



**COMMENTS RELATING TO DEVELOPMENT OF A
PRELIMINARY DRAFT NEW REPORT ON
SOFTWARE DEFINED RADIO**

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Software Defined Radio Forum

COMMENTS RELATING TO DEVELOPMENT OF A PRELIMINARY DRAFT NEW REPORT ON SOFTWARE DEFINED RADIO

1 Introduction

This contribution relates to the work of WP8A to develop a PDNR in response to Question ITU-R 230-1/8, “Software Defined Radios.”

The SDR Forum is an international, nonprofit organization dedicated to promoting the development, deployment, and use of SDR technologies for advanced wireless systems. Its mission is to accelerate the proliferation of SDR in wireless networks to support the needs of civil, commercial, and military market sectors. Over 120 entities throughout the world are members of the Forum, including operators, suppliers/manufacturers, policy makers, technologists, and academia, and the organization strives to carry out studies and develop views on software defined radio that are representative of all three ITU Regions.

2 Discussion

The SDR Forum notes the excellent work and significant progress in WP8F to study the role of SDR technology in developing and implementing systems for IMT-2000 and beyond, in which it has participated actively during the past several years. The Forum now looks forward to extending its effort and attention to other mobile operations, such as public mobile systems including public protection and disaster relief (PPDR), intelligent transportation systems and telematics, and dispatch systems, and to the use of SDR techniques for improved spectrum efficiency and frequency sharing. Furthermore, it is encouraging that a growing number of national and international bodies have added SDR and related software-based techniques to their agendas and work programs.

2.1 Current activities of the SDR Forum

The SDR Forum continues to conduct five general meetings per year in Europe, Asia, and North America, to hold a major Technical Conference and Exhibit in November of each year, to conduct workshops and seminars including joint events with other bodies, and to carry out its work program in the technical, regulatory, and market factor areas. In particular, there are three new initiatives within the Forum that are expected to provide a major source of input to ongoing ITU-R efforts, as follows:

- 1) New report on Security Aspects of Radio Software for RF Reconfiguration – the SDR Forum’s Download Working Group of the Technical Committee is nearing completion of

a significant document on software security that relates to the ongoing SDR work of both WP8A and WP8F. Approval by the Forum membership is expected shortly (i.e., by October 2004). The report will be widely available and relevant material is expected to be introduced to both working parties.

- 2) New Special Interest Group for Public Safety – the SDR Forum established a SIG to coordinate activities involving the public safety community and help define SDR-related priorities. The Group’s initial effort was to develop a Request For Information (RFI) to solicit views on the application of SDR technology to satisfy requirements for communications and interoperability among public safety agencies (such as those published by the U.S. SAFECOM Program and Project MESA). The RFI, which is expected to be approved by the Forum and released to the public shortly, will lead to a report on the findings, and relevant portions are expected to be introduced to a future meeting of the Working Party. In addition, the Forum has established new SIGs dealing with cognitive radio, space applications, and smart antennas, which are also expected to result in relevant contributions to WP8A.
- 3) New Working Group on Spectrum Efficiency and Cognitive Radio – consistent with the relentless pressure for spectrum access and growing interest among regulators, the Forum created this group to study the underlying SDR-based techniques and implications that are being considered for improved spectrum efficiency and cognitive radio operation, and report same to the responsible operators, regulators and other interested parties for consideration. Initial tasks include documentation of relevant definitions and nomenclature, and a survey of specific techniques and applications being considered. Again, it is expected this work will contribute to future Forum submissions to the Working Party.

As a separate but related matter, the SDR Forum understands that the United States of America is submitting a document to the Working Party on this subject, with specific recommended changes to the draft working document. The contribution contains, for example, proposed text relating to wireless broadband devices (RLANs) and public mobile systems including PPDR for inclusion in “Section 5 – SDR application to mobile systems (not including IMT-2000)”. The Forum is pleased to support the addition of this text to the working document.

