the decision of WP 5D of what technologies to include within the standardization phase of IMT-Advanced and their technology frameworks, along with other IMT-Advanced related deliverables.

The fifth, and final, major milestone to be completed in 2011 is the Recommendation ITU-R M.[IMT.RSPEC] deliverable defining the detailed specifications of the IMT-Advanced radio interface technologies along with other relevant IMT-Advanced deliverables.

For detailed information on this subject the Radiocommunication Bureau has established the relevant web page (<http://www.itu.int/ITU-R/go/rsg5-imt-advanced/>).

In addition to the above activity, Working Party 5D has developed the following 3 revised Recommendations:



- Rec. ITU-R M.1457-8 “Detailed specifications of the radio interfaces of International Mobile Telecommunications-2000 (IMT-2000)”;
- Rec. ITU-R M.1580-3 “Generic unwanted emission characteristics of base stations using the terrestrial radio interfaces of IMT-2000”;
- Rec. ITU-R M.1581-3 “Generic unwanted emission characteristics of mobile stations using the terrestrial radio interfaces of IMT-2000”.

The first Recommendation, i.e. M.1457-8, has been already approved, and the latter 2 Recommendations, i.e. M.1580-3 and M.1581-3, are now under the approval process.

Furthermore, the work on draft revision of Rec. M.1457-8 toward the next version has been completed and the output is already submitted to the Study Group 5 meeting in December 2009 for its consideration.

Working Party 5D has developed 3 new Reports ITU-R M.2133, M.2134 and M.2135 relating to the development of IMT-Advanced radio interface specifications. Another one new and two revised Reports have been produced (see Table 4 in Attachment 2).

Furthermore, one existing Question (Q.ITU-R 229-1/5) was revised to address studies on the terrestrial component of IMT (both IMT-2000 and IMT-Advanced).

Working Party 5D has also been responsive to the ITU-D in updating critical documents produced in ITU-D Study Group 2 under its Question 18-1/2. Working Party 5D provided in June 2009, by way of liaison, a comprehensive supplement to update the Guidelines on the Smooth Transition of Existing Mobile Networks to IMT-2000 for Developing Countries (GST). In addition, Working Party 5D has taken a view towards a future update of the sections related to WP 5D’s relevant terrestrial work with regard to the ITU Handbook on the Deployment of IMT-2000 systems, which was jointly developed by the three sectors (T-Sector; R-Sector and D-Sector) in a prior timeframe. Working Party 5D has also kept ITU-D Study Group 2 apprised of the work on IMT-Advanced and consequently IMT-Advanced has benefitted from information received from ITU-D regarding developing country aspects useful in the work on IMT-Advanced

#### **(4) The work relating to the CPM-11 preparation**

Working Party 5D has been nominated as one of the concerned groups for agenda item 1.22. Also Working Party 5D is contributing within its scope to SDR and CRS technologies having relevance to agenda item 1.19, under the coordination of Working Party 5A, the lead group in Study Group 5 on this issue.

#### **(5) Other issues**

Working Party 5D held the 2nd workshop on IMT-Advanced on 7<sup>th</sup> October 2008 immediately before its 3<sup>rd</sup> meeting in Seoul. This workshop, following the first one in May 2007 in Kyoto, addressed the process, requirements, and timeframes for IMT-Advanced as well as views from industry on their expected radio interface technologies.

Another workshop is planned to be held on 15<sup>th</sup> October 2009 during the 6th meeting in Dresden to provide an opportunity for the ITU-R Working Party and the external evaluation groups to have a better understanding of the technology candidates as well as to promote information sharing and mutual dialogue.

As part of the on-going communication and education about the work in ITU-R, IMT-Advanced has been featured, by an effort of Chairman of Working Party 5D, in the December 2008 issue of the ITU News publication which has served to extend a view of this work to parties that may not

directly participate within the Study Group and Working Party.

## **(6) Future work**

The continued updating of the IMT-2000 radio interface specifications to reflect the on-going evolution and improvements in the industry is also a major activity in WP 5D, where we are continuing to see new technology elements come forward. The next update of Rec. ITU-R M.1457 has been announced to occur from October 2009 in WP 5D with a planned submission to Study Group 5 at year-end 2010.

