**3GPP TSG-RAN WG4 Meeting # 104-e R4-22XXXXX**

**Electronic Meeting, 15– 26 August 2022**

**Agenda item:** 12.4.4.

**Source:** Moderator (SWR/EBU)

**Title:** Email discussion summary for [104-e][316] LTE\_terr\_bcast\_bands\_BSRF

**Document for:** Information

# Introduction

This document summarizes the email discussion for the following agenda item

12..4.4 BS RF requirement maintenance [LTE\_terr\_bcast\_bands\_part2-Core]

for the Rel-18 work item on 5G Broadcast (RP-220518). Discussion of other agenda items related to 12.4 including Proposals 1 and 2 in documents R4-2211555, R4-2211981, R4-2211982, R4-2212099 and Proposals 1 and 2 in R4-2211585 are treated in thread 128.

It is appreciated that the delegates for this topic put their contact information in the table below.

Contact information

|  |  |  |
| --- | --- | --- |
| **Company** | **Name** | **Email address** |
| ZTE | Fei Xue | Xue.fei25@zte.com.cn |
| Rohde & Schwarz | Niels Petrovic | Niels.petrovic@rohde-schwarz.com |
| Ericsson | Dominique Everaere | dominique.everaere@ericsson.com |
| Huawei | Peng (Henry) Zhang | zhangpeng169@huawei.com |
| Nokia | Iwo Angelow | iwajlo.angelow@nokia.com |
| Qualcomm | Bin Han | binhan@qti.qualcomm.com |

Note:

1. Please add your contact information in above table once you make comments on this email thread.
2. If multiple delegates from the same company make comments on single email thread, please add you name as suffix after company name when make comments i.e. Company A (XX, XX)

# Topic #1: Coexisting Studies between IMT service around DTT spectrum

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [R4-2213699](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213699.zip) | ZTE Corporation | Proposal 1: there is no need of further coexistence study between IMT service and DTT service {LTE based broadcast in Rel-17} in RAN4.  Proposal 2: for IMT service, it could follow the existing 3GPP RAN4 requirements and for DTT service {LTE based broadcast BS in Rel-17}, it should follow the regulatory requirements.  Observation 1: the coexistence study between IMT service around DTT spectrum and DTT service has been well studied in the past when IMT bands around DTT spectrum was introduced. |

## Open issues summary

*ZTE proposes not to conduct no further coexisting study between IMT service and DTT service. Instead existing 3GPP RAN4 requirements for IMT should be followed as for DTT.*

* + Any concerns with the above? Any other aspect that needs consideration?

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| ZTE | To further clarify our proposals, for existing IMT-BS coexisting with DTT BS, it’s proposed to follow the requirement in TS 36.104 for the protection of DTT.  For DTT coexisting with legacy E-UTRA BS, we propose to follow the regulatory requirement to show its compliance. |
| Rohde & Schwarz | We agree with the ZTE assessment and also think that there is no further coexistence study required in this case. |
| Ericsson | As commented in the other thread#128, we still need to study HPHT deployment which has not been considered so far. |
| Huawei | Tend to agree with ZTE, but more studies about current regulatory requirements are welcome in case working group miss something. |
| Nokia | As far as 5G broadcast BS fulfills the DTT emission requirements, there is no need for further co-existence study between 5G broadcast and IMT. However, BS-UE co-existence studies might be needed to prove BS ACLR/UE ACS defined for 5/10MHz LTE can be reused for 6/7/8MHz in broadcast band. |
| Qualcomm | We support ZTE’s proposal. We can follow the legacy requirements and regulatory requirements in regions. If we go with co-ex study, we should limit the scope and co-ex verification should be enough. |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary** |
|  | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |

## Discussion on 2nd round (if applicable)

# Topic #2: List of expected Changes to 36.104 due to introduction of LTE based 5G terrestrial broadcast band(s)

## During RAN#92-e, the WID on new bands and bandwidth allocation for LTE based 5G terrestrial broadcast has been approved. This document focuses on the impact to BS RF requirements in 36.104.

