Draft Minutes of 3GPP TSG RAN WG4 Meeting #3 (revision 3~~2~~),~~2~~12.4.99 Meeting: Tokyo, 29-31 March 1999

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Introduction and Welcome to Delegates

These are the minutes of meeting number 3 of TSG-RAN working group 4, which took place at the New Takanawa~~hama~~ Prince Hotel in Tokyo 29-31 March 1999. It was chaired by Mr Howard Benn of Motorola, vice chair Mr Fukuda of ~~Hitach~~ Fujitsu and secretary David Cooper of Telecom Modus. The chairman Howard Benn opened the meeting. Mr Sando of Motorola, the meeting hosts, welcomed delegates to Tokyo.

Adoption of Agenda

Agenda approved, tdoc 92. Report of meeting #2 in tdoc 114, approved.

Letters, reports from other groups.

Three documents, tdocs 90 95 126, were identified and the chairman decided they will be taken under appropriate agenda item.

Agenda item 4: report from TSG RAN#2

Tdoc 133 is a report presented by Howard Benn. Terms of reference of WG4 were outlined: it is responsible for all activities related to the RF aspects. Thus pulse shaping moved from WG1 to WG4. Noted "protocol aspects from systems point of view" replaced by "RF systems aspects". Now WG2 defines RRM strategies, and example algorithms. WG4 is also responsible for study of RF scenarios.

S4.03 is renamed to "RF parameters in support of radio resource management".

Other issues from TSG RAN: the group is requested to raise document numbers to 2.0.0 in time for next RAN meeting; to rename UE to terminal.

The document numbering will be changed. Proposed document numbering (still provisional) will be use numbers of the form 25.4xx. Proposed to use 450 onwards on for reports, eg 25.450 for introduction document (for details see tdoc). Conformance testing is proposed to be 34.xxx series. This group still needs a work plan. The meeting schedule also was presented.

Discussion: the meaning of version numbering needs to be clarified, since version 2 documents will not be completely stable. The group needs to write a supporting document stating that documents are not all completely stable. The term UE will continued to be used.

Mr Furuya, RAN chairman, asked for a complete proposal on numbering, during this meeting. The chairman suggests than RAN meeting allocate numbers, and asked for approval of his document numbering proposal as interim suggestion. Agreed as working assumption (to be returned to at end of meeting).
It is proposed that the scope of test specs for BS (S4.11, S4.12) should indicate it applies to antenna ports only, ie not include Iub testing. Agreed.

Agenda item 6: reports from Email Adhoc Groups

A number of email ad hoc discussion groups have taken place since the last RAN4 meeting as below.

AH01: test parameters for receiver BB tests

Tdoc 131: the report from email AH01 was presented by the ad-hoc's chairman. Key points: there are new proposed static, dynamic channel models. Debate has taken place on whether BER, FER be used in particular situations. Many issues are still open, AH01 is constrained by output of other issues and needs more time. It was asked whether it should continue.
Discussion: Amer El Saigh (Vodafone) mentioned the need for testing BER as low as 10^{-4} eg AMR speech, asking if this is taken into account. Needs to be discussed offline, perhaps need for specially defined channel for AMR testing.
Chairman suggests that AH01 continues: meeting agreed. Also agreed to have a side meeting on channel models during this plenary: Mr Jukka Vikstedt, Nokia to chair. Report will be in tdoc 150.

AH02: Simulation parameters.

Tdoc 128 presented by Andrea De Pasquale, Ominitel as secretary of meeting contains the report of this ad-hoc.

AH 03. UE Power tolerance.

Tdoc 116 is report of this email ad hoc, presented by Simon Pike, Lucent. Discussions on the reflector did not reach consensus, so the report contains a proposed way forward with proposals that try to remove any motivation to produce mobiles rated for lowest possible power, and possibly separate power for planning purposes from regulatory nominal.
Discssion: Mr Numminen of Nokia comments that temperature variation tolerances needs to be included. Asked whether tolerances include multicode. Mr Van Bussel of T-Mobil wants power level which can be used for planning purposes. Still no consensus.

Tdoc 121 was presented by Mr Norimatsu NEC supporting 4dB range, with asymmetric nominal. Mr Van Bussel of T-Mobil suggests that if nominal is asymmetric then nominal should be raised. Mr Van de Berg, Ericsson wants issues of level and tolerance separated. No consensus, chairman requests informal discussion after lunch (Simon Pike of Lucent to chair) and noted that question of body losses are a separate issue.

AH04 TDD Tx and Rx.

Meik Kottkamp of Siemens reports no contributions on reflector. Ad hoc closed (but comments still allowed reflector).

AH05: FDD MS radio transmission.

A report was given by Edgar Fernandes of Motorola and in conclusion the ad hoc is closed.

AH06: FDD BTS radio transmission.

Editor not present due to illness. There are some issues being discussed in WG1, but it was agreed that this ad hoc is closed.

ERC TG1 Physical Ad hoc

This took place in Tokyo 29 March in response to tdoc 90, LS from ERC. Output will be LS to ERC TG1 tdoc 140 to be presented. This issue will be returned to later.

Agenda 7: Documents

Agenda 7.1: R4.00 Introduction and Work plan

Editor Mr Takami (NTT DoCoMo) reports that no work has taken place on this since previous meeting. Chairman allows opportunity during this meeting to produce input.

Agenda 7.2: S4.01 (A and B) Radio transmission and reception (FDD)

Tdoc 104. This proposes a new pulse shaping filter (using Nyquist filter with Kaiser-Bessel window) presented by Mr Georgeaux of Nortel. Discussion: ~~Esa Barck~~ Mr Jokinen Nokia states that FCC mask cannot be fulfilled. The meeting requests the document giving the FCC requirement. Simon Pike notes that spectral mask wider. There was no agreement to this proposal.

Tdoc 100 is a proposal for carrier raster scheme, presented by Bernhard Raaf of Siemens. It allows non uniform 200 kHz 'delta' raster but clustered around 5MHz carriers, applicable to FDD and TDD. Discussion: the scheme must take into account US requirements (optimum is on odd multiples of 100 kHz). Chairman questions whether this group is allowed to define anything less than full set of 200 kHz channels. In conclusion: a LS is required to inform other organisations ie ARIB, TSG-SA, ERC, T1P1, to be tdoc 143.

Modulation Accuracy

Tdoc 107 was presented by Mr Yokoyama, HP. It proposes a definition for the error vector magnitude (EVM), and code domain error. Discussion: iwhether error vector is before or after despreading needs clarification.