In addition to the development of the radio interface specifications and related Recommendations/Reports for IMT-Advanced, and the on-going updates to the IMT-2000 in Recommendation ITU-R M.1457, Working Party 5D is conducting the studies under Question ITU-R 229-2/5, which include:

- Working document towards a preliminary draft revision of Recommendation ITU-R M.1036-3, “Frequency arrangements for implementation of the terrestrial component of IMT in the bands identified for IMT in the Radio Regulations (RRs)”;
- Future revisions of Recommendations ITU-R M.1580-3 and M.1581-3, “Generic unwanted emission characteristics of base/mobile stations using the terrestrial radio interfaces of IMT-2000”.

The preliminary texts or the draft work plan for the above items are contained in the relevant Chapters of the Working Party Chairman’s Report (Document 5D/526) for further consideration.

## **5 Joint work between Study Group 5 and other Study Groups**

### **5.1 Approval procedure for the Recommendations under joint responsibility with Study Group 4**

Under the new Study Group structure approved at the RA-07, studies on the satellite-related issues have been transferred to Study Group 4. A number of Recommendations are maintained under joint responsibility between Study Groups 4 and 5. The Chairmen of the two Study Groups made consultations to decide procedures for future updating of these Recommendations, which include:

- SF-series Recommendations developed by the former Working Party 4-9S;
- M-series Recommendations developed jointly by the former Working Parties 8B and 8D;
- M-series Recommendations developed jointly by the former Working Parties 8F and 8D.

The agreed approval procedures for these Recommendations are provided in the Attachment 3 (in sections 1 to 3, respectively).

### **5.2 Issues involving Working Parties in more than one Study Group**

This topic of how to carry out sharing/compatibility studies between the Working Parties was initiated by Study Group 4 in early 2008, and its original view was circulated to all other Study Groups for their comments (Doc. 5/51).

At its second meeting in November 2008, Study Group 5 discussed this issue and sent a reply to Study Group 4. The issue was considered at the 15<sup>th</sup> Chairman/Vice-Chairman (CVC) meeting in February 2009, where an agreed output was produced taking into account many elements conveyed from Study Group 5 (Doc. CVC-15/2). The above output prepared by Chairman of Study Group 4 was discussed also at the RAG immediately after the CVC meeting. The RAG reconfirmed the result of the CVC meeting and gave its advice on this issue in its Summary and Conclusions reflecting the view addressed in Doc. CVC-15/2 (Doc. RAG09-1/13, see Attachment 4).

The content of Document CVC-15/2 is so important that it is viewed as a basis for issues involving Working Parties from more than one Study Group. At the same time, we need to recognize that it is

no more than “a basis” and that further efforts should be made between the concerned groups to solve problems associated with individual cases of sharing/compatibility studies.

### **5.3 The work of Joint Task Group 5-6**

Joint Task Group 5-6 was established by the first session of the CPM-11 as the sole responsible group to deal with the WRC-12 agenda item 1.17, i.e. studies on the use of the band 790-862 MHz by mobile applications and by other services. Before the first meeting of JTG 5-6, the Chairmen of Study Groups 5 and 6 made efforts to avoid possible duplication of the studies under Resolution 749 (WRC-07) and Resolution 224 (Rev.WRC-07) (Revision 1 to Document 5/49). Based on the proposed approach in Doc. 5/49r1, the JTG is now conducting the sharing/compatibility studies assigned by Resolution 749. All the Working Parties within Study Group 5 need to respect the specific status of the JTG as addressed in the Note from Chairman of JTG5-6 (Document 5/122, reproduced in Document 5A/182-5B/179-5C/138-5D/331) and to contribute to its study only when the JTG so requests.

## **6 Consideration on the effect of the merger of the terrestrial groups**

This section considers the effect of the creation of a new Study Group 5 for the terrestrial services as a result of the merger of former Study Groups 8 and 9 (excluding the studies on the mobile-satellite & radiodetermination-satellite services).

Analyses focused on the meeting days, the meeting duration and input contributions of the relevant Working Party meetings and Study Group meeting(s), comparing the required resources between the first two years of the new study period after the RA-07 and the corresponding years of the previous study period.

