

**3GPP TSG-RAN WG1#7  
Hannover, Germany, 30. August – 03. September 1999**

**TSGR1#7(99)b78**

3GPP TSG T WG1 EMC  
30th July 1999  
South Queensferry, Scotland

TSGT1#4 E-99035

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**Source:** TSG T1 SWG EMC

**TO:** TSG RAN WG1

**cc:** TSG RAN WG4

**TITLE:** LIAISON STATEMENT -- Envisaged Impact of DPCCH Gating  
of UE when in Control Only State

At its fourth meeting TSG T1 SWG EMC received the above liaison from TSG RAN WG1 and reviewed it. After a lengthy debate it was finally decided by the committee to fully endorse the liaison statement which had been produced by TSG RAN WG4 on this subject. The TSG RAN WG4 temporary document number is: TSGR4#6 (99)430. For your information we attach the meeting minutes as they illustrate the long discussion necessary to reach this decision.

Attachment A: TSG T1SWG EMC meeting #4 minutes

**Source:** John Fenn, TSG-T1-WG1 EMC Convenor  
**Title:** Meeting report of TSG-T1 WG1 EMC #4 meeting

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### **3GPP TSG-T WG1 EMC meeting #4**

#### **1. Opening of the meeting**

Previous to the opening of the meeting a joint session had been held between the EMC, RF and Sig group to discuss mutual issues such as Audio testing. After this the groups split up for their regular meetings.

The convenor opened the meeting and welcomed the delegates.

#### **2. Introduction of Delegates**

The new delegates Mr. Janne Niemi from Nokia, Mr. Do Hyou Kim and Mr. Sang-Yong Yang from SAMSUNG Electronics Korea briefly introduced themselves. See full participants list attachment A.

#### **3. Approval of Agenda**

The agenda was approved.

#### **4. Approval of meeting reports from last meetings**

The documents from the Miami meeting had been received by all participants and no comments or changes were made.

#### **5. Convenors report and objectives for meeting #4**

The convenor hoped that at this meeting the last inputs for the table would be made and that the group could get down to drafting the output document at the next meeting. He also stated that time was short due to the joint session that had been held earlier.

#### **6. Allocation of contributions for discussion**

After some confusion the documents were assigned as follows:

**E24, E25, E27, E28, E29, E30, E31, E32, E33**

Plea from convenor " let us try as much as possible to get the documents circulated before the meeting so that they can be on the server and on the email reflector for people to review. Don't worry about document numbers when on the email reflector

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just make sure you have a unique title so that document numbers can be allocated afterwards.”

## 7. Introduction and review of contributions

Document E24 and E25 was introduced by Mr. Sood. E 24 was a “Liaison Statement to T1/EMC on Baseline and Service Capabilities Request for Terminal Implementation Capabilities Information.”

“This Liaison Statement contains a Request for Terminal Implementation Capabilities Information from T1/EMC, requesting details of the Service Implementation Capabilities required for Release 99, to support Terminal Service Capabilities as agreed in S1.

It also requests information on Terminal Implementation Capabilities Information for Terminal Baseline Capabilities, further to our prior LS’s T2(99)282 and T2(99)446.

This information is requested in time for T2 to consider it at its September 99 meeting.

T2 requests TSG T WG 1 / EMC to identify the Implementation Capabilities within its technical domain to support Terminal Baseline Capabilities as defined in Annex A. T2 requests TSG T WG 1 / EMC to identify the Implementation capabilities within its technical domain to support the Service Capabilities listed below in the next section of this LS. Additionally, T2 request that these Implementation Capabilities be identified by (split into) each group – Baseline, and Service.

TSG T WG2 looks forward to receiving details of the required Baseline and Service Implementation Capabilities by its 5<sup>th</sup> meeting (September 6-10, 1999). *Extract.*

Document E25 was a draft response prepared by Mr. Sood to be discussed at the meeting.

“Liaison Statement on Terminal Implementation Capabilities

T1/EMC would like to respond with comments and information in two sections as follows :

Terminal Baseline and Service Implementation Capabilities in the areas of T1/EMC General Comments and Recommendation to T2 SWG6.