Tdoc 111: presented by Mr Van de Berg of Ericsson. Proposes to define EVM at chip level ie before despreading. Discussion: is code domain accuracy also needed for uplink?

Tdoc 99:Mr Maucksch of Rhode & Schwarz presents principles for Tx modulation accuracy testing. Discussed, some questions raised.

In a summary of the above proposals for modulation accuracy, Mr Yokoyama and Mr Van de Berg believe 107, 111 can be aligned. Chairman suggests joint proposal: to be tdoc 144 by Mr Yokoyama.

Tdoc 119 was presented by ~~Edgar Fernandes~~ Mr Hamada Motorola and contains a text proposal for S4.01A on freuqency stability. Discussed, and the meeting concluded: the proposed amendment is removed and the first sentence provisionally changed to "The UE modulated carrier frequency shall be accurate…". Mr Van Bussel of T-Mobil requests that all references to carrier frequency are changed this way in the document.

Tdoc 120, is proposed change to S4.01A. Presented by Mr Hamada of Motorola. It requests that interfering signal should be CW. The editor Edgar Fernandez suggests to include this principle, with wording to be advised. Agreed.

Tdoc 122 is a proposed definition of tranmitter off state, presented by Mr Norimatsu, NEC. Discussion: may also apply to slotted mode. Proposal: "Transmit OFF state is any UE's status where UE does not transmit except in uplink DTX mode" (note minor improvements to English).
Also off power is should be less than -50dBm. Accepted.

Tdoc 110: Presented by Peter Van de Berg, Ericsson, concerns UE receiver blocking frequency bands. It proposes to change frequency offsets for blocking. Discussion: Simon Pike asks what other systems have been considered? Nokia state that they have produced rationale in Tdoc 38. Chairman suggests: provisionally accept document but allow delegates to consider issues including tdoc 38 and if necessary raise them later in this meeting. Accepted.

Tdoc 130, "blocking requirement for 10 MHz offset" was presented by Jussi Numminen, Nokia. It proposes new in-band UMTS-UMTS blocking requirements. Discussed, to be treated with 132 after simulation ad-hoc.

Tdoc 132. Presented By Jussi Numminen. Changes intermodulation test case. Discussion: some question about scenarios, issue needs to be taken offline in simulation ad-hoc to produce conclusion on 130, 132.

It was agreed to hold the simulation ad-hoc on Tuesday, 08:30- 10:00. Goals: to produce agreement on simulation parameters. To address ACP, ACIR.

The meeting adjourned until Tuesday

A brief report of Simultion ad hoc was given. The lack of results for DL & macro to micro situations impede progress.

Agenda 7.2: S4.01 (A and B) Radio transmission and reception (FDD): continued from Monday

Tdoc 135 on open loop power control was presented by Mr Iwane, Mitsubishi. It defines open loop power control and proposes tolerance of ±9 dB. Discussion: Does this tolerance on O/L power affect maximum power? Answer: no, since even if initial power of RACH is inaccurate the MS will ramp power up if no response received. Conclusion: send LS to WG1, copy WG2 to ensure that text in this proposal describing usage of open loop power control is correct. To be produced by Mr Iwane, assigned tdoc 147 for this.

Tdoc 113 presented by Peter Van De Berg, on open loop power control. Proposes O/L accuracy of ±9dB with ±12dB in extreme conditions. Discussion: Mr Georgeaoux points out that this tolerance is linked to downlink power measurement errors as well as power setting tolerance. Also request for paper on packet data delay & step size, to be tdoc 148. Chairman suggests that discussion resumed when this available.

Tdoc 95. LS from WG1 on power control step sizes. Discussion: need to distinguish delta step and step resolution and decide step size. Would it be possible to tighten step size in future?

Tdoc 126, is LS from WG1 on clarification of closed loop power control assumptions. It asks: what are limitations on possible step sizes; constraints on adjacent slot powers; constraints on in-slot variation; can step size be UE dependent. Discussion: Response to Q1 of liaison, "what are UE step sizes". Answer: 1dB is correct, but need bigger steps with appropriate delta tolerance. Mr Fernandes is concerned about sizes <1 dB in MS, Mr Iwane of Mitsubishi on interference measurement in BTS. Need to ask WG1 what is their requirement. Chairman recommends: LS to WG1 (Mr De Pasquale to produce) to inform them of the 1dB step size and other possibilities in future. Will be tdoc 149. Response to Q2 in LS: "Variation of gain between DPCCH, DPDCH": Eric Georgeaoux of Nortel thinks WG1 wants individual settings on U/L. To be disussed offline.

Tdoc 112: presented by Mr Van de Berg, Ericsson, on UE closed loop power control of downlink. Contains proposed material for S4.01A which defines requirements on UE SIR measurement. Discussion: Simon Pike asks for clarification of time constant; can variable interference be defined and tested; what is confidence level. Amer El Saigh of Vodafone asks for material to go into S4.03 ("Support of RF paremeters…") since this is a procedure. Also similar requirements needed for BS. Conclusion: this material is needed but with clarifications, target document to be reviewed.

Tdoc 109: Proposal for Time mask for UE transmit On/Off scenarios, presented by Mr Van de Berg of Ericsson, proposing 50µs~~S~~ ramp time. Disussion: 50µs~~S~~ not testable due to filtering in test equipment. Can 50µs~~S~~ ramp period impact be qualified? Chairman suggests: accept proposal as it stands, testability to be further considered. Agreed.

Tdoc 146: presented by Mr Maeda of DoCoMo, "proposal for common mesurement channel", proposes a single channel type for all RF measurement. Discussion: Mr Van Bussel of T-Mobil ask whether a single channel is indicative of performance for all channels. Answer: for single code terminal, and where we want to verify "basic receiver characteristics", one channel is OK, further study needed for more complex terminals. Chairman: general principle to minimise number of tests agreed, if possible using 1 channel, but detailed spec cannot yet be produced due to ongoing work in WG1.

Tdoc 118: Presented by Mr Jokinen, Nokia. Proposes change to BS output power in S4.01B as mean power per carrier. Discussion: Simon Pike states need to disambiguate measured and declared values; define extreme conditions. Conclusion: text for 6.2, 6.n agreed, 6.2.1 will have editorial change (left to editor), place-marker will be added for extreme conditions.