### **(1) Statistics on the total meeting days**

An analysis has been made on the total days for each WP meeting from its start to the end, excluding the weekend in between, and then totaled.

The result is given in Table A1 in Attachment 5, which indicates that the total meeting days have reduced from 208 to 130 for the WP meetings and from 11 to 7 for the Study group meetings, both contributing to about a 37% reduction of the required resources.

### **(2) Statistics on the meeting duration**

Another analysis has been done for the meeting duration, i.e. from the first day of a block meeting to the last day of that block meeting including the weekend in between. This means the total required days for a participant wishing to attend all the parallel meetings within the block to stay at the meeting venue. For meetings held separately from other ones, e.g. WP 5D meetings, the calculation has been also done separately.

The result is given in Table A2 in Attachment 5, which indicates that the total meeting durations have reduced from 163 days to 92 days for the WP meetings, contributing to about a 44% reduction of the required resources.

### **(3) Statistics on the input contributions**

The other aspect is comparison of the number of the input contributions to the relevant meetings. For the moment, the summation of the contributions has been done up to the third WP block meetings including the subsequent Study Group meeting, i.e. up to May/June 2009 for this study period (about one and half year after the previous RA).

The result is provided in Table B in Attachment 5, which indicates that there were almost same numbers of the input contributions to the terrestrial groups between the current and the previous study period.

## **7 Summary**

As reported in the previous sections, it may be concluded that the new Study Group 5 is working quite efficiently in handling the same quantity of documents as the previous study period with significantly reduced resources.

The Chairman believes that such efficiency is thanks to the following factors:

- Sufficient support from the Radiocommunication Bureau, i.e. three Counselors' excellent support as well as the establishment of the Sharepoint site leading to a paper reduction of about 75%;
- Leadership of the Chairmen of the Working Parties and their subordinate groups;
- Good cooperation of all the meeting participants.

Therefore, the Chairman wishes to convey his sincere appreciation to these concerned people and to continue our cooperation toward fruitful achievement of the terrestrial group.

## Attachment 1

### Structure of Study Group 5 (Terrestrial Services)

Scope: Systems and networks for the fixed, mobile, radiodetermination, amateur and amateur-satellite services:

<i>Chairman:</i>	Dr. A. HASHIMOTO	(Japan)
<i>Vice-Chairmen:</i>	Mr. T.K.A. ALEGE	(Nigeria)
	Dr. A. CHANDRA	(India)
	Dr. J. COSTA	(Canada)
	Mr. T. EWERS	(Germany)
	Mr. C.T. GLASS	(United States)
	Dr. A. JAMIESON	(New Zealand)
	Mr. A.I. KLYUCHAREV	(Russian Federation)
	Ms. L. SOUSSI	(Tunisia)
	Mr. L. SUN	(China)
	Dr. K.-J. WEE	(Korea (Rep. of))

**Table 1 Working Party structure in Study Group 5 (for the 2007-2012 study period)**

	Scope	Chairman
Working Party 5A	Land mobile service excluding IMT; Amateur and Amateur-satellite service	J. Costa (CAN)
Working Party 5B	Maritime mobile service including Global Maritime Distress and Safety System (GMDSS); Aeronautical mobile service; Radiodetermination service,	J. Mettrop (UK)
Working Party 5C	Fixed wireless systems; HF and other systems below 30 MHz in the Fixed and Land Mobile services,	C. Glass (USA)
Working Party 5D	IMT systems,	S. Blust (AT&T)

**Table 2 Concerned groups within Study Group 5 for certain WRC-12 Agenda items**

	Agenda item and the WRC Resolution	Responsible group	Concerned groups (Note 1)
<b>1.2</b>	Resolution <b>951 (Rev.WRC-07)</b>	WP 1B	<b>WP 5A</b> , WP 5B, WP 5C
<b>1.19</b>	Resolution <b>956 (WRC-07)</b> ;	WP 1B	<b>WP 5A</b> , WP 5B, WP 5C
<b>1.22</b>	Resolution <b>953 (WRC-07)</b> ;	WP 1A	<b>WP 5A</b> , WP 5B, WP 5C, WP 5D
<b>1.25</b>	Resolution <b>231 (WRC-07)</b> ;	WP 4C	WP 5A, WP 5B, <b>WP 5C</b>

Note 1: The groups indicated in bold letters are contributing groups that would act as the lead group on each agenda item as well as the focal point in Study Group 5. This assignment does not preclude other Working Parties to conduct the relevant studies within their scope and to contribute to the agenda items.

