**3GPP TSG-RAN2 Meeting #113bis-e draftR2-2104387**

**Online, April 12 – 20, 2021**

**Agenda Item: 9.1.4**

**Source: Huawei, HiSilicon**

**Title: Offline 403 - RSRQ measurements when RSS is used**

**Document for: Discussion and decision**

1. Introduction

This document is the summary of the offline email discussion “[AT113bis-e][403][ eMTC R16] RSRQ measurements when RSS is used (Huawei)”, as indicated below:

* [AT113bis-e][403][eMTC R16] RSS based RSRQ (Huawei)

Status: Started

      **Scope:** Check whether RSRQ measurements should be defined for RSS,
collect initial comments and draft an LS reply.

      **Intended outcome:** Report in R2-2104387

      **Deadline:** Thursday 2021-04-15 10:00 UTC

1. Discussion

The options proposed by RAN4 are:

* *Option 1: Remove RSRQ from the cell selection and cell re-selection criterion when a cell is measured using RSS.*
* *Option 2: Define RSRQ for RSS measurements.*

Companies are requested to provide comments in the table below (one row for each new comment to better keep track of the discussion – please don’t edit the previous comments).

|  |  |  |
| --- | --- | --- |
| **Company** | **Option 1 or Option 2?** | **Detailed comments** |
| Qualcomm | Option 1 | RAN1/RAN had already concluded not to support RSRQ with RSS, see R2-2103013.The proposed draft reply LS for option 1 says RAN2 has agree CRs for Option 1 but there are no CRs submitted to this meeting. Therefore, the response in this LS should be modified as follows:“RAN2 have discussed the options listed in the LS from RAN4 and has agreed ~~the attached CR for~~ to implement option 1 (i.e. remove RSRQ ~~has been removed~~ from the cell selection and cell re-selection criterion when a cell is measured using RSS).”  |
| ZTE | Option 2 | We understand that the WID update was to exclude the RSRQ improvement through the use of RSS, not to exclude the RSRQ measurement.According to the following description in TS 36.214 “*E-UTRA Carrier Received Signal Strength Indicator (RSSI), comprises the linear average of the total received power (in [W]) observed only in certain OFDM symbols of measurement subframes*”, we understand the measurement signal density will not increase the RSSI measured value, it may only improve the measurement accuracy. If the Option 1 is selected, the cell selection and/or reselection performance may be impacted and should be re-evaluated. Furthermore, the RAN2 specification may be impacted much (e.g. both the TS 36.304 and TS 36.331 will be impacted). So, RSS based measurement should not deactivate RSRQ based cell selection/reselection criterion.Therefore, we suggest to response the LS with the following points:

|  |
| --- |
| RAN2 has discussed the two options in the LS related to RSS based RSRQ for LTE-MTC. Based on the discussion, RAN2 provide the following understanding: • The Option 1 is not preferred from RAN2’s perspective.• Whether Option 2 is necessary should be decided by RAN1. |

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| Sequans | Option 2 | We think from RAN2 POV option 1 has much more impact, as it will affect eMTC cell reselection and introduce different behaviors between UEs supporting and not supporting RSS, and possibly on different cells as they support RSS-based measurements.Not only the new behavior will have to be analyzed, but probably will result in the need to introduce new parameters and/or new signalling to compensate. This work will not be limited to RAN2 only.However, we agree that the WID change reflects not only the inability to improve the accuracy, but actually to define RSRQ based on RSS.There is also secret option number 3, where after analysis both are bad options and RSS-based measurements cannot be used for reselection at all, but that seems premature.Since both option 1 and 2 would eventually entail further RAN1/4 work, we suggest to go with ZTE’s suggestion, while expanding on the reasoning. |
| Ericsson |  | May be we should let RAN1/RAN4 decide and let us know what is best; so we can update our specification if need be. I do not see how RAN2 can decide what is best. We do not perform any simulations etc. |
| Huawei, HiSilicon | Option 2 | As mentioned in [1] from RAN2 point of view option 1 is not preferable. It introduces a clear difference in cell selection and reselection behaviour depending on when RSS is used or not and has considerable specification impact. Are we now saying after many releases that the RSRQ thresholds introduced in LTE Rel-9 are no longer useful? If this is the case then the issue seems wider than just the RSS measurements feature. The intention of the feature was to improve measurement accuracy, not to change the idle mode functions.  |

1. Conclusion

TBD

1. Reference

[1] [R2-2103491](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113bis-e/Docs/R2-2103491.zip), RSRQ measurements when RSS is used, Huawei, HiSilicon

[2] [R2-2103013](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_113bis-e/Docs/R2-2103013.zip), Whether to support RSRQ with RSS, Qualcomm Incorporated

[3] [R2-2104182](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_113bis-e/Docs/R2-2104182.zip), Consideration on LS related to RSS based RSRQ for eMTC, ZTE Corporation, Sanechips

Appendix A Draft Reply LS for Option 1

**3GPP TSG-RAN2 Meeting #113bis-e R2-21xxxxx**

**Online, April 12 – 20, 2021**

**Title: [draft] Reply LS related to RSS based RSRQ for LTE-MTC**

**Response to:** R4-2103728

**Release:** Release 16

**Work Item:** LTE\_eMTC5-Core

**Source:** [Huawei – to be] RAN2

**To:** RAN4,

**Cc:** RAN1

**Contact Person:**

**Name:** Brian Martin

**E-mail Address:** brian DOT alexander DOT martin AT huawei DOT com

**Send any reply LS to: 3GPP Liaisons Coordinator,** **mailto:3GPPLiaison@etsi.org**

**Attachments: [Agreed CR]**

**1. Overall Description:**

RAN2 thanks RAN4 for the LS in R4-2103728.

RAN2 have discussed the options listed in the LS and have agreed the attached CR for option 1 (i.e. RSRQ has been removed from the cell selection and cell re-selection criterion when a cell is measured using RSS).

**2. Actions:**

**To RAN4:**

RAN2 kindly asks RAN4 to take the above into account.

**3. Date of Next TSG-RAN2 Meetings:**

TSG-RAN2 Meeting #114-e 19 – 27 May, 2021

TSG-RAN2 Meeting #115-e 16 – 27 Aug, 2021

Appendix B: Draft Reply LS for Option 2

**3GPP TSG-RAN2 Meeting #113bis-e R2-21xxxxx**

**Online, April 12 – 20, 2021**

**Title: [draft] Reply LS related to RSS based RSRQ for LTE-MTC**

**Response to:** R4-2103728

**Release:** Release 16

**Work Item:** LTE\_eMTC5-Core

**Source:** [Huawei – to be] RAN2

**To:** RAN4, RAN1

**Cc:**

**Contact Person:**

**Name:** Brian Martin

**E-mail Address:** brian DOT alexander DOT martin AT huawei DOT com

**Send any reply LS to: 3GPP Liaisons Coordinator,** **mailto:3GPPLiaison@etsi.org**

**Attachments: -**

**1. Overall Description:**

RAN2 thanks RAN4 for the LS in R4-2103728.

RAN2 have discussed the options listed in the LS and have decided that from a RAN2 perspective option 2 is preferred.

**2. Actions:**

**To RAN1, RAN4:**

RAN2 kindly asks RAN1 and RAN4 to take the above into account, and update the specifications accordingly.

**3. Date of Next TSG-RAN2 Meetings:**

TSG-RAN2 Meeting #114-e 19 – 27 May, 2021

TSG-RAN2 Meeting #115-e 16 – 27 Aug, 2021