TSG-RAN WG#1 Meeting#7 TSGR1#7 (99)d08

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Agenda Item: Ad Hoc 3

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Support of Configuration Change Indicators on the PICH

Introduction

In order to ensure that system information is up-to-date after cell reselection, in a 3GPP-WCDMA system, the UE would be required to wake up to receive either the PCH, the BCCH, or both after cell reselection. Experience shows that cell reselection can be frequent when the UE is between cells of similar strength. Waking up frequently to receive the PCH or BCCH reduces the standby time.

In order to improve standby time, it would be desirable for the UE to be able to avoid waking up to receive either the PCH or the BCCH after cell reselection; however, it is also critical that the UE have up-to-date system information following cell reselection.

In this contribution, a simple addition to the PICH is proposed which increases standby time by, in many cases, allowing the UE to avoid waking up for either the PCH or the BCCH for the purpose of updating system information after cell reselection.

1.0 Current Structure of PICH

The Page Indication Channel (PICH) is a physical channel used to carry Page Indicators (PI). Figure 1 illustrates the frame structure of the PICH. One PICH frame is of length 10 msecs and consists 300 bits (150 symbols). Of these, 288 bits are used to carry Page indicators and the remaining 12 bits are not used. The Page Indicators indicate to a UE that there may be a page intended for it. The UE monitors its PI and if it is determined to be in $_{PICH}$ as shown in Figure 1.

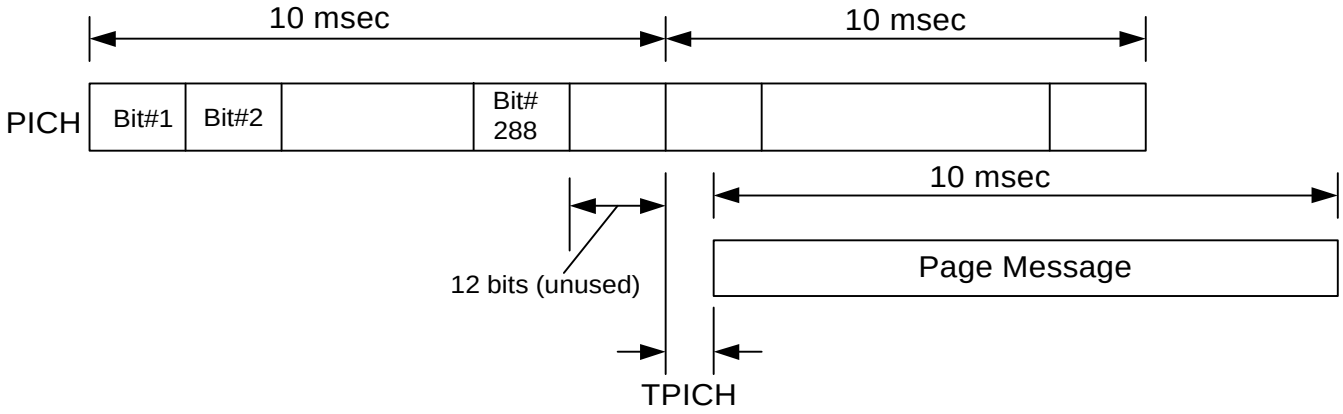

Figure 1

2.0 Proposed Addition to PICH and Associated Processing

Figure 2 shows the proposed modification to the PICH. Four of the twelve reserved bits will be used as a Configuration Change Indicator (CCI). The CCI indicates to the UE if there has been a recent change in system information.

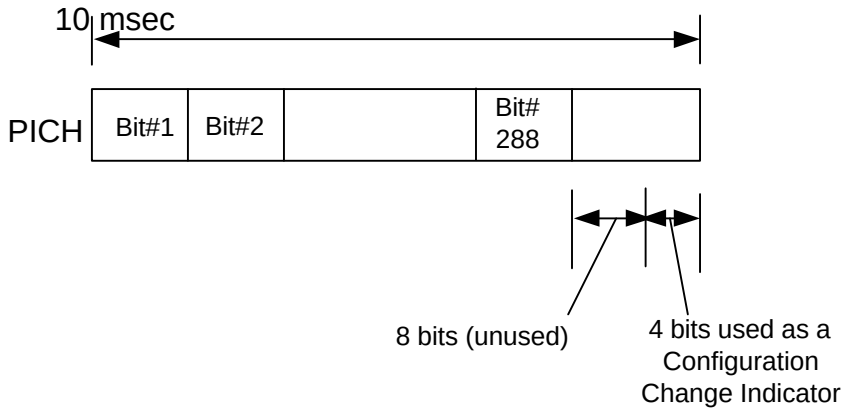

Figure 2

The UE will be allowed to store and "remember" the system information from a cell for a maximum amount of time after performing cell reselection to another cell. When the system information broadcast from a cell is changed, all CCIs broadcast on the cell's PICH will be set to indicate a recent change in system information for a time period which corresponds to the maximum amount of time the UE is allowed to "remember" the system information.

When the UE performs cell reselection to a cell for which it "remembers" the system information, it can receive the CCI and, if the CCI indicates that there was not a recent change in configuration, the UE can avoid waking up to receive the PCH or BCCH for the purpose of updating the system information. It should be noted that the UE only needs to receive the CCI upon performing cell reselection to a cell for which it "remembers" the system information; at other times, there is no need to receive the CCI.

3.0 Conclusion

The Configuration Change Indicator on the PICH improves standby time in situations where the UE is performing frequent cell reselection between cells for which the UE has stored the up-to-date system information.

4.0 References

[1] Ericsson, "Updated text proposal for Paging Structure", TSGR1#6(99)848.
[2] TS 25.304, "UE Procedures in Idle Mode", v1.3.2