## Attachment 2

### Summary of the results of the Study Group meetings

**Table 3 New and revised Recommendations**

Rec. ITU-R	Title	WP	Approval date
M.1457-8	Detailed specifications of the radio interfaces of International Mobile Telecommunications-2000 (IMT-2000)	WP 5D	29 May 2009
F.1247-2 (*)	Technical and operational characteristics of systems in the fixed service to facilitate sharing with the space research, space operation and earth exploration-satellite services operating in the bands 2 025-2 110 MHz and 2 200-2 290 MHz	WP 5C	6 June 2009
M.1842-1	Characteristics of VHF radio systems and equipment for the exchange of data and electronic mail in the maritime mobile service RR Appendix 18 channels	WP 5B	6 June 2009
M.1849	Technical and operational aspects of ground-based meteorological radars	WP 5B	6 June 2009
M.1851	Mathematical models for radiodetermination radar systems antenna patterns for use in interference analyses	WP 5B	10 June 2009
M.585-5	Assignment and use of maritime mobile service identities	WP 5B	3 Oct. 2009
M.1677-1	International Morse code	WP 5A	3 Oct. 2009
M.493-13	Digital selective-calling system for use in the maritime mobile service	WP 5B	3 Oct. 2009
M.1730-1	Characteristics of and protection criteria for the radiolocation service in the frequency band 15.4-17.3 GHz	WP 5B	3 Oct. 2009
M.1452-1	Millimetre wave radiocommunication systems for ITS applications	WP 5A	3 Oct. 2009
F.1249-2 (*)	Technical and operational requirements that facilitate sharing between point-to-point systems in the fixed service and the inter-satellite service in the band 25.25-27.5 GHz	WP 5C	3 Oct. 2009
F.1509-1 (*)	Technical and operational requirements that facilitate sharing between point-to-multipoint systems in the fixed service and the inter-satellite service in the band 25.25-27.5 GHz	WP 5C	3 Oct. 2009
M.1580-3	Generic unwanted emission characteristics of base stations using the terrestrial radio interfaces of IMT-2000	WP 5D	8 Oct. 2009
M.1581-3	Generic unwanted emission characteristics of mobile stations using the terrestrial radio interfaces of IMT-2000	WP 5D	8 Oct. 2009

(\*) These Recommendations would become elements of a list to be prepared by the Director BR in accordance with Resolution 703 (Rev.WRC-07).

**Table 4 New and revised Reports**

Rep. ITU-R	Title	WP	Approval date
M.2127	Example of maritime wideband VHF data system	WP 5B	19 Feb. 2008
M.2128	Test results and simulations illustrating the effective duty cycle of frequency modulated pulsed radiolocation and EESS system waveforms in marine radionavigation receivers	WP 5B	19 Feb. 2008
M.2133	Requirements, evaluation criteria and submission templates for the development of IMT-Advanced	WP 5D	11 Nov. 2008
M.2134	Requirements related to technical performance for IMT-Advanced radio interface(s)	WP 5D	11 Nov. 2008
M.2135	Guidelines for evaluation of radio interface technologies for IMT-Advanced	WP 5D	11 Nov. 2008
M.2113-1	Sharing studies in the 2 500-2 690 MHz band between IMT-2000 and fixed broadband wireless access systems including nomadic applications in the same geographical area	WP 5D	11 Nov. 2008
M.2136	Theoretical analysis and testing results pertaining to the determination of relevant interference protection criteria of ground-based meteorological radars	WP 5B	10 Nov. 2008
M.2146	Coexistence between IMT-2000 CDMA-DS and IMT-2000 OFDMA-TDD-WMAN in the 2 500-2 690 MHz band operating in adjacent bands in the same geographical area	WP 5D	29 May 2009
M.2141]	Study of the isolation between VHF land mobile radio antennas in close proximity	WP 5A	29 May 2009
M.2147	Assessment of potential interference between FM broadcasting stations operating in the band around 87-108 MHz and aeronautical VDL Mode 4 systems in the band 112-117.975 MHz operating in the AM(R)S	WP 5B	29 May 2009
M.2039-1	Characteristics of terrestrial IMT-2000 systems for frequency sharing/interference analyses	WP 5D	29 May 2009