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [R4-2213580](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213580.zip) | Nokia, Nokia Shanghai, Bell | **Proposal:** On top of any other requirements, as for introduction of any LTE band, additional 36.104 changes are expected due to introduction of LTE based 5G terrestrial broadcast band(s) at leastRR in the following Clauses unless co-existence/co-location requirements should not be covered by this Work Item:  Clause 6.6.4.3 Additional spurious emissions requirements  Clause 6.6.4.4 Co-location with other base station It is proposed to take into account BS requirements details above for LTE based 5G terrestrial broadcast band(s) introduction to 36.104. It should be noted this document focuses on Core BS requirements only, additional impact may be expected to BS conformance testing, e.g. by introducing new test models |

## Open issues summary

*When introducing any LTE based terrestrial broadcast band(s) 36.104 should be upsted at least in the Clauses 6.6.4.3 and 6.6.4.4*

* + Any concerns with the above? Any other aspect that needs consideration?

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| ZTE | For the co-location with other BS stations, since this requirement is targeted to protect its receiver, we think it might be not needed.  For additional spurious emission requirement for LTE based broadcast BS, at leas receiver impact is not need and for the requirements for transmitter, this need more discussion in RAN4. |
| Rohde & Schwarz | Not sure if 6.6.4.3 and 6.6.4.4 since they are designed to protect other BS deployments in the cellular network. We can further discuss. |
| Huawei | The proposal is too general. Not sure what is the intention of proponent. More specific proposals are welcome. |
| Nokia | As mentioned in R4-2213580, detailed analysis needs to be performed for each BS requirement if existing requirements are applicable/can be reused for LTE based 5G terrestrial broadcast operation. With respect to co-existence and co-location requirements, while there is no impact to protect own receiver, confirmation is needed requirements for defined bands can be met for operation LTE based 5G terrestrial broadcast band. |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary** |
| **Sub-topic#1** | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |

## Discussion on 2nd round (if applicable)

*Moderator can provide summary of 2nd round here. Note that recommended decisions on tdocs should be provided in the section titled ”Recommendations for Tdocs”.*

# Topic #3: Reuse of existing regulatory agreements

## These papers provided by several network operators adress band definition and BS requirements for LTE based 5G Broadcast. Proposals 1 and 2 are treated in thread 128. Propsals 3 request to reuse existing regulatory agreements when operating LTE based 5G Broadcast.

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [R4-2212099](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212099.zip) | TDF | **Proposal 3:** RAN4 to re-use BS requirements as provided in existing regulatory agreements and documentation provided by the ITU and national regulators for the broadcasting service. |
| [R4-2211981](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211981.zip) | Cellnex | **Proposal 3:** RAN4 to re-use BS requirements as provided in existing regulatory agreements and documentation provided by the ITU and national regulators for the broadcasting service. |
| [R4-2211982](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211982.zip) | BNE | **Proposal 3:** RAN4 to re-use BS requirements as provided in existing regulatory agreements and documentation provided by the ITU and national regulators for the broadcasting service. |
| [R4-2211555](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211555.zip) | SWR, EBU | **Proposal 3:** RAN4 to re-use BS requirements as provided in existing regulatory agreements and documentation provided by the ITU and national regulators for the broadcasting service. |
| R4-2211585 | Rohde & Schwarz | **Proposal 3:** Re-use the existing transmitter requirements as of Digital Terrestrial TV Transmitters. |

## Open issues summary

*5G Broadcast has the potential to become a global solution enabling the delivery of linear media services to mobile devices and connected vehicles. The UHF band spectrum can be used to operate 5G Broadcast, and the networks deployment can leverage existing HPHT broadcast terrestrial network infrastructure.*

*The BS requirements as provided in existing regulatory agreements and documentations provided by ITU and national regulators for the broadcasting service should be reused.*

* + Any concerns with the above? Any other aspect that needs consideration?

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| ZTE | Agree with the proposal to follow the regulatory requirements instead of specifying new requirements for it unless there are other specific requests or deployment scenario to be considered. |
| Ericsson | Further analysis would be needed here. Anyway, Regulation is always an input to 3GPP when specifying requirements, this should be the case here as well. This doesn’t preclude 3GPP to specify other/additional requirements to guarantee network performance. |
| Nokia | It is not clear what is meant by re-use existing BS requirements. As mentioned in R4-2213580, detailed analysis needs to be performed for each BS requirement if existing requirements are applicable/can be reused for LTE based 5G terrestrial broadcast operation. Additional regulatory requirements can be references in relevant specifications. |
| Qualcomm | We agree with the proposal to reuse existing regulatory requirements and ITU documentations the broadcasting service. |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | **Status summary** |
|  | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |

## Discussion on 2nd round (if applicable)

*Moderator can provide summary of 2nd round here. Note that recommended decisions on tdocs should be provided in the section titled ”Recommendations for Tdocs*