Tdoc 117: presented by Mr Jokinen, Nokia. Proposes requirements and definitions for BS ACPR, spurious emissions, intermodulation. Speaker notes ACP values are only examples. Discussion: what about RGSM, DCS1900, others worldwide? Simon Pike, Prem Sood of Sharp raise difficulties in including all regional requirements in this document: requirements depend on what systems are co-located. Mr Van Bussel proposes scenario calculations. Strong support, also for equivalent UE scenarios. Simon Pike remarked: parts of spectrum mask not defined; measurement bandwidth of filter; document not precise enough to derive measurement techniques; need continuous spectral mask; alsoother editorial remarks.

Chairman's conclusion: cannot accept figures in proposal. Interested parties need to produce new submission, to be tdoc 152, to be produced by email ad-hoc [AH31 (meeting **3** ad-hoc **1**) on BS tx spectrum requirements] chaired by Nokia.

Tdoc 91. Proposal on blocking and spurious response from Ericsson (to remove 7.7 from S4.01B, and add new blocking characteristics). Discussion: in band, out of band blocking requirements must be distinguished. Chairman: will be discussed further after 108.

Tdoc 108: From Motorola presented by Chairman on BTS Receiver blocking. Contains simulation results, derives blocking characteristics. Proposes –42 dBm in-band blocking level. Discussion: what is sensitivity to changes in geographic offsetassumptions. Answer: improves. Question: Is proposal for 2nd adjacent testable (need to generate modulated signal at low level)? No comment. Q: what is performance with microcells? A: not done. Q: sensitivity to different cell radius? A: probably not significant. Remark: is 0.01% blocking probability justified? Could be justified by scenario. Remark (Mr Färber, Siemens): generally need to define reference sensitivity.
Chairman: proposes to add these simulation results to RF scenarios document, placing –42dBm in brackets, and adding clarification of scenario assumptions. Results for 577m radius and higher radius will be included soon.

Agenda 7.3: S4.02 A/B radio tx and rx TDD

Tdoc 96: "TDD/FDD co-existence investigation- summary of results" presented by Meik Kottkamp, Siemens. Proposed to include material as part of system scenarios document. Agreed.

Tdoc 145: "Co-siting of TDD/FDD and TDD/TDD base stations", presented by Meik Kottkamp, Siemens. Demonstrates possibility of co-sitedoperation of FDD/TDD with appropriate BS filters (optional, used when co-sited), and possibility of multi-operator TDD/TDD site sharing. Discussion: is the assumed –104 dBm TDD interference levels acceptable? Offline discussions needed. Chairman: sections will be forwarded to RF scenarios document.

Tdoc 101: "TDD synchronisation" Siemens presented by Michael Färber, Siemens. Describes possibilities and presents solution to synchronise TDD Node-Bs (heirarchical and non heirarchical). Contains text proposal to WG4 S4.02"UTRA

TDD radio transmission and reception". Discussion: are requirements independent of implemented sychronisation technique? Clarified yes. Proposed to add WG4 related text to S4.02 document (with figures in brackets). Approved.

Document management

Chairman: general approach about editorial comments, to apply to all documents: chairman suggests to not approve documents at this meeting but approve by email, raising to version 2.0.0. This must be done in time for next RAN TSG.

Suggested process: editors must have all specifications available by close of business Monday 12 April (GMT), for circulation and approval on reflector as version 1. There will be 4 days for comments, ie end of 16 April (GMT), at which time document becomes V2. There is no proposal to put reports to V2. Process agreed.

Agenda 7.5 BS conformance testing (FDD)

Tdoc 134, presented by Mr Nakamura Fujitsu. This is editor's draft, presented to group for 1st time. Discussion: Simon Pike remarks constituent parts of Node-B must be defined; asks how are regional EMC requirements covered. Q: will RR signalling be included. A: no. Therefore Mr Van Bussel identifies need to tell RAN group to write a test spec. This request will be included in existing LS to RAN.

Chairman: this document will not be raised to V2 for next RAN, but comments are invited before next meeting.

Agenda 7.6 BS conformance testing (TDD)

This specification is not available. Participation invited by Siemens. Chairman will highlight lack of input for TDD to TSG RAN.

This was the end of Tuesday's proceedings; the meeting adjourned to Wednesday

Agenda 7.4 S4.03 RF Parameters in support of RRM

Tdoc 105: ~~draft of~~ S4.03 v0.0.3 "RF parameters in support of Radio Resource ~~m~~Management, presented by Mr Franceschini, editor (CSELT)". The document presented by the editor was the updated version of S4.03 with the new Scope and Index Also Tdoc 106 "Draft Proposal for the Contents of S4.03 on RF Parameters in support of RRM". ~~is~~ was presented by CSELT which.proposed a first structure and proposed a first structure and table of contents for the S4.03,.

Discussion: Q: what is scope of document; A: can cover inter-layer procedures, and this group needs to identify RF paramters to support them. Includes requirements for O/L power control. Chairman: should reflect RF parameters (how measured, accuracy) but not actual algorithms. Editor: RF parameters can be divided into two categories, those relating to physical layer (suitable for S4.01) and those related to systems aspects (S4.03); since some of the former may affect the latter we have to decide how to treat them. ~~addressed are clear from scope~~. Amer El Saigh believes that power control parameters are in scope of S4.03 (not 4.01). Chairman: further discussion needed on table of contents and split between S4.03, S4.01. El Saigh offers to produce document: will be tdoc 159.

Agenda 7.7 S4.13 Basestation EMC

Tdoc 97. Presented by Prem Sood, Sharp. "suggested approach for handling EMC/Safety requirements in 3GPP standards". Suggests approach for handling different regional regulatory requirements (for basestations), via a set of annexes.Comments: similar problem envisaged for terminal. Clarified that this tdoc includes terminal. Simon Pike: standard may have to be superset of regional requirements.

Tdoc 127: presented by Esa Barck Nokia. Counterproposal to 97, suggesting worldwide common EMC & safety requirements for BS and formation of ad-hoc to formulate these. Discussion: Q: what does BS product safety cover? A: electrical safety.

Tdoc 98: presented by Prem Sood. Informative document on US safety (ie SAR) & EMC requirements (both for terminals and BS) available on FCC website.