**Table 5 Updated Recommendations through the procedure in Section 11 in Resolution ITU-R 1-5**

Recommendation ITU-R	WP	Approval date
M.1041-2, M.1043-2, M.1044-2, M.1452(*), M.1454, M.1544, M.1637, M.1653, M.1677, M.1678	WP 5A	19 Feb. 2008
M.589-3, M.1084-4, M.1227-2, M.1458, M.1459, M.1462, M.1466, M.1582, M.1584	WP 5B	19 Feb. 2008
M.1456, M.1545, M.1579, M.1646	WP 5D	11 Nov. 2008
F.1488, F.1567	WP 5A	29 May 2009
M.1177-3, M.1179, M.1460-1, M.1461-1, M.1796	WP 5B	29 May 2009
F.748-4, F.749-2, F.1404-1, F.1671, F.635-6, F.1494, F.1498-1, F.1605	WP 5C	29 May 2009

(\*) This updating has been superseded by a new version of this Recommendation.

**Table 6 Suppressed Recommendations**

Recommendation ITU-R	WP	Suppression date
M.1040	WP 5B	
SF.355, SF.358, SF.406, SF.558, SF.1004, SF.1005, SF.1008, SF.1193, SF.1320	WP 5C	6 June 2009
F.759, F.1405	WP 5C	3 Oct. 2009
F.1244	WP 5A	3 Oct. 2009

**Table 7 Suppressed Reports**

Report ITU-R	WP	Suppression date
M.1181	WP 5B	19 Feb. 2008
M.358-5, M.1018-1, M.1019	WP 5A	10 Nov. 2008

**Table 8 New and revised Questions**

Question ITU-R		WP	Approval date
110-2/5	Antenna radiation diagrams of point-to-point fixed wireless stations for use in sharing studies	WP 5C	18 July 2008
215-3/5	Frequency bands, technical characteristics, and operational requirements fixed wireless access systems in the fixed and/or the land mobile services	WP 5A	19 June 2009
229-2/5	Future development of the terrestrial component of IMT	WP 5D	18 July 2008
247/5	Radio-frequency arrangements for fixed wireless systems	WP 5C	18 July 2008
248/5	Technical and operational characteristics for systems in the fixed service used for disaster mitigation and relief	WP 5C	18 July 2008
249/5	Technical characteristics and operational requirements of wireless avionics intra-communications (WAIC)	WP 5B	19 June 2009
[LMS.SAC]/5	Mobile wireless access systems providing telecommunications for a large number of ubiquitous sensors and/or actuators scattered over wide areas in the land mobile service	WP 5A	30 Sept. 2009

**Table 9 Suppressed Questions**

Question ITU-R	WP	Suppression date
224/8	WP 5A	19 June 2009
221/8, 234/8	WP 5B	18 July 2008
107-2/9, 108-2/9, 125-7/9, 136-2/9, 209-1/9, 212-2/9, 218-1/9, 226-1/9, 229-1/9, 234/9, 236/9, 238/9, 239/9, 240/9	WP 5C	18 July 2008



## **Attachment 3**

### **Approval procedure for the Recommendations under joint responsibility with Study Group 4**

#### **1 SF-series Recommendations developed by the former Working Party 4-9S**

*(The following text is reproduced from Document 5C/18-4A/5.)*

Regarding the future updating of SF-series Recommendations developed by the former Working Party 4-9S, the following procedure would apply with the agreement of the Chairmen of Study Groups 4 and 5.

- Either Study Group 4 (including its relevant Working Party) or Study Group 5 (including its relevant Working Party) may initiate revisions of existing SF-series Recommendations;
- The work for the revisions would basically be conducted through liaison statements between the responsible Working Parties until the text becomes mature;
- Both Study Groups should consider proposals for draft revised Recommendations serially;
- The Study Group holding its meeting earlier should send the result of its consideration to the other Study Group holding its meeting later. The Study Group holding its meeting later should take the formal action for the adoption and approval of the draft revised Recommendation.

