TSG RAN meeting #9
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Title: Answer to the LS from ITU-R WP 8F on Updating
            Recommendation ITU-R M.1457
Document for: Approved

3GPP TSG RAN would like to thank ITU-R WP 8F for the Liaison Statement on the updating of Recommendation ITU-R M.1457.

3GPP TSG RAN appreciate that there is a need within ITU-R WP 8F to define a clear, swift and simple mechanism/process which can be deployed at the October 2000 meeting in order to distinguish between 'routine' minor updates and 'non-routine' major updates. As mentioned in the LS from ITU-R WP 8F, 3GPP TSG RAN believe that Recommendation ITU-R M.1455 could provide a good technical basis for such a distinction. All proposed changes to the existing terrestrial radio interfaces contained in ITU-R M.1457 that are consistent with their related parameters within ITU-R M.1455 could almost certainly be considered 'routine' update whereas inputs to ITU-R M.1457 that also require modifications to ITU-R M.1455 should be carefully evaluated by ITU-R WP 8F as they are most likely to be considered 'non-routine' updates.

In addition, changes to the RKEY parameters resulting from the support of new service requirements or affecting spectrum efficiency or regulatory issues should be considered non-routine. The impact on global compatibility, interoperability, and roaming is a key factor which must also be assessed and form part of the judgment. Using the above definition of routine and non-routine, External Organizations should quantify the impact of their proposed changes on these areas, justify the changes and provide this information to WP 8F as evidence that their update is routine, with WP 8F making the final decision after reviewing all proposed changes.

However, 3GPP TSG RAN believe that at this early stage of IMT-2000 any significant divergence from the terrestrial radio interfaces currently specified in ITU-R M.1457 should be carefully considered, due to possible concerns based also on market considerations.

3GPP TSG RAN would like to inform ITU-R WP 8F on the focus areas currently under consideration within 3GPP TSG RAN. It is noted in the liaison from ITU-R WP8F that one of the possible focus areas is increased data rates and changes to the radio interfaces to improve packet and/or IP based services and applications. 3GPP TSG RAN wishes to draw particular attention to its work item on high speed packet access, which proposes to enhance WCDMA to provide very high speed downlink packet access. The study is expected to address adaptive modulation and coding

schemes, hybrid ARQ protocols, the position of the scheduling function within UTRAN, and other advanced techniques. Annex 1 contains a list of relevant approved 'Work Items' sheets containing a brief description of the technical contents, some indication of the expected service/performance requirements, and the time-schedule foreseen at the moment. The list contained in Annex 1 is not meant to be complete and it is subject to continuous revision; it is also anticipated that the further development of the Work Items is dependent on the outcome of the investigations currently ongoing on these topics. 3GPP TSG RAN will keep ITU-R WP 8F informed on the status of the Work Items activities. The complete list of Work Items is available on the 3GPP web site (www.3gpp.org).

With reference to the update process proposed by ITU-R WP 8F, 3GPP TSG RAN appreciate the efforts to accommodate the different work plans of the organizations external to ITU. In particular, the foreseen phased approach is considered a good way forward. In order to allow development of a common view on the multiple proposals that are likely to be developed for any one focus area, it is further suggested to require from External Organizations information (even in a preliminary stage) on all proposals by the June 2001 meeting of ITU-R WP 8F. This would allow for concurrent evaluation of all proposals.

For future revisions of Recommendation ITU-R M.1457, 3GPP TSG RAN believes that a single annual maintenance update interval should continue to be followed, accommodating both routine and non-routine updates. This would fit the internal 3GPP work plan. The time schedule currently proposed for the year 2000 revision should be used also for future revisions.

For changes deemed to be non-routine, the subsequent requirements definition in any one focus area and the process to be used for submission and evaluation of the proposals satisfying these may reflect to some extent the successful one used for the original development of ITU-R M.1457. Organizations external to ITU may be required to provide the results of their internal technical evaluations for consideration by ITU-R WP 8F.

For completeness, Annex 2 contains the dates of the future meetings of TSG RAN that may be considered by ITU-R WP 8F when further developing the process to accommodate 'non-routine' updates.

3GPP TSG RAN would like to continue fruitful liaison with ITU-R WP 8F on the future revisions of Recommendation ITU-R M.1457.

ANNEX 1

Terminal power saving features:

The UE battery saving, UL/DL interference reduction, and capacity increase are important for deploying the UMTS services. The gated DPCCH transmission can be one of the solutions. The objective of this WI is improving the terminal power saving features, UL/DL interference reduction, and capacity increase. Expecting termination date: RAN#11

Radio link performance enhancements:

After completition of Release –99, possible topics have been identified that could improve the radio link performance. In order to improve the performance it is felt necessary to continue related studies after Release –99 completition and to include possible agreed improvements to the coming UTRA releases. Expecting termination date of the feasibility study: RAN#14 (identified technologies will be included in Specs on a continuous basis)

High Speed downlink packet access:

This work item proposes to study enhancements that can be applied to UTRA in order to provide very high speed downlink packet access (beyond 2 Mbps). It's aim is to identify a long term evolution path for the UTRA air interface.