2.2 Growing relevance of SDR technology

A review of the existing ITU-R work program reveals that the topic of software defined radio is applicable to various other questions and study groups beyond the Question 230-1/8 dealing specifically with SDR. For example, WP8F’s effort on SDR has fully taken into account Q.229 on systems for IMT-2000 and beyond, which has ensured a well integrated approach to the role of SDR technology and concepts in the ongoing evolution and development of their future IMT systems.

Along with Q.230, WP8A has responsibility for a number of specific questions that appear to have an essential relationship (i.e., analogous to the link between Q.230/SDR and Q.229/IMT-2000 in WP8F) to SDR technology and techniques, and the work expected to be done over the next several WP8A meetings. These include inter alia:

- Q.205/Intelligent Transportation Systems,
- Q.209/Improvement of Disaster Communications,

- Q.77/Needs Of Developing Countries relating to Mobile Radio Technology,
- Q.37/Improved Spectrum Efficiency for Land Mobile Service,
- Q.7/ Equipment Characteristics for Land Mobile.

Furthermore, there are most likely other ITU activities in the execution and planning stages that may bear on or benefit from the accelerating SDR studies of Working Party 8A, such as possible WRC implications for non-IMT systems.

In light of the growing support to move forward with the SDR studies for the broader land mobile service, the SDR Forum believes it would be useful to consider and understand the relevance of SDR technology to these other areas of SG 8 and ITU-R and to identify the preferred form, scope and venue for such contributions, or to decide that all SDR matters should be placed in the WP8A report on SDR for the foreseeable future. Discussion and clarification of this matter is expected to benefit the Forum and other participants in their preparation for and contributions to future meetings of Working Party 8A.

2.3 Liaison statement from WP8F

The SDR Forum notes the Liaison Statement from WP8F (Document 8A/87 dated 19 July 2004) to Working Party 8A and wishes to offer the following preliminary thoughts on several of the matters raised:

- 1) Table of contents/outline – note that the WP8F liaison statement indicates they regard their version as fairly stable, given the number of meetings held and the level of work to date. However, the preferred outline relating to IMT-2000 systems will likely be different from the table of contents created to cover the wide divergence of non-IMT systems being studied by the Working Party. Nevertheless, the Forum supports the inclusion of a major section dealing with special interference considerations, as adopted by 8F.
- 2) Complementary scopes – concur that this is an important objective, and that WP8A will not overlap with WP8F treatment of the issues specific to IMT-2000 and systems beyond. As previously agreed, 8A should address Q.230 not only from a general perspective (per the liaison statement), but will also address specific issues and details associated with one or more of the relevant land mobile operations, e.g., PPDR and ITS.
- 3) Completion date – note the planned completion date for the 8F report (June 2005). The SDR Forum welcomes the proposed additional meeting of WP8A in 2005, and believes that substantial progress can be made on the development of a report during the next two meetings, providing that an effective mechanism can be established to advance the work in the interim. In this regard, the Forum believes that ongoing study and work on SDR should eventually lead to the adoption of one or more recommendations; however, this aspect may be considered at a later date.

3 Proposed WP 8A Actions

The following actions are proposed:

- a) Measures to advance the work – establish a Correspondence Group to work on the draft report between the 15th and 16th meetings of the Working Party. In this regard, the SDR Forum would be honored and pleased to lead and/or assist in such an effort.
- b) Applicability of SDR-related work to other ITU-R Questions and ITU activities – consider with a view to forming preliminary conclusions regarding a broader relevance of WP8A work on this topic (i.e., beyond Question 230-1/8 and/or SG 8), the preferred method of handling such extended matters in upcoming WP8A meetings, and the form and timing of such contributions if any.
- c) Completion of a draft report on SDR – noting the intention of WP8F to complete work on a SDR report at its 16th meeting (proposed June 2005):
 - Propose that WP8A establish a tentative time schedule for completion of the SDR Report at its 17th meeting (proposed November 2005), provided an effective means is set up to advance the work between meetings; and
 - Consider and recommend a mechanism and time schedule to coordinate with WP8F to ensure that the separate reports are in fact complementary and to avoid any conflicts in the respective material intended for SG8 adoption.
- d) Table of Contents/Outline – modify the draft outline to include a major section dealing with special interference considerations, similar to that adopted by WP8F.