A discussion of above documents followed. Simon Pike derived the following diagram with the agreement of the meeting

Subject	UE	Basestation

Antenna port tx [ref ITU-R SM.329]	**WG4 reqt**	**WG4**
Antenna port rx	**Regional Option**	**Regional Option**
Enclosure	**TSG-T**	**Regional Option (working assumption)**
Other ports EMC	**TSG-T**	**S.4.13**
SAR	**TSG-T, impact WG4**	**Operator?**

Suggests need for internal WG4 report that summarises different regional regimes. Mr Barck of Nokia suggests ad hoc to elaborate common definitions, if not levels. Chairman: S4.13 will not be presented to TSG-RAN; will report progress on S4.13 to TSG-RAN; ad-hoc to be formed to produce report (AH32).

Agenda 7.8 BS environmental, S4.14

Chairman: S4.14 to be removed from document list.

Agenda 7.9 RF Systems Scenarios R4.01

Tdoc 157 is report from side meeting of Tuesday presented by Mr De Pasquale. This also contains text changes to R4.01. Discussion: clarified Ericsson D/L proposal was covered. Proposed text changes will be reviewed on reflector.

Tdoc 156, "uplink ACIR simulation results presented at AH03"presented by Edgar Fernandes. Contains averaged results from different contributions. Discussion: some anomolous behaviour noted in Nokia results, section 1.1. Should results be revisited?
Chairman thanks companies for results. Work will be continued on reflector: key issues are consensus on acceptable capacity loss and ACIR (both theoretical and practical).

Mr Van de Berg of Ericsson points out that ACIR trades off vs capacity; what is 'cost' criteria for tradeoff. Mr Pike points out that capacity is not only criterion. What share of overall statistical capacity loss from theoretical is ACIR allowed? Eg as compared with non-ideal cell placement. Chairman: more inputs required by next meeting. Mr De Pasquale noted that these results are for static case. Mr Van de Berg & Mr ~~Nummінen~~Lilja, Nokia: can we identify particular ACIR ranges to concentrate on, eg 30-40 dB. Accepted.

Mr Furuya, TSG-RAN chairman: Q: is this a system level simulation, which is remit of WG1. WG4 Chairman: A: this is a simulation designed to indicate capacity loss as a function of RF non idealities but is not indicative of actual system capacity.

Tdoc 125: "effect of outage from ACI on QoS for moving users", presented by Simon Pike Lucent. Looks at effect of D/L ACI on outage for moving users, not capacity. Key point illustrated is that ACI could be worse for moving users than static users in some circumstances. Discussion: Amer El Saigh thinks MCL on U/L is actually the constraint. ~~Jussi Nummінen~~ Mr Lilja suggests that interfrequency handover can help. Mr Benn as Motorola: path loss is in any case non-monotonic function of distance, challenging paper's conclusion. Agreed that situation complicated. Mr Hamalainen of Nokia asks that scenario agreed by ad hoc be used. Chairman encourages more work.

Mr De Pasquale mentions that UMTS quality must be higher than GSM. He also asks what is behaviour of U/L powercontrol when D/L is lost. Chairman asks for clarification of where this is defined. Mr Furuya: may involve WG1, WG2 but unsure. In any case WG1 has discussed this issue (specifically proposing inter frequency handover).
Agreed that tdoc 149, LS on power control, will ask for clarification and also go to WG2.

Tdoc 123 & 124, presented by Mr De Pasquale. Outline and text for R4.01, RF system scenarios. Discussion: Q: are results together with descriptions of scenarios? A: no, in separate section is better. Q: do we need TDD/TDD. A: yes, accepted. Some editorial comments were also made, chairman suggests they be given offline to the editor.

Tdoc 103 from Alcatel presented by Mr Auvray, introduction of FDD/TDD system scenarios. Chairman: this heading will be added to RF system scenarios document. Agreed.

Note on Documentation: meaning of square brackets could be included in 'terms and abbreviation' section of each document.

Further discussion of agenda 7.2

Tdoc 144, presented by Mr Yokoyama HP, is proposal for revised definition of modulation accuracy. It now covers the multicode case. Discussion: Q: any similar work on TDD. A: yes, envisaged. Q: is multicode transmission on uplink considered. A: unclear. Conclusion: proposal accepted, but editorial changes necessary.

Tdoc 111: reconsidered. Peter Van de Berg proposes to use the value of 17.5% for EVM. Accepted as working assumption in brackets. Ericsson asked for justification of value of 12.5% used in other cellular systems at future date.

Tdoc 148, Ericcson, "accuracy of O/L power setting, impact on RACH attempt delay", presented by Peter Van de Berg, to support proposal in tdoc 113. Shows RACH delay relatively insensitive to absolute O/L accuracy around ~9dB. Discussion: Q: what was step size assumption. A: 3dB, but results relatively insensitive to this. Q: what are RACH delay requirements. A: not in this group's remit (WG1 defines procedure). Conclusion: proposal in tdoc 113 approved.

Tdoc 151 is a specification proposal for UE closed loop power control of D/L, a modification of 112, presented by Mr Van de Berg, containing text proposal for S4.01A. Text proposal accepted, although Amer El Saigh remarked it would be better in S4.03.

Tdoc 150 is report of side meeting held on Monday on channel models, presented by Mr Vikstedt of Nokia. Discussion: Q: what does "speed" of AMR channel mean in section 1.5. A: bearer bit rate, not user bit rate.
Chairman: useful to continue AH01 email meeting. Agreed.

Tdoc 155. "clarification of O/P RF spectrum emissions" presented by Mr Norimatsu, NEC. Contains text proposal to 4.01A which defines "out of band", "spurious" emissions and gives requirements. Discussion: Mr Van Bussel asks for documentation tosupport values for spurious emissions, in system scenarios. Agreed this is needed. Mr Van de Berg identifies PHS requirements, which are regional. Should UE meet all regional requirements simultaneously? Agreed, and this requirement is Japan's request.

Suggestion: (1)remove PHS requirement from table 5, put it in a new table with power bracketed. Agreed.
(2) Put reference to underlying ITU requirements so table 5 can be traced from ITU requirments. Agreed.
(3) Clarification is requested whether all parameters are mean or peak, with appropriate references.

UE power classes

Tdoc 102 from Vodafone, T-Mobile presented by Amer El-Saigh is on UE Tx power classes, proposing to delete (for now) classes other than power class 4 from S4.01A. However signalling must continue to permit future power classes.

Tdoc 121 presented by Mr Normiatsu NEC, is counterproposal which suggests we keep the higher power classes for higher data rates. Discussion: Mr Takami DoCoMo remarks: need to keep mention of higher power classes to guide other groups. Mr Cooper NEC Tech, Mr Kottkamp: we need to indicate how many power classes in LS. Mr Sood of Sharp points out need for higher classes (eg data) and lower classes (eg "tiered" public and private services).