It is proposed that the study should include, but not be restricted to, the following topics:

- Adaptive modulation and coding schemes (link adaptation by selecting modulation and encoding method based on current link quality. Good link quality makes multilevel modulation possible and facilitates faster data rate.)
- Hybrid ARQ protocols (somewhat faster link adaptation scheme and operates together with adaptive modulation and coding. RLC-PDUs that are to be retransmitted are not discarded but is combined with some incremental redundancy information provided by the transmitter for subsequent decoding. For obtaining highest possible adaptation speed hybrid ARQ in HSPA takes place in L1. There is also a specific WI within RAN on Hybrid ARQ)
- Position of the scheduling function within UTRAN (the scheduling functions needs to be relocated from RNC to the Node B thus allowing distributed scheduling across peer Node Bs. This allows retransmissions to be scheduled within a very short time.)
- Other advanced techniques

Expecting termination date of the feasibility study: RAN#11

Node B Synchronization for TDD:

NodeB synchronisation is beneficial in UTRA TDD to minimise cross-interference in neighbouring cells. Currently, no method has been specified how NodeB synchronisation can be achieved with UTRAN's and UE's internal resources such as signalling via the air interface.

The following benefits of the introduction of NodeB synchronisation by means of internal resources are seen:

- A substantial reduction of the cost of the transmission network.
- An autonomous synchronisation procedure without the need of external references.
- An easily extendable method for the purpose of inter-system NodeB synchronisation.

The purpose of this new work item is to enable the synchronisation of NodeBs in UTRA TDD by means of UTRAN's and UE's internal resources such as air interface signals and NodeB cross measurements. NodeB synchronisation involves radio frame und multi frame synchronisation and intra-system and inter-system synchronisation. Expected termination date: RAN#11

Radio Access Bearer support enhancements

The increasing interest in IP based services demands special optimisation of the means by which a radio access bearer can be provided by UTRAN.

This work item should have the scope of adding necessary functionality to the Uu and Iu interface in order to efficiently support RT traffic, e.g. VoIP. Expected termination date: RAN#11

Smart Antenna:

The smart antennas with the property of beamforming are the essential part of the 1.28 Mcps UTRA TDD option enhancing the system capacity, and this may cover e.g. RNS, layer 1, layer 2/3 aspects for the 1.28 Mcps TDD. For the UTRA FDD as well as 3.84 Mcps UTRA TDD the needed support for the use of adaptive antenna is covered in UTRA specifications. The objective of this work item is to clarify the technology of smart antenna and the impact of smart antenna on other layers. It will most affect the physical layer specification with maximizing the commonalities with high chip rate TDD. Expected Termination date: RAN#11.

Base station classification:

Current TSG RAN WG4 specifications have been done according to the requirements for the macrocell base stations (NodeBs). For the UTRA evolution requirements specific for other type of base stations are needed as well (e.g. micro, pico).
The objectives are:
- definition of base station classes according to deployment scenarios (e.g. macro, micro, pico)
- identification, review and possible update of radio parameters dependent on deployment scenarios
- identification, review and possible update of UTRAN (Node B) measurement requirements and conformance where the maximum base station output power is reflected, dependent on deployment scenarios
- review and possible update of conformance test specifications
- recording of related information into RF System Scenarios

Expected termination date: RAN#11

Hybrid ARQ II/III:

This feature has been shown to have the potential of efficiently enhancing the performance of packet data transmission by transmitting incremental redundancy at the request of the receiver.
In order to support the general mechanism, required signalling, and combining of existing information with incremental redundancy, the specifications for physical layer, as well as for higher layers and testing will be changed and/or extended. Note that Hybrid ARQ type I with soft combining is a special case of Hybrid ARQ type II. Expected termination date: RAN#13

UTRA FDD repeater Specifications:

Repeaters have proven to be useful for extending the coverage into buildings, train/car tunnels, subways, highways, etc in 2nd generation systems. Also, by installing repeaters at the sector borders or in highly dense areas, the transmitted power from the MS and the BS could possibly be lowered, leading to an improvement in C/I and thereby capacity. For the installation of repeaters in cellular networks a specification is needed in e.g. Europe due to regulatory requirements. For operators without the capability of handover to 2nd generation systems, extending the coverage of UTRA will be of importance especially at the initial rollout stage. For operators with capability of handover to 2nd generation systems, user requirements (e.g. high data rates) may not be met by those systems and extended UTRA coverage might be needed.
The objective of the work item is to create a technical specification of the UTRA repeater's minimum RF characteristics which, at least, should include:
- Spurious emissions
- Intermodulation products
- Out of band gain
- Frequency stability
- Modulation accuracy
- Blocking characteristics

In addition to the minimum RF characteristics, conformance requirements and Electro Magnetic Compatibility (EMC) shall also be specified.
Expected termination date: RAN#11

UE positioning:

This work item investigate improvements to the UE positioning methods already supported by UTRAN. Expected termination date: RAN#11

ANNEX 2

3GPP TSG RAN future meetings dates

Meeting	Date	Location
RAN#10	06 - 08 December 2000	Bangkok, Thailand
RAN#11	14 - 16 March 2001	US
RAN#12	13 - 15 June 2001	Stockholm, Sweeden
RAN#13	26 - 28 September 2001	Beijing, China
RAN#14	13 - 14 December 2001	Tokyo, Japan