#### **2 M-series Recommendations developed jointly by the former Working Parties 8B and 8D**

*(The following text is reproduced from Document 5B/40-4C/4 with slight editing.)*

Regarding the future updating of the M-Series Recommendations developed jointly by the former Working Parties 8B and 8D (i.e. Recommendations ITU-R M.1459, M.1582 and M.1584), the Chairmen of Study Groups 4 and 5 have agreed the following procedure:

- either Study Group 4 (including its relevant Working Party) or Study Group 5 (including its relevant Working Party) may initiate revisions of these Recommendations dealing with issues within the scope and mandate of their respective Group;
- the work for the revisions would basically be conducted through liaison statements between the responsible Working Parties until the text becomes mature;
- both Study Groups should consider proposals for draft revised Recommendations serially;
- the Study Group holding its meeting earlier should send the result of its consideration to the other Study Group holding its meeting later. The Study Group holding its meeting later should take the formal action for the adoption and approval of the draft revised Recommendation.

It is also proposed to add a footnote to the title of each Recommendation, which would read: “This Recommendation includes elements of both terrestrial service(s) and satellite service(s). Future revisions should be undertaken jointly by Radiocommunication Study Groups 4 and 5.” This editorial updating could be done under the procedure specified in section 11 in Resolution ITU-R 1-5.

### **3 M-series Recommendations developed jointly by the former Working Parties 8F and 8D**

*(The following text is reproduced from Document 5/61-4/32 with slight editing.)*

With regard to the Recommendations developed jointly by the former Working Parties 8F and 8D (i.e. Recommendations ITU-R M.1182, M.1579 and M.1645), in order to further clarify the procedure for their future updating, the Chairmen of Study Groups 4 and 5 would like to provide the following solution, noting that a draft Recommendation needs to be formally adopted by a single Study Group only, while also noting that both Study Groups (and the relevant Working Parties) need to be concerned with the substantial work on a draft revision of these Recommendations.

- it is naturally assumed that Study Group 4 (or the relevant Working Party in Study Group 4) will initiate and make a proposal for a revision of the satellite part of the Recommendations, and that Study Group 5 (or the relevant Working Party in Study Group 5) will initiate and make a proposal for a revision of the terrestrial part of the Recommendations;
- the proposed revision from the one side may lead to consequential changes or updating in the text for which the other side is responsible;
- therefore, the work for the revisions will require liaison activity between the relevant Working Parties;
- when the work becomes mature and mutually agreed by the Working Parties involved, the draft revision of the Recommendation should be formally adopted by the Study Group initiating that proposal.

## **Attachment 4**

### **Issues involving Working Parties in more than one Study Group**

*(The following text is reproduced from Document RAG09-1/13 with slight editing.)*

RAG advised that sharing studies involving Working Parties from more than one Study Group may include the following cases:

- The development of relevant protection criteria pertaining to a given radio service should remain within the Working Party (or Study Group) responsible for this service. This Working Party (or Study Group) will initiate the study in question and liaise with the other Working Parties involved to progress the work. Once the work is mature and mutually agreed by the Working Parties involved, the output in the form of a new or revised Recommendation and/or Report, as appropriate, would be submitted to the parent Study Group of the Working Party which initiated the study for formal actions on the adoption and approval procedures. Subsequent to the required adoption and approval procedures, the final product would become part of the Study Group documentation.
- With regard to the development of sharing studies, the main objective to continually improve the efficient use of the spectrum/orbit resource for the benefit of all users is often driven by new technological advances and by new applications. In this sense, the role of the Working Party (or Study Group) responsible for the new applications is important in conducting the sharing studies while it is also essential to take into consideration the protection requirements of the existing systems. The Working Party (or Study Group) responsible for the new application could initiate the sharing studies and liaise with the other Working Parties involved to progress the work. Once the work is mature and mutually agreed by the Working Parties involved, the output in the form of a new or revised Recommendation and/or Report, as appropriate, would be formally adopted, approved and maintained by the Study Group responsible for the new application.