Chairman: (1) can we remove classes 5 and 6, with explanatory LS (to TSG-SA, TSG-T) to ask for signalling at later date. Agreed. This LS will be tdoc 161, produced by Mr El Saigh.

(2) can we remove square brackets on maximum output power column of power classes 1-3 [*not tolerance column*]. Agreed for class 1,2,3.

Discussion: Mr Van Bussel: we need some (ie at least one) proposed higher power class so we can simulate it in the RF scenarios. Mr Pike: regulators would like properly defined power class (no bracket). Mr De Pasquale wants 1 and 4 kept without brackets.
Mr Van Bussel: we have strong justification for only one power class higher than 21dBm, but accepts 3 classes.
Mr De Pasquale asks for the justification for classes 2,3. Answer: Mr Sood points out that 2 operators say they want them.

Mr De Pasquale asks why do power class ranges overlap, since this makes it unclear how they map to services.

Mobile power tolerance

During the meeting there had been informal debate concerning mobile power tolerance. The situation was summed up by Mr Fernandes: proposal is 21 dBm +/- 2 dB which "does not include any measurement tolerance." Discussion: Q (Daniele Francesch~~esc~~ini): What does measurement tolerance mean? A: tolerance of measurement equipment setup. Mr Van Bussel clarification: +/-2 dB is "core requirement", any additional margin required for testing purposes is for TSG-T group to specify. It was clarified that ~~T~~this tolerance applies under both normal and extreme conditions.
Proposal Accepted.

Proposal: There is a need for a note in S4.01A, S4.01B. **Action** on ad hoc 03 to implement this, Mr Numminen will make proposal, which will be tdoc 164.

Further disucssion of agenda 7.4, S4.03

Tdoc 159, presented by Daniele Franceschini, CSELT, editor. This is V0.04 of S4.03 "RF parameters in support of radio resource management". Discussion: Jussi Numminen prefers all RF requirements for terminal in a single document, and all RF requirements for BS in a single document. Q: Amer El Saigh: where does SIR measurement fit in this scheme; it is a procedure, not an RF parameter. A: Mr Fernandes suggests revisit this later, editor ~~differs~~. answered that it was important to take a decision about the structure of the S4.03 in this meeting in order to obtain the final version of the document to be submitted for approval to the next RAN..
Chairman: proposes to make this document into a report which refers to existing requirements. Editor: keep as specification according to RAN decision. Agreed. Mr Van Bussel: do it the tried and tested GSM way eg like 05.08. But editor points out that it is the task of this group to specify RF parameters in support of system requirements.
Amer El Saigh explains: S4.01 is used (by operators) to plan network. S4.03 is used to operate network. Mr Jockinen asks then where does power control go?
Mr Iwane's explanation: 'elemental aspects' of RF live in S4.01, 'composite aspects', ie usage of elements, of RF live in S4.03. Editor agrees.
Mr Yokoyama, HP: do we need conformance tests for both for regulatory purposes? A: Yes.
Chairman: there must be no duplicated requirements and for this it was agreed that a possible solution to the problem it was the use of cross reference between the two documents.. (1) can we accept editor's proposed ~~methodology~~ structure and index contained in tdoc 106: agreed. (2) can we ask editors of S4.01, S4.03 to propose way forward for the split between S4.01 and S4.03, by email reflector. Also this applies to S4.02 (TDD). Agreed.
Action on editors of S4.01, S4.03: run email discussion to determine split between S4.01, S4.03. To be AH34.

Agenda item 8: liaisons & outputs to other groups

Tdoc 139. LS to TSG-RAN concerning document number and version conventions, presented by Mr Van Bussel. Discussion: Mr Van de Berg wants text *within* the documents to indicate which bits are stable. LS accepted.

Tdoc 158: WOME proposed working methods, presented by chairman.

Tdoc 90, 140, 141 presented by Simon Pike. Tdoc 90 is LS from ERC-TG1 which was considered by ad-hoc on Sunday 28 March. Tdoc 140 is cover sheet for Tdoc 90. Tdoc 141 is proposed draft LS to ERC-TG1.
Proposal: to set up email group to sort out issue before TSG-RAN, with the following objective: "To complete proposed LS to TSG-RAN based on inputs received and complete sections where there are notes in square brackets". Designated AH33, chaired by Mr Pike.

WG4 Chairman: have not got permission to send LS to ERC. Mr Furuya, TSG-RAN chairman: understanding is that we now have (will confirm this with PCG). Does WG4 want an authorised relationship with ERC? Benn: yes.

Tdoc 143. LS on carrier frequency raster, presented by Herr Raaf. Discussion: addressees revised to: …(ERC, T1P1 via TSG-RAN). Revision will be tdoc 163, otherwise approved.

Tdoc 149: presented by Mr De Pasquale, LS to WG1, WG1 on clarification on PC step sizes in the closed loop pwer control. Tdoc 162: revised version of this with extra point about closed loop power control. LS in tdoc 162 accepted.

Tdoc 147: LS to WG1, WG2 on clarification of O/L power control on the uplink, presented by Mr Iwane. Approved.

Tdoc 154: LS in answer to baseline terminal capabilities request, presented by Mr Takami. To TSG-T2, cc RAN, R2, R3, S1, "ERC-TG1 via RAN". Discussion: Q: Mr Auvray Alcatel: is TDD in FDD band optional? Mr Pike refers to tdoc 90 as containing draft ERC decision. Mr De Pasquale: Q: what will be duplex distance. A: Steve Green UK-DTI in UK 190 MHz, but tdoc 90 from ERC TG1 mentions 190 MHz +/- 5 MHz. Comment: power class should be option… but terminal must support at least one class. De Pasquale asks for extra sentence asking for guidance from ERC-TG1 re duplex distance. Agreed. Simon Pike: the terminal must support a sufficient set of channels to make it testable. Mr Franceshini: does mandatory 190 MHz contradict our specs? Chairman requests to remove all text below table (so revised tdoc is 165, will be produced by email).

Tdoc 161: is LS on Future definition of UE power classes., to TSG-R2, TSG-S1, TSG-T2 cc TSG-R1, TSG-RAN, presented by Amer El Saigh. Approved.

Agenda 9: work plan and future meetings.