The T1/EMC SWG would like to inform T2 SWG6 of our plans and document structure.

The areas of interest for the T1/EMC Sub Working Group are those related to EMC, Certification, Regulatory Requirements, etc, and related areas, for Terminals and ancillary equipment.

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The T1/EMC workplan agreed by the SWG and approved by T1 consists of two stages. Stage One would produce a document reflecting the present status of standards and regulatory requirements of 3GPP covering all the Regions. For Stage Two, T1/EMC hopes that 3GPP could influence the national and regional regulators to agree on a harmonized approach, so that one specification could be produced for global use.

T1/EMC has yet to make a decision on the document structure and type (Report, Specification, etc.) that would contain Stage One, and therefore is unable to provide information referenced by Document/Section Number, etc.

However, T1/EMC is of the view that, considering the Group's ToR, all the EMC, Certification, Regulatory, etc., requirements are applicable to Baseline Terminal Implementation Capabilities. None of the Requirements envisioned to be in the Stage One document are currently viewed as Service Implementation Capabilities. Attached to this LS is Table 1 which is being developed as a key part of the Stage One document. It is envisioned that the column labeled 3GPP Specs will also list the required and voluntary Baseline Implementation Capabilities. “

Considering this information, T1/EMC would like to suggest to T2 SWG6 that there is a need to carefully consider the future direction and specify only the minimum requirements for terminals, especially with regard to Certification, and Type-Approval or Conformance Testing. The days of lengthy Type-Approval testing and Certification testing appear to be behind us. T1/EMC would like to commend T2 SWG6 for its efforts in developing the concept of Baseline Capabilities as an example of mandating minimum requirements.

T1/EMC seeks the guidance of T2 SWG6 in this matter.” *Extract.*

A short discussion ensued. All delegates were of the opinion that all electrical equipment posed EMC problems and therefore were essential in a capability document. It was decided to accept E 25 without modification but with an updated Table I and forward it to T2 in time for their next meeting. During the debate Mr. Hansson made a number of fundamental points and he was asked to capture these in and distribute them by email for review and discussion.

*Action Point: Mr. Sood to send E 25 with updated Table 1 to T2 before its next meeting.*

The next document for discussion was E28 “Liaison Statement requesting views on the envisaged impact of DPCCH gating of UE when in Control Only State” from TSG RAN WG1. Two contributions addressed this issue. Mr. Sood introduced the first: E31 “LIAISON STATEMENT -- Envisaged Impact of DPCCH Gating of UE when in Control Only State” which was drafted by TSG RAN WG4. The major points of the LS to WG 1 were:

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“Immunity effects of non-radio products are highly non-linear, and their subjective effects, especially for audio systems, are highly dependent on the characteristics of the transmitted signal:

The output power for the condition being considered.

The amplitude of the envelope variation.

For interference to audio products, the frequency of the envelope variation (note that the subjective effect of audio interference depends considerably on the position within the audio frequency range, and is highest at around 1KHz).

While RAN WG4 has not done the above-mentioned detailed analysis, we are of the view that it would be a prudent step for RAN WG1 to consider all means to reduce, to the maximum extent possible, the potential for EMC effects of such actions as the requested Gated DPCCH in Control Only State.

WG4 recommends to WG1 that it should minimize the potential for EMC by:

if possible, restricting regular gating of RF.

Minimizing the envelope variations due to bearers which are transmitted discontinuously.

Avoiding conditions which result in abrupt changes of RF power.

Where possible, in the case of external audio equipment, keeping frequencies of modulation of the RF envelope away from the range which causes most subjective annoyance.

Considering the service which is likely to be in use, and whether it is likely to be used in a manner where terminals could be used close to equipment which could be susceptible to EMC.” *Extract.*

Mr Yang then introduced document E29 from SAMSUNG Electronics Co., which was a summary of several contributions, which had been discussed in TSG RAN WG1. The major points of E29 could be summed up as:

“During E-mail discussions and physical meetings in TSG RAN WG1 Ad Hoc 14, the benefits of this proposal were agreed as follows:

reduces uplink interference

reduces UE battery power consumption

The proposal was approved as a working assumption by TSG-RAN WG1 AH14 combined with NTT DoCoMo’s Transmission Stop and Resumption Control proposal.