## Attachment 5

### Statistics on the meeting days, the meeting duration and the input contributions up to the 4th WP block meetings and the subsequent Study Group meeting

**Table A1 Meeting days excluding the weekend (\*)**

Study period	Meetings	#1	#2	#3	#4	Total
(2003– 2005)	WP 8A	6 (Nov.03)	8 (Sep.04)	5 (April 05)	5 (Sep.05)	24
	WP 8B	6 (Nov.03)	8 (Sep.04)	5 (April 05)	6 (Sep. 05)	25
	WP 8F	7 (Oct.03) #1 6 (Feb.04) #2	6 (June 04) #3 6 (Oct.04) #4	6 (Feb.05) #5 6 (June 05)#6	6 (Oct.05)#7	43
	WP 9A	4 (Feb.04)	6 (Sep.04)	5 (April 05)	3 (Nov.05)	18
	WP 9B	6 (Feb.04)	7 (Sep.04)	7 (April 05)	7 (Nov.05)	27
	WP 9C	4 (Feb.04)	4 (Sep.04)	5 (April 05)	4 (Nov.05)	17
	WP 9D	7 (Feb.04)	7 (Sep.04)	7 (April 05)	7 (Nov.05)	28
	WP 4-9S	7( Feb.04)	6 (Oct.04)	7 (May 05)	6 (Nov.05)	26
	WP total					<b>208</b>
	SG 8	2 (Dec.03)	2 (Dec.04)	2 (Nov.05)		6
	SG 9	2 (Sep.04)	2 (Dec.05)			4
	JSG 4-9	1 (Oct.04)				1
	SG total					<b>11</b>
SG+WP					<b>219</b>	
(2008– 2009)	WP 5A	8 (Feb 08)	8 (Oct.08)	8 (May 09)	8 (Nov.09)	32
	WP 5B	8 (Feb 08)	8 (Oct.08)	8 (May 09)	8 (Nov.09)	32
	WP 5C	8 (Feb 08)	7 (Oct.08)	8 (May 09)	8 (Nov.09)	31
	WP 5D	5 (Jan.08) #1	6 (Jun.08) #2 6 (Oct.08) #3	6 (Feb.09) #4 6 (June 09) #5	6 (Oct.09)#6	35
	WP total					<b>130</b>
	SG 5	2(Feb.08)	2(Nov.08)	1 (May 09)	2 (Dec.09)	<b>7</b>
	SG+WP					<b>137</b>

(\*) For Working Parties 8F and 5D, the meeting days up to their 7<sup>th</sup> and 6<sup>th</sup> meetings are included, respectively.

**Table A2 Block meeting durations including the weekend**

Study period	Block meeting	#1	#2	#3	#4	#5	#6	#7	Total
(2003 – 2005)	WPs 8A-8B	9	11	5	9				34
	WP 8F	9	8	8	8	8	8	8	57
	WPs 9A-9D	9	10	10	9				38
	WP 4-9S	9	8	9	8				34
	WP total								<b>163</b>
	SG 8	2	2	2					6
	SG 9/JSG 4-9	3	2						5
	SG+WP								<b>174</b>
(2008 – 2009)	WPs 5A-5C	12	12	11	12				47
	WP 5D	5	8	8	8	8	8		45
	WP total								<b>92</b>
	SG 5	2	2	1	2				7
	SG+WP								<b>99</b>

**Table B The number of the input contributions up to the 3<sup>rd</sup> WP block meetings including the subsequent Study Group meeting**

Study period	Meetings	Number of the inputs
Working Parties / Study Groups meetings (2003-early 2005)	WP 8A	201
	WP 8B	181
	WP 8F	547
	WP 9A	43
	WP 9B	131
	WP 9C	80
	WP 9D	122
	WP 4-9S	70
	WP total	<b>1375</b>
	SG 8	70
	SG 9	47
	WP+SG	<b>1492</b>
Working Parties / Study Groups meetings (2008-early 2009)	WP 5A	304
	WP 5B	295
	WP 5C	216
	WP 5D	525
	WP total	<b>1340</b>
	SG 5	154
	WP+SG	<b>1494</b>