Tdoc 160 is proposal for work plan, presented by Mr Dohi, NTT DoCoMo. Prioritises RF parameter definitions.
Chairman requests that such significant papers made available earlier in meeting.
Mr De Pasquale: Q: how do these timescales relate to ACIR investigations, etc., due to ongoing simulations which may not complete in timescale of this document.

Chairman: Q: what is expected use of this paper?A: Internal use within WG4. Chairman remarks that it will be difficult to resolve open issues before end of April. Mr Van Bussel: next option to approve values is mid May. Mr Furuya: if WG cannot meet milestone, must determine whether essential or non essential. If essential then decision must be taken in any case. Therefore 1st step is to determine what is "essential". Chairman: most areas essential. We need detailed work plan.

Chairman suggests:address work plan to look at need for parameters from point of view of workplan.

Next WG4 meeting 10-12 May, hosted by Ericsson Stockholm.
Donald Zelmer Bell South invites meeting to Miami 14-16 June.

Mr Furuya requests to send volunteer to TSG-SA. Mr Fukuda volunteers.

List of future meeting dates (announced after meeting):
RAN WG 4, 10 - 12 May, Stockholm
RAN WG 4, 14 - 16 June, T1P1 - Miami
RAN 17 June - 18 June
RAN WG 4, 27 - 29 July, Host needed
RAN WG 4, 7 - 9 Sept, Host needed
RAN 29 Sept - 1 Oct
RAN WG 4 19 - 21 Oct, Host needed
RAN WG 4, 30 Nov - 2 Dec, Host needed
RAN 15 - 17 Dec, Host needed

Agenda 10: Any other business

Mr Vikstedt warns tdoc 144 has virus.

Topic of system level simulation. Chairman: let's think about it, he will report back after RAN meeting.

Secretary: D Cooper ceases to be secretary after this meeting. Chairman asks for volunteer.

The meeting closed at the end of Wednesday.

Annex A: list of documents

NUMBER	TITLE	source	on disc	item	status
R4-99089	Draft meeting report for TSG-R4#2	TSG-R4 secretary, D Cooper	#1		revised in 99114
R4-99090	LS from ERC-TG1	ERC-TG1 S Pike	#1	6.7	taken in ad-hoc
R4-99091	Proposal for spurious response and blocking specification for BS	Ericcson, P van de berg	#2	7.2	presented
R4-99092	Agenda	chairman WG4	#1	2	presented
R4-99093	uplink ACIR simulation results	Ericson, P van de berg	#2	7.9	
R4-99094	downlink ACIR power control modelling	Ericcson, P van de berg	#2	7.9	
R4-99095	Liaison from 3GPP RAN WG1 Tdoc 129.	E Le Strat	#1	4, 7.2	presented
R4-99096	TDD – FDD coexistence investigation: summary of results	Siemens, Miek Kottkamp	#1	7.3	presented
R4-99097	Suggested Approach for handling EMC/Safety Requirements in 3GPP standards	NTTDoCoMo, NEC, Sharp, Prem Sood	#1	7.7	presented
R4-99098	Information on US Safety and EMC Regulatory Requirements	NTT DoCoMo, Sharp, Prem Sood	#1	7.7	presented
R4-99099	Guidelines for TX Tests	Rohde & Schwarz	#1	7.5 and 7.6	presented
R4-99100	Definition of Channel Raster	Siemens, Mr Raaf	#1	7.2	presented
R4-99101	TDD synchronisation	Siemens, Miek Kottkamp	#1	7.3	presented
R4-99102	3G UE Transmit power classes and changes to S4.01A	Vodafone, T-Mobil (amer el-saigh)	#1	7.2	presented
R4-99103	TDD/FDD scenarios into the R4.01 RF system scenarios	Alcatel (Olivier Visbecq)	#1	7.9	presented
R4-99104	A new pulse shaping function for the FDD and TDD modes of UTRA	Nortel, Eric GEORGEAUX	#1	7.2 & 7.3	presented
R4-99105	3GPP TSG RAN WG4 S4.03 V0.0.3: "RF Parameters in support of Radio Resource Management "	CSELT, Daniele Franceschini	#1	7.4	presented
R4-99106	Draft Proposal for the Contents of S4.03 on "RF Parameters in Support of Radio Resource Management	CSELT, Daniele Franceschini	#1	7.4	presented
R4-99107	Uplink and Downlink Modulation Accuracy	Hewlett-Packard (M.Yokoyama)	#3	7.2 and 7.3	presented
R4-99108	BTS receiver blocking	Motorola, Howard Benn	#3	7.2	presented
R4-99109	time mask for UE transmit on/off	Ericsson, Peter van de	#3	7.2	presented

	scenarios	Berg			
R4-99110	UE receiver blocking frequency bands	Ericsson, Peter van de Berg	#3	7.2	presented
R4-99111	uplink modulation accuracy	Ericsson, Nokia, Peter van de Berg	#3	7.2	presented
R4-99112	UE closed loop power control of DL	Ericsson, Peter van de Berg	#3	7.2	presented
R4-99113	accuracy of open loop power setting	Ericsson, Peter van de Berg	#3	7.2	presented
R4-99114	Final Draft meeting report for TSG-R4#2	TSG-R4 secretary, D Cooper	#1	3	presented
R4-99115	Evaluation of ACIR impact to the system capacity	NTT DoCoMo, Masato MAEDA	#3	7.9	
R4-99116	Report of WG4 AH 03 (Terminal output power tolerance)	Lucent, Simon Pike	#2	6.3	presented
R4-99117	BS transmit spectrum requirements	Nokia Telecommunications, Sami Jokinen	#1	7.2	presented
R4-99118	Definitions for BS output powers	Nokia Telecommunications, Sami Jokinen	#1	7.2	presented
R4-99119	Frequency Stability	Motorola, Kunihiro Hamada	#5	7.2	presented
R4-99120	Transmit Intermodulation	Motorola, Kunihiro Hamada	#3	7.2	presented
R4-99121	Proposal for UE maximum output power	JAPAN TELECOM CO., LTD., Mitsubishi Electric Co., NEC, NTT DoCoMo	#1	7.2	presented
R4-99122	Definition of transmitting OFF state	JAPAN TELECOM CO., LTD., Mitsubishi Electric Co., NEC, NTT DoCoMo	#1	7.2	presented
R4-99123	R4.01 RF System scenarios v 0.0.2	Editor (Andrea De Pasquale)	#1	7.9	presented
R4-99124	Proposed outline for 3GPP TSG RAN WG4 R4.01: "RF System Scenarios"	Omnitel (Nadia Benabdalah)	#1	7.9	presented
R4-99125	The effect of outage from Adjacent Channel Interference on Quality of Service for moving users	Lucent Technologies	#2	7.9	presented
R4-99126	Liaison statement to WG4 on clarification of closed loop power control assumptions	3GPP RAN WG1	#1	4, 7.6	presented
R4-99127	Approach for handoing EMC requirements in TSG RAN WG4	Esa Barck, Nokia	#2	7.7	presented
R4-99128	ad hoc 02 chairman report (simulation parameters)	jussi numminen, nokia	#4	6.2	presented
R4-99129	ACIR simulation results	jussi numminen, nokia	#4	7.9	
R4-99130	blocking requiremnt for 10MHZ offset	jussi numminen, nokia	#3	7.2	presented
R4-99131	report from AH 01 (test parameters for receiver BB tests)	jussi numminen, nokia	#3	6.1	presented
R4-99132	Modiicatins to FDD UE receiver intermod sensitivity	jussi numminen, nokia	#3	7.2	
R4-99133	report from TSG RAN#2	chairman WG4	#5	5	presented
R4-99134	draft for S4.11 (BS conformance and testing)	Editor,Mr Nakamura	#2	7.6	

R4-99135	proposal for open loop power control	Mitsubishi,NEC, NTT docomo	#2	7.2	presented
R4-99136	FDD/FDD ACIR description documents (V0.3) as agreed in AH 02	Omnitel, De Pasquale (ad hoc secretary)	#2	7.9	taken in ad-hoc
R4-99137	UL ACIR	Motorla, Fernandez	#2	7.9	taken in ad-hoc
R4-99138	DL ACIR	Motorla, Fernandez	#2	7.9	taken in ad-hoc
R4-99139	LS to TSG-RAN for document version number conventions	WG4, T-mobil	#5	8	approved output
R4-99140	Presentation of LS from ERC TG1	Lucent, Simon Pike	#4	8	presented
R4-99141	draft LS to ERC TG1 in response to document 90	ERC side meeting, WG4 (simon pike)	#5	8	presented
R4-99142	S4.01B version 0.0.3	Ericcson, Nilsson	#2	7.2	
R4-99143	LS on frequency raster to ARIB, TSG-SA, (ERC, T1P1 via TSG-RAN)	Siemens, Raaf	#5	8	revised in 99163
R4-99144	joint proposal on modulation accuracy	WG4, Mr Yokoyama	#4	7.2	presented: virus warning
R4-99145	co-siting of TDD/FDD and TDD/TDD base stations	Siemens, Kottkamp	#4	7.9	presented
R4-99146	proposal for common measurement channel	DoCoMo, Mr Maeda	#3	7.2	presented
R4-99147	LS to WG1 copy WG2 on clarifiaction of open loop power control usage	WG4, Iwane	#4		approved output
R4-99148	packet data delay and step size	Ericsson	#4		presented
R4-99149	proposed LS to WG1 WG2 on power control	WG4, De Pasquale	#5		revised in 162
R4-99150	report on side meeting #1, "channel models"	ad-hoc 1:Jukka Vickstedt	#4		presented
R4-99151	Proposal UE closed loop power control of DL (revised from 112)	Ericsson, Peter van de Berg	#4		presented
R4-99152	BS transmit spectrum requirements, revised from 117				expected from AH31
R4-99153	text for S4.01A on UE maximum power	Simon Pike, AH03 convenor			withdrawn
R4-99154	The LS answer proposal to TSG-T2 on baseline terminal capabilities	DoCoMo, Mr Takami	#5		presented
R4-99155	clarification of ootput RF spectrum emissions	NEC, Mitsubishi, NTT, Mr Norimatsu	#5		presented
R4-99156	uplink ACR simulation results	Motorola, Fernandez			presented
R4-99157	draft minutes of AH02 of march 30	Secretary AH02, De Pasquale	#5		presented
R4-99158	Proposed working methods for 3GPP TSGs	WOME, chairman	#4		presented
R4-99159	split between 4.01, 4.03	WG4, CSELT-Daniele Franceschini, Vodafone - Amer El Saigh			presented
R4-99160	proposal for efficient way for finalization of specification	NTTdocomo, NEC fujitsu	#5		presented
R4-99161	LS on future power classes to tsg-r2,tsg-s1, tsg-t2 cc tsg-r1 tsg-ran	WG4, Amer El Saigh			approved output

R4-99162	LS to WG1 WG2 on power control (to replace 149)	WG4, De Pasquale			approved output
R4-99163	LS on frequency raster to ARIB, TSG-SA, (ERC, T1P1 via TSG-RAN), revised 143	Siemens, Raaf	#5		approved output
R4-99164	agreement on mobile power tolerance from AH03	AH03 (numminen)	email		to be produced by AH03
R4-99165	LS to TSG-T2 on baseline terminal capabilities (cc TSG-T, TSG-RAN, TSG-R2, TSG-R3, TSG-S1)	WG4			not yet avail
R4-99166	Draft meeting report for TSG-R4#3, rev3	Secretary, D Cooper	Email		This document

Annex B: status of email discussions

AH01	Test parameters for receiver BB tests, chair Mr Vikstedt	Continues
AH02	Simulation parameters	continues
AH 03.	UE Power tolerance	continues
AH04	TDD Tx and Rx	closed
AH05	FDD MS radio transmission	~~Closed~~ Continues
AH06	FDD BTS radio transmission	~~Closed~~ continues
AH31	BS tx spectrum requirements] chaired by Nokia.	Created Meeting3
AH32	EMC issues chair Simon Pike	Created Meeting3
AH33	LS to ERC TG1, chair Simon Pike	Created Meeting3
AH34	Parition between S4.01, S4.03, chaired by editors	Created meeting 3

Annex C Participants list

Last name	First name	Company	country	title
Higuchi	Kenji	Advantest Corporation	Japan	Mr.
Ohgami	Takayuki	Advantest Corporation	Japan	Mr.
Auvray	Gerard	Alcatel	France	Mr.
Visbecq	Oliver	Alcatel	France	Mr.
Toda	Hiromichi	Anritsu	Japan	Mr.
Tagawa	Chihiro	Anritsu Corporation	Japan	Mr.
Zelmer	Donald	Bellsouth Cellular	U.S.	Mr.
Beyer	Sascha	Bosch Telecom GmbH	Germany	Mr.
Franceschini	Daniele	CSELTC (Telecom Italia)	Italy	Mr.
Green	Steve	Department of Trade & Ind.	U.K.	Mr.
Van Bussel	Han	Deutsche Telekom Mobilnet	Germany	Mr.
Nilsson	Johan	Ericsson	Sweden	Mr.
Skold	Yonan	Ericsson	Sweden	Mr.
Van de Berg	Peter	Ericsson L.M.	Sweden	Mr.