However, there were some questions on the impact of EMC when UE is operating in DTX mode(300Hz, 500Hz), even though the output power of DPCCH is relatively small compared with that of DPDCH, and DPCCH gating is only used for packet data mode where the terminal will not be held close to the ear.

Conclusion

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Gated transmission of DPCCH in Control Only Substate provides several benefits such as uplink interference reduction and increasing UE battery life, etc. There were some questions when UE is operating DTX mode of a few hundred Hertz. However, the impact on EMC when using gating of DPCCH in control only substate will be negligible due to;

the output power of DPCCH is relatively small compared with that of DPDCH  
(-11dB at 307.2Kbps)

DTX rate of DPCCH gating in control only substate is similar to that of TDD mode ([300Hz, 500Hz] vs. 750Hz) – For interference to audio products, the subjective effect of audio interference is highest at around 1KHz

the impact on EMC during DPCCH gating will be smaller than that of TDD mode  
the gating of DPCCH is only envisaged for packet data mode (i.e. the terminal will be far from the ear).” *Extract.*

After these introductions a lengthy discussion ensued. The outcome of these discussions are summed up as follows:

- As previously mentioned whenever switching occurs EMC problems occur regardless of power, naturally the lower the power the smaller the EMC
- Subjective audio interference could occur at any frequency dependent on the characteristics of the listener
- The effective distance away from the EMC source only has a positive effect on certain devices and could indeed be detrimental to others e.g. terminal far away from the ear but near that users heart pacemaker

The debate centred on how to answer the LS from TSG RAN WG1. The LS posed a weighty matter and to answer it in full a major study would have to be undertaken. However, this was impracticable due to cost and time. A simpler answer would be to endorse the RAN 4 response to RAN 1(E31) quoted above. Mr. Yang agreed to this but proposed to attach the document E29 also quoted above but this was turned down by the rest of the committee. Finally it was unanimously agreed to fully endorse E31 in a LS from T1 EMC SWG as answer to RAN 1’s LS and to attach the minutes of this meeting to show that it was a difficult topic which had required an extensive debate.

*Action Point: Convenor to draft LS for TSG RAN 1 next meeting*

The next document for review was E27 “Draft EMC specification for 3<sup>rd</sup> generation terminals” from Nokia. Mr. Sorensen introduced it saying:

“We (Nokia) believe that the impact of the 3<sup>rd</sup> generation mobile systems depend crucially on the global acceptance of uniform specifications throughout the world. Only in this way global roaming and free mobility of terminals across borders become possible. The EMC specification is just one of many, but all are important to achieve this goal. EMC requirements shall be based on sound technical judgement. They shall encompass or be equivalent to the regional requirements such that complying products cannot be rejected on technical grounds.

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The present draft is a first attempt to prepare an EMC specification, which may be applied globally. It is based on the international, generic EMC standards IEC 61000-6-1 and IEC 61000-6-3. It is an adaptation of the EN 300 342-1 (draft 3<sup>rd</sup> edition) prepared by ETSI. The detailed technical requirements presently included apply in Europe. Some GSM specific details may have been overlooked. In such cases they shall be replaced by the appropriate 3<sup>rd</sup> generation terms.

In the present draft the spurious emissions from the radio terminal has not been included. An agreement between TSG-T1-RF and TSG-T1 EMC on the division of work shall be reached.

Also input on the performance assessment criteria from TSG-T1 is required.”

*Extract.*

This draft it was agreed should be discussed and worked upon at the next meeting in Kobe.

Documents E30 and E32 concerning the ongoing update of Table 1 were submitted by SAMSUNG Electronics Co. Mr. Yim explained that E32 contained both the Japanese and Korean updates as outlined in E30:

“This document is the brief explanation about the Korean EMC table which we promised to fill in for this meeting in Edinburgh. It is only for your understanding about these table contents describing the EMC regulations in Korea. Please refer to the attached EMC table for the detailed items and values, which is titled “Table1 : EMC/Regulatory Specification Areas and Regional Requirements”. It was appended to the EMC table sent by Japan through the EMC email reflector and checked by RRL(Korea Regulatory body) for confirmation.” *Extract.*

With this explanation the revised Table 1 was adopted.