Larsson	Henric	Ericsson Radio Systems AB	Sweden	Mr.
Honda	Tsutomu	Ericsson(Nippon Eri, KK)	Japan	Mr.
Jotsuka	Masaharu	Ericsson(Nippon Eri, R&D)	Japan	Mr.
Hosoya	Hirobumi	Ericsson,Nippon Ericsson KK	Japan	Mr.
Jober	Johan	Ericsson,Nippon Ericsson KK	Japan	Mr.
Le Cornec	Alain	France Telecom	France	Mr.
Nakamura	Takaharu	Fujitsu	Japan	Mr.
Fukuda	Eisuke	Fujitsu Europe telecom R&D	U.K.	Mr.
Yokoyama	Mitsuru	Hewlett Packard Japan	Japan	Mr.
Cioci	Sergio	Italtel	Italy	Mr.
Pike	Simon	Lucent Technologies	U.S.	Mr.
Ahmed	Walid	Lucent Technologies	U.S.	Mr.
Okubo	Tadashi	Lucent Technologies Japan	Japan	Mr.
Tanaka	Shunichi	Lucent Technologies Japan	Japan	Mr.
Higashida	Yasushi	Matsushita comm. Ind. Co.	Japan	Mr.
Hiramatsu	Katsuhiko	Matsushita comm. Ind. Co.	Japan	Mr.
Iwaoka	Atsushi	Matsushita comm. Ind. Co.	Japan	Mr.
Obara	Toshio	Matsushita comm. Ind. Co.	Japan	Mr.
Ohsaki	Yoshiharu	Matsushita comm. Ind. Co.	Japan	Mr.
Okawa	Shinji	Matsushita comm. Ind. Co.	Japan	Mr.
Yamaguchi	Manabu	Matsushita comm. Ind. Co.	Japan	Mr.
Shepherd	Chris	Mitel Semiconductor	U.K.	Mr.
Fukuda	Hiroyuki	Mitsubishi Electric corp.	Japan	Mr.
Iwane	yasushi	Mitsubishi Electric corp.	Japan	Mr.
Benn	Howard	Motorola	U.K.	Mr.
Fernandes	Edger	Motorola	U.K.	Mr.
Hamada	Kunihiro	Motorola Japan Ltd	Japan	Mr.
Iwasa	Masaaki	Motorola Japan Ltd	Japan	Mr.
Furuya	Yukitsuna	NEC	Japan	Mr.
Kito	Eiji	NEC	Japan	Mr.
Norimarsu	Hidehiko	NEC	Japan	Mr.
Parrott	Stuart	NEC Technologies Ltd.	U.K.	Mr.
Barck	Esa	Nokia Corporation	Finland	Mr.
Heleine	Nicholas	Nokia Mobile Communications Co Ltd	Japan	Mr.
Ohtani	Kouichi	Nokia Mobile Communications Co Ltd	Japan	Mr.
Lilja	Harri	Nokia mobile phones	Finland	Mr.
Numminen	Jussi	Nokia mobile phones	Finland	Mr.
Vikstedt	Jukka	Nokia mobile phones	Finland	Mr.
Hamalainen	Seppo	Nokia Research Center	Finland	Mr.
Jokinen	Sami	Nokia telecomunication	Finland	Mr
Leino	Anne	Nokia telecomunication	Finland	Ms.
Dennis	Yann	Nortel Networks	(France?)	Mr.
Georgeaux	Eric	Notel Networks Europe	(France?)	Mr.
Dohi	Tomohiro	NTT DoCoMo	Japan	Mr
Maeda	Masato	NTT DoCoMo	Japan	Mr.
NakaMura	Takehiro	NTT DoCoMo	Japan	Mr.
Takami	Tadao	NTT DoCoMo	Japan	Mr.
De Pasquale	Andrea	Omnitel Pronto Italia S.p.A	Italy	Mr.

Hekman	Peter	Philips Japan	Japan	Mr.
Chivico	Luis	Philps Japan	Japan	Mr.
Maucksch	Thomas	Rande & Schwanz	Germany	Mr.
Lee	Woo Yong	Samsung Electronics	Korea	Mr.
Ikeda	Katsuyuki	Seiko Epson Corporation	Japan	Mr.
Onodera	Tetsuo	Sharp	Japan	Mr.
Okabe	kaoru	Sharp Corp	Japan	Ms.
Sood	Prem	Sharp Labs of America Inc.	U.S.	Mr.
Frank	Wolfgang	Siemens A.G.	Germany	Mr.
Farber	Michael	Siemens AG	Germany	Mr.
Kottkamp	Meik	Siemens AG	Germany	Mr.
Raaf	Bernhard	Siemens AG	Germany	Mr.
Ito	Kenji	Siemens K.K.	Japan	Mr.
Mori	Nobukazu	SiemensK.K.	Japan	Mr.
Cooper	David	Telecom Modus	U.K.	Mr.
Asamuma	Yutaka	Toshiba	Japan	Mr.
Sato	Hikaru	TU-KA Cellular Tokyo Inc.	Japan	Mr.
El-Saigh	Amer	Vodafone Ltd.	U.K.	Dr.

Annex D: Summary of outputs and liaisons

Note: please open embedded documents to see the LS.

Tdoc no.	Title	Embedded document
R4-99139	LS to TSG-RAN for document version number conventions	Microsoft Word Document
R4-99147	LS to WG1 copy WG2 on clarifiaction of open loop power control usage	Microsoft Word Document
R4-99161	LS on future power classes to tsg-r2,tsg-s1, tsg-t2 cc tsg-r1 tsg-ran	Microsoft Word Document
R4-99162	LS to WG1 WG2 on power control (to replace 149)	Microsoft Word Document
R4-99163	LS on frequency raster to ARIB, TSG-SA, (ERC, T1P1 via TSG-RAN), revised 143	Microsoft Word Document
R4-99165	LS to TSG-T2 on baseline terminal capabilities (cc TSG-T, TSG-RAN, TSG-R2, TSG-R3, TSG-S1)	Notyet avail, (revises 154 presented by DoCoMo)

[END OF DOCUMENT]