The final document for review was E33 “Comments for 3GPP EMC #4 Meeting” from Panasonic (Matsushita Communication Industrial Co., Ltd.). Mr. Shigemitsu introduced the document:

– “It basically concerned Radiated Emission and Immunity

. Radiated Emission : Emission under receiving condition (including idling state of transmitter).

He stated that we must divide the spurious emission of transmitting (concern with carrier wave) from another radiation of a digital circuit (ex. Clock OSC.) or receiving circuit (ex. Local OSC. ). Because generally spurious emission level is estimated as the quality of carrier wave in regional standards or law (ex. Radio law in Japan). So I think we should not care for these spurious emission(radiation) as a conformance test of EMC requirements, and we should separate the Radiated Emission items concerned with the active state of transmitter from 3GPP EMC standards.

We should measure the radiated emission under the condition as follows.

1) State of receiving for Receiver and Transceiver

2) State of idling for Transmitter (We should not worry about the active state of transmitter as a radiated emission of EMC.) Therefore we should delete the

Radiated Emission items concerned with the active state of transmitter in Table 1 (EMC regulatory specifications areas and regional requirements).

Immunity : Basically we should refer to international standards and the present standards of mobile communication system of ETSI 300 342-1/2 and ARIB T-57 2nd edition(draft).

(But we should check the test method, level and performance criteria for applying to W-CDMA systems.) Or we should investigate necessity of original tests for W-CDMA systems.

I think the immunity requirements in the 3GPP EMC standard should be considered as one of a product quality issue." *Extract.*

These comments would be incorporated in the revised Table 1.

The full documents of which the extracts are shown above are available on the 3GPP Server.

## **8. Progress report**

### **▪ T1 Mobile Terminal Conformance Testing**

As mentioned above a joint session was held to discuss audio testing. It was decided to liaise with TC STQ of ETSI to receive input and perhaps some guidelines how to tackle it.

## **9. TSG-T WG1 EMC Work Plan**

Due to lack of time no review was carried out. The work continues.

## **10. Future meeting schedule**

### **▪ TSG-T WG1 EMC**

The next meeting will be in Kobe, Japan September 13 by kind invitation of Hewlett Packard Japan. In light of the lack of time to deal with all topics at this meeting it was agreed to have a 2 day meeting (i.e. 13 and 14 September) if possible. The host said "it would try and meet this request."

### **▪ TSG T joint meeting**

As planned.

## **11. Any Other Business**

The convenor promised to give the URLs for the Web sites with EMC related information:

1. List of CEC directives: [www.lyons.demon.co.uk/euemcstd.txt](http://www.lyons.demon.co.uk/euemcstd.txt)
2. List of EMC standards: [www.conformity.com/catalogemc.html](http://www.conformity.com/catalogemc.html)
3. European Union Official Journal: <http://europa.eu.int/eur-lex/en/oj/index.html>



## **12. Close of the meeting**

The convenor thanked all the participants for their hard work (even missing a full lunch!). He also expressed many thanks to the host Hewlett Packard Queensferry for hosting the meeting and for providing at very short notice a sandwich lunch.

The meeting was then closed.

Attachment A: Participants list

Name	Company	Country	Tel/Fax
Ole Soerensen	NOKIA	DK	+45 323292556
Janne Niemi	NOKIA	FIN	+358 10 505 5220
John Fenn	SERI	GB	+44 1784 428 600/629
Mats Hansson	ERICSSON	SE	+46 46193357/295
Do Hyou Yim	SAMSUNG Electronics	KR	+82 331280/686
Sang-Yong Yang	"	KR	+82 342 779 7772
Hirohito Shigemitsu	PANASONIC	JP	+81 45 939 1268
Prem Sood	SHARP	JP	+1 360 